Journal Pre-proof

How 'bad' is renter protection for institutional investment in multifamily housing?

Meagan McCollum, Stanimira Milcheva

PII: S1051-1377(22)00084-5
DOI: https://doi.org/10.1016/j.jhe.2022.101912
Reference: YJHEC 101912

To appear in: *Journal of Housing Economics*

Received date : 26 February 2021
Revised date : 15 December 2022
Accepted date : 15 December 2022

Please cite this article as: M. McCollum and S. Milcheva, How 'bad' is renter protection for institutional investment in multifamily housing?. *Journal of Housing Economics* (2023), doi: https://doi.org/10.1016/j.jhe.2022.101912.

How 'Bad' is Renter Protection for Institutional Investment in Multifamily Housing?*

Meagan McCollum† and Stanimira Milcheva‡

Keywords: Multifamily housing, rental market, cap rates, volatility, NOI, renter protection.

December 15, 2022

Abstract

We assess the role of state-level renter protection regulations on the pricing, performance and risk of multifamily housing. We construct a renter protection score (RPS) to measure the extent of renter protection in each state. Using a proprietary property-level dataset from loans backed by commercial mortgage backed securities (CMBS) and census tract socioeconomic variables, we study the role of RPS on initial capitalization (cap) rates, annual net operating income (NOI) and annual loan delinquency rates of multifamily housing. We find that, contrary to conventional wisdom that renter protection is 'bad' for investors, multifamily housing in high RPS states is associated higher annual NOI and NOI growth and lower delinquency rates. We also show that better tenant protection is associated with lower initial cap rates. The results point to investors perceiving properties in more regulated states as lower risk due to reduced income volatility. For institutional investors, higher levels of renter protection are, therefore, not 'bad' but are instead associated with lower cash flow volatility and better income growth prospects.

---

*This research was initiated while Meagan McCollum was at Baruch College where she had access to Trepp data.

†University of Tulsa. Address: University of Tulsa, Collins College of Business, 118-H 800 S Tucker Dr, Tulsa, OK 74104, Tulsa, OK; email: meagan-mccollum@utulsa.edu.

‡University College London. Address: Bartlett School, UCL, 1-19 Torrington Place, London, WC1E 7HB; email: s.milcheva@ucl.ac.uk.

1 Introduction

Institutional investors are the main players in the market for multifamiliy rental housing (MFRH) in the US. Unlike the single-family rental market, which has historically been dominated by private investors, multifamily housing is a form of commercial real estate whose landlords are typically institutional investors, such as private equity funds, pension funds, insurance companies, etc. The stock of MFRH is as large as the stock of single-family rented housing. Nationwide, there are more than 20 million rental apartment units (NMHC, 2019) and one out of nine households is a renter of multifamily housing. While the multifamily market in the US is mature when it comes to institutional capital, other countries, e.g. the UK, have only recently started experiencing an inflow of institutional investors into the private rented sector. At the same time, governments are also exploring avenues to regulate rental markets, given affordability pressures and the increasing reliance on rental accommodation as a form of tenure.

While landlord and tenant laws have been largely unchanged for several decades in the US, there has recently been more support for updating rental market regulations to provide better protection for tenants and strengthen their rights. For example, New York City recently enacted the Housing Stability and Tenant Protection Act of 2019; one of the changes is that the security deposit is capped at one month's rent for all properties. This is significantly below what has historically been charged in deposit for New York City apartments and below the limits set in other states where the maximum allowable deposit can cover two or three months of rent. There has also been a push to tighter regulations internationally. For example, the UK has decided to abolish the so called Section 21 in the assured shorthold tenancy agreements. This section allowed a tenant to be evicted without any particular reason – a no-fault eviction. Abolishing it would make it harder to evict a tenant.

The conventional wisdom has been that, while larger protection of tenants' rights is 'good'

for tenants, it is 'bad' for landlords and investors in this sector. Some landlord organizations claim that tighter renter protection may be associated with fewer rental properties on the market and hence landlords might increase rents. However, there is no empirical evidence of how MFRH investment performance is affected.[1] This paper thus aims to shed light on some of the conventional wisdom around the role of renter protection regulations on the pricing of and risk in multifamily housing.

Due to the lack of time-series data on multifamily housing, it has been hard to assess drivers of investment performance. What previous studies (Hardin and Wolverton (1999), Hardin III et al. (2009), Ambrose et al. (2000), Cotter and Roll (2015)) tend to do instead is to examine the performance of listed real estate companies that specialize on multifamily housing. However, the majority of MFRH studies have focused on the performance of commercial mortgage loans (Vandell (1984), Vandell et al. (1993), Quigley and Order (1995) Hardin and Wolverton (1996), Chen and Deng (2013) Seslen and Wheaton (2010) Agarwal et al. (2012) An et al. (2013)). Vandell et al. (1993) show that default is predicted by loan terms and property values. Archer et al. (2002) find that the multifamily market is different from the single family market, with LTV ratios not being the main driver of multifamily mortgage defaults; instead, property characteristics and the geographic location (zipcode) play a major role. More recently, Seslen and Wheaton (2010) show that changes in MSA-level property values and NOI are important factors in predicting mortgage default. Harding et al. (2009) highlight the importance of neighborhood characteristics for default. Yildirim (2008) shows that commercial real estate mortgage loans within the same location have correlated defaults. Cocola-Gant and Gago (2019) use 30,000 CMBS loans originated between 1998 and 2012 and show that local residential house price-related measures are a good proxy for

[1]Renter protection and legal provisions for tenants are not related to rent controls, with the latter placing legal limits on the amount of rent that can be charged. While renter protection operates at the state level, rent control programs are mostly conducted at the municipality level. Oregon is the only state to have a statewide rent control law, and this law was only passed in 2019, outside of our sample period. We are only assessing state-level differences in landlord-tenant laws.

local traits and explain commercial mortgage defaults. In particular, the authors show that high unemployment rates and low house price growth are associated with greater default risk at the county level.

On the regulatory side, Seshimo (2003) explores optimal contract structure between tenants and landlords and presents a theoretical model that shows the optimal contract has a fixed-term tenant protection. Coulson et al. (2020) construct a Tenant-Right Index to measure legal protection of tenants rights by state. They find that an increase in the index value leads to lower eviction rates and increases housing prices. The authors conclude that there are trade-offs between tenant protections and rent affordability and these depend on the extent to which avoiding evictions is beneficial. Arnott and Shevyakhova (2014) show that tenancy rent control lead to the landlord having the incentive to do refurbishment work only between tenancies, not during the tenancy period; this leads to a reduction in overall maintenance work completed.

Our study is closest to Ambrose and Diop (2018) who look at how state-level variation in regulations impact rental payments. They find that higher regulation costs for landlords increase their incentives for tenant screening. As a result, landlords charge higher rents and experience fewer tenant defaults in states with higher renter regulation.

We assemble a state-level measure of renter protection and assess its effect on initial capitalization (cap) rate, annual net operating income (NOI) and annual loan delinquencies in MFRH. As MFRH is a form of commercial real estate, the initial cap rate is one of the key pricing and risk metrics for the transacted properties. The cap rate is calculated as the ratio between the NOI and the property value. A property associated with a higher initial cap rate would be priced lower and be associated with more risk. Properties with low cap rates are regarded as having a higher value and are lower risk. Given that the initial cap rate consists of expectations about future rental income and capital expenditure and the current value of the property, regulations can potentially have an effect on cap rates through multiple

channels. The net effect of renter protection on cap rates has not yet been documented and is not straight forward.

On one hand, high levels of renter protection could be positively linked to cap rates. Investors may perceive the risk investing in tenant-friendly states to be higher due to the loss of flexibility or higher costs for screening tenants. Landlords can struggle to quickly replace 'bad' tenants and hence may increase rents, similar to the finding in Ambrose and Diop (2018). On the other hand, renter protection can lead to lower cap rates if investors perceive the risk to invest in a property in a location with high renter protection to be lower. One explanation for investors agreeing on lower cap rates for multifamily housing in areas with high renter protection can be associated with lower NOI volatility. Better tenant protection makes renters feel more secure and stay longer, which can lead to more stable rent revenues.[2] To test the risk channel, we analyse how landlord and tenant laws affect the volatility in NOI growth. For similar reasons, multifamily housing properties located in areas with high renter protection may be associated with lower mortgage delinquency rates. Therefore, in addition to examining the impact of renter protections on initial cap rates, we also examine the investment performance of MFRH by looking at annual NOI, annual NOI growth and annual delinquency.

To measure tenant protection we combine regulatory data governing the tenant-landlord relationship by state from a variety of sources and construct a Renter Protection Score (RPS) for each US state.[3]. These state level provisions are multi-faceted in nature and include limits on security deposits and longer periods to evict tenants for non-payment, providing important measures of security for rental tenants. Renter protection provisions

[2]Eppli and Tu (2018) show that markets with high expected employment growth are associated with high property appreciation and low cap rates of MFRH. Additionally, large metropolitan areas would be expected to have lower liquidity risk and hence lower cap rates.

[3]There are also variations in renter protections at city or county level that we do not evaluate in this study. City or county level laws would provide higher levels of renter protection than state level laws, making our estimates a lower bound of the impact of renter protection laws. Also, the RPS does not vary over time but only across states.

are associated with large variations across US states, as shown in Figure 1.[4] Vermont, Arizona, the District of Columbia, and Nebraska offer the highest levels of renter protection while the least tenant friendly states are Arkansas, West Virginia, North Carolina, Georgia, and Wyoming.[5] In more tenant-friendly states, landlords often face restrictions such as the inability to collect large security deposits from tenants, shorter time limits for landlords to return security deposit after the end of the tenancy, longer required notice periods when evicting tenants, or the right of tenants to legally withhold rent if certain repairs are not completed.

Our analysis is conducted at the property level and uses a sample of investment-grade multifamily properties for which mortgages has been granted and the loans have been securitized into non-agency commercial mortgage backed securities (CMBS). Our primary data source is Trepp, which provides individual level loan origination and performance characteristics on apartment buildings across the US that are included in private CMBS'. The data includes not only loan characteristics but also has some building-level information, most importantly for this study, information that allows us to calculate initial cap rates[6], in addition to mortgage delinquency and annual NOI per unit. The data spans from 2000 to 2016 and covers the whole of the US, providing us with over 20,000 [7] unique properties and up to approximately 150,000 property-year observations. We link the Trepp data with tract-level socioeconomic data from the Census Public Use Microdata Sample (PUMS) from the American Community Survey (ACS).[8]

[4]The Renter Protection Score (RPS) aggregates several state level policies; this methodology is detailed in Section 3.

[5]However, at the more granular level even two states with overall landlord-friendly laws may differ in the extent they enforce each policy.

[6]We calculate initial cap rates using initial NOI and building price at the time of loan origination. See the data discussion in Section 3 for more details.

[7]The sample size varies depending on the control variables used and is lower in many specifications. See the results section for more details on sample sizes for different models.

[8]PUMS is a smaller nationally representative census of 5 percent of census population which takes place every year as compared to the national census taking place every ten years. We include variables such as the share of minority residents, eviction rate, median rent, ownership structure all at the census tract. See

We use a host of model specifications and data samples including pooled Ordinary Least Squares (OLS) regressions, panel regressions with random effects, and probit models. We show that multifamily housing located in states with high levels renter protection (high RPS) are associated with lower initial cap rates. This is not driven by expected lower rental income or capital expenditure. Instead, investors have higher valuations for properties in such states and perceive them as lower risk. Those properties are actually associated with significantly higher NOI over time and significantly higher growth of NOI. In addition, we find some evidence that multifamily housing located in high RPS states is associated with lower probability of mortgage delinquency (i.e. the mortgage is 30 or more days behind in required payments).[9]

Overall, it seems that a higher RPS is associated with lower risk of investing in and lending against multifamily housing. We show that cash flows of properties in high RPS states as less volatile. All else equal, multifamily housing in high RPS states has significantly lower NOI volatility. Therefore, we conclude that, contrary to conventional wisdom, renter protection is not 'bad' for institutional investors per se. It is important to have a more nuanced view and a better understanding of what institutional frameworks and regulations do to pricing and performance. In the case of landlord and tenant laws and provisions in the US and their effect on multifamily housing pricing and performance, we see that the regulations lower the cash flow risk, thus providing more stable NOI but at the same time lead to significant increases in NOI and NOI growth. MFRH in regulated states are associated with lower initial cap rates stemming from reduced risk and stable fundamentals.

Section 3 for more details.

[9]The magnitude of reduction in mortgage delinquency is relatively economically small and is not statistically significant in all of our specifications.

2 Renter protection regulations

Laws governing interactions between landlords and tenants are most often codified at the state level.[10] These laws vary greatly across states as can be seen in Figure 1. We use several variables to measure renter protection levels. We collected information for eleven laws and regulations relevant to tenant-landlord relationships for each state as well as the District of Columbia.[11]

Although there are important US federal laws, such as the Fair Housing Act and Fair Credit Reporting Act that apply to all landlords, there is substantial variation in state level protections offered to tenants. Some aspects of renter protection are not addressed by some states. Table 1 presents information about the different types of policies by state. Those laws and regulations govern important aspects of the landlord-tenant relationship, including handling of security deposits, notice landlords must give to raise rent or discontinue rental arrangements, rights tenants have to address issues regarding the landlord not completing repairs in a timely manner, notice that landlords must give to tenants before filing eviction papers, and rights of tenants to collectively organize or lodge complaints against the landlord without retaliation from the landlord. We omitted the inclusion of some regulations from our analysis if they are only relevant to a single state or small group of states (e.g. Arkansas is the only state that does not have an implied warranty of habitability) or if they were not connected closely to the financial health of landlords or tenants (e.g. number of hours of notice a landlord is required to give a tenant before entering to make repairs).

Table 2 provides summary statistics for each policy averaged across states. For example, many states have codified different circumstances in which tenants are allowed to perform

[10]There also exist some variation at the city level, such as rent regulation in specific cities such as New York, San Francisco, and Washington D.C., but city specific regulations are not the focus of this paper. In any case, city or county regulations are stricter than state statues and would bias our estimates downwards.

[11]Information was collected from several sources including Nolo and was verified by examining individual laws and statutes available on individual state website (See https://www.nolo.com/legal-encyclopedia/chart-landlord-tenant-state-laws-29016.html)

repairs and deduct the cost from rent, but other states have no statues related to this issue. Also, in regards to the maximum security deposit that may be collected, about half of the states do not have any statue. Similarly, 22 states have no statue for the days required to give a notice when rent is increased for month-for-month contracts. On the other end, all states have a statue on policies related to the deadline for returning the security deposit or the number of days for the termination notice of the contract.

We use the information provided by state statues about the above policies to construct separate policy variables which are static over time but vary across states. The information in each category normally consists of the number of days or months. For example, a policy would indicate the maximum security deposit in terms of number of months of rent paid in advance for an unfurnished apartment on a one year lease. There are states that allow landlords to collect a maximum of three months deposit and other states that allow a maximum of one month. In a large number of states however, they is no statue regulating tenant deposits. Another category indicates the number of days the tenant has in order to recover abandoned property after receiving notice. In some states like Arkansas and Georgia, the tenant can be required to vacate the property immediately on the same day. In other states such as Indiana and the District of Columbia the tenant has 90 days. Some categories are related to a yes/no answer - for example if the tenant is allowed to repair and deduct costs from the rent. We examine the distribution of each law and regulation to create a measure of how friendly the law was towards tenants in a given state, in relation to all other states. The distribution of state specific laws is not continuous, so we look for common responses. For each policy in each state we assign a value of 0, 1 or 2 with 0 being the most landlord friendly policy and state and 2 being the most renter friendly one. Items that are associated with a yes-no answer are 0 for the most landlord friendly and 2 for least tenant friendly. Where we have no statue, we treat this as an option for the landlord to be tenant friendly or not. Therefore, in most cases, when a state has no statute we assign a value of zero.

However, there also other policies for which there is a statue in place that we assign a value of zero. For example, the maximum number of days a landlord has to return a security deposit after a tenant vacates the premises varies. The smallest maximum number of days is 10 in Montana, while the largest number of maximum days is 60 in Alabama, West Virginia, and Arkansas. The responses fall into three broad categories, less than 31 days (14 states, ranging from 10-21 days), 30-31 days (26 states), and more than a month (10 states and D.C., 45 or 60 days). The quicker the law requires that a security deposit must be returned, the more beneficial it is to the tenant. Therefore, we assign a value of 0 to states with policies that set the maximum number of days to return the deposit at more than a month, we assign a 1 to the group of states that require the deposit return in a month, and we assign a 2 to the group of states where landlords must return the deposit in less than a month. In the case that a state statute assigns different values depending on the circumstances of the rental arrangement (e.g. 30 days to return the deposit in some circumstances and 60 days in others), we use the value that is least friendly to the tenant in classifying the observation. Additionally, if the statute does not offer a specific value, but instead states that the landlord must be reasonable we assign that observation a value of 1, the middle case. Some laws can be grouped into only two categories; for example either tenants have the right to form a tenant organization or they do not. In these cases, a value of 2 is assigned to the tenant friendly policy and a 0 otherwise. The values assigned to each law are summed and the total of all relative tenant protections form the variable *Renter Protection Score* (RPS), which varies from a low of 4 in Arkansas to a high of 22 in Vermont. Details of each variable and its construction can be found in the Appendix. The RPS is time invariant; state laws regarding rental agreements change very infrequently and there are no meaningful changes in our sample period. To verify this, we conduct an online search for each state and each policy to assess when the landlord and tenant laws were last significantly modified. In some states, such as Arkansas, laws hardly changed since 1948, whereas in other states such as

Oregon (2019) and New York (2018) there has been recent changes but those changes do not occur within our sample period, which ends in 2016. Laws have been modified over the years but those modifications mostly involve some text changes without any major revamp of the laws. For example, in Nevada laws from 1985 were modified in 2009 to add a paragraph about surety bonds which can be used as an insurance to cover for property damage. These type of changes have occurred periodically in the past few decades, but they are quite minor and do not have any meaningful impact on tenant protection levels.

For robustness, we also use an alternate renter protection score developed by RentCafe (alternative RPS).[12] This alternative RPS ranges from 0 to 100, with a higher score corresponding with higher levels of rental protection. The index covers ten important components of the landlord-tenant relationship: security deposit maximums, deadlines for returning security deposits, rent increase notices, repair and deduct policies, withholding rent policies, landlord's access to the property, termination notices for nonpayment, regular termination notices for tenancies at will, termination notices for lease violations, and abandoned tenant property. Each of the ten components is worth between 0 and 10 points in the RPS. For example, in the security deposit category, states that have a maximum of 1 month receive the full 10 points, as this is the most favorable deposit policy for renters. States with a 2-month maximum get an intermediate value of 5 points while states that either have no maximum on deposits charged or have no statues on deposits get a value of 0, reflecting that this policy is beneficial for landlords, who are unconstrained by law on how much they can demand a tenant submits as a deposit before receiving the rental unit.

Finally, we also use an index following the classification of states in three categories by Hatch (2017). The author examines state-level landlord-tenant laws to create a typology of landlord-tenant policy approaches across states. Using cluster and discriminant analysis on a

[12]For details on the RentCafe index, see: and https://www.rentcafe.com/blog/renting/states-best-worst-laws-renters and https://rentalhousingjournal.com/legislation-changing-in-many-states-to-make-them-less-landlord-friendly/

host of state laws on landlord-tenant relationships, the author classifies states as *protectionist*, *pro-business*, or *contradictory*. Pro-business states have regulations that are viewed to be favoring landlords or investors, protectionist states have laws that are viewed as favorable for tenant rights, and contradictory states have some laws that favor each side. The two methods of assessing renter protection are highly correlated. Our baseline renter protection score (RPS) has a pairwise correlation of 0.86 with the RentCafe score (alternative RPS) and 0.57 with the Protectionist state dummy variable, given the substantial overlap in the laws that these methods consider. There is a substantial overlap in the laws that these three methods consider as important to the tenant-landlord relationship. Although there are differences in how these variables related to renter protection are generated, they provide comparable measures of tenant protection.

3 Data

We combine data from various sources to generate a unique property-level dataset. First, we obtain loan level and property level information from Trepp. Trepp collects information about non-agency CMBS including monthly information about commercial real estate loan performance at the building level.[13] We specifically use the Trepp data on multifamily loans securitized into CMBS from 2000-2016. It is worth mentioning that the buildings for which CMBS financing is available are investment-grade. The properties in our sample are more likely to be located in urban areas rather than rural areas. For some smaller metropolitan or micropolitan areas we have no data points at all. Therefore, the sample we investigate is

[13]We considered utilizing loan level data for multifamily housing loans from Freddie Mac and Fannie Mae, which have become more active in the securitization business of multifamily loans following the Global Financial Crisis. Their goal is to provide affordability to the US housing market. While Fannie Mae does not provide performance data of multifamily loans, Freddie Mac discloses some performance data. The Freddie Mac data is available between 2009 and 2018 and contains 12,897 unique loans. As a comparison, our data from Trepp contains information on more unique properties in the multifamily sector over a longer sample period, thus we choose to focus on the Trepp data.

not a representative sample of all available multifamily buildings. However, although many MFRH buildings are financed by other methods, such as bank loans, private equity or with the backing of Fannie Mae or Freddie Mac, the near-universe of private CMBS data provides us data on a significant and important portion of the MFRH market. Since those buildings would be bought using a CMBS loan, we can assume that we capture the institutional side of the MFRH market. Additionally, we do not have any development or construction loans in our sample, and properties in our sample have relatively high occupancy rates, so we assume that an adequate measure of investment and credit performance, as regarded by institutional investors, is the periodic income generated by these properties as well as the default rates of the loans associated with the properties.

The Trepp database contains not only information about the loan and its performance over time, but also information about the building and its cash flow. Building-level variables for which data is available include initial cap rate, annual net operating income (NOI), annual occupancy rate of the building, number of units for each building, the year of construction, and the date of the last building renovation, if any. We create a dummy variable that takes the value of 1 if a renovation has taken place in the past 5 years. While capital expenditure (CapEx) exists as a category within the Trepp database, there is almost no available information on this variable for the multifamily segment of this dataset. We therefore control for any operating expenditure and CapEx through the dummy which indicates recent renovation as well as the property age. We also have information about loan characteristics such as the loan-to-value (LTV) ratio at origination, the loan interest rate at origination (interest rate), debt service payments in each year, a dummy whether the loan requires a balloon payment, a dummy whether the loan has a lock-up period, and the age of the loan.

In order to assess the role of renter protection for investment performance of multifamily housing, one would ideally assess the total return. However, the data only contains the estimated value of the building at the point of securitization and we do not have annual

data for the value, as periodic revaluations do not take place. Instead, we examine net operating income (NOI) and year-on-year NOI growth. We also examine credit performance by looking at the mortgage delinquency rate. We also assess how investors decide on the price and capitalization rate of a building located in states with higher renter protection by looking at the initial cap rate. The cap rate is calculated as the NOI at loan origination divided by the valuation at loan origination, which should be, and in most cases for our units, is the same as the price of the property. The time varying NOI is expressed as the NOI per unit, for each year the mortgage remains outstanding.

Our data also contains the exact locations of each building. This enables us to link the loan data with census-tract socioeconomic data to capture local market characteristics; specifically, we use data from the Census 5-percent Public Use Microdata Sample (PUMS) American Community Survey (ACS).[14] The census tract level variables are in annual frequency. Specifically, we include the median rent, the percentage of African-American and Hispanic residents, and percentage of renter-occupied housing.

We also use eviction data from the Eviction Lab to calculate the annual eviction rate by census tract. The eviction rate is the percentage of evicted households out of the total households in a given tract. Evictions are involuntary moves for renters similar to foreclosures for homeowners. In the case of evictions, the landlord takes the decision to expel the tenant from the property. In most cases evictions occur because the tenant cannot make timely rent payments. The most affected tenants from evictions are typically the poorest. Such households spend on average over 70 percent of their income on rent and utilities according to Eviction Lab.[15] Eviction Lab findings also show that the households that are most at risk

[14]PUMS is a smaller census of 5 percent of census population which takes place every year as compared to the national census taking place every ten years.

[15]The Eviction Lab is an effort by researchers at Princeton University to understand housing eviction. They have created a comprehensive nationwide database of evictions and eviction filings available for download at https://evictionlab.org/. The data on evictions is based on decisions from civil court cases. The laws surrounding eviction vary substantially from city to city.

of eviction are poor women of color.

Trepp reports loan payments monthly, but our measures of interest for property characteristics and NOI are only reported annually. Additionally, our socioeconomic variables are also annual, so we collapse the data set to annual observations. Once we filter for availability of data for our variables of interest, we have a sample of over 150,000 loan-year observations between 2000 and 2016.[16]

4 Summary Statistics

Table 3 presents the summary statistics of the full sample used in our analysis. In total, we have approximately 151,000 property-year observations. It is important to distinguish between two ways of sorting the data. First, as we are interested in pricing and look at the initial cap rate, the data is a cross-section. The cap rate is only available at the year of loan origination for each property, leaving us with just over 21,000 observations for which all data is available. Stated differently, this means we have more than 21,000 unique buildings. The cap rate is 5 percent per year on average with a standard deviation of 3 percentage points. The average annual NOI per unit (over time and across buildings) is \$3,710. It has a standard deviation of more than \$4,000. The top quartile has a value of \$4,518 and the bottom one a value of \$1,840. Figure 2 maps average NOI in each state. We observe large variations across states with the West Coast registering the highest NOI. The states with the lowest average NOI per unit are generally in the Eastern part of the country. The average property value at loan origination is 14.84mn US dollars (USD). The average property is located in a census block that has a 3 percent annual eviction rate. The density of the

[16]Despite the large number of loans in the Trepp database, when we clean the sample and account for properties for which NOI is available for the entire period with no missing values, the sample is substantially reduced. We do exclude loans with large numbers of missing annual NOI observations. However, NOI is often not reported in the year the loan is originated or securitized or in the last year of the loan's history. Adding the eviction rate, which has some missing values over our period of analysis, reduces the sample as well.

census tract is on average 6,206 people per square mile but has substantial variation. The top 1 percentile has a density of nearly 69,000 and the bottom five percentiles, 73. We also include state-level time-varying controls by adding state population and state gross domestic product (GDP) per capita.[17] The average population is 15.7mn people living in a state and earning on average 48,330 USD annual per capita. In our sample, the average monthly rent by census tract is $915. 13 percent of residents are African-American and 17 percent are Hispanic. 41 percent of the housing stock within a census tract is renter occupied.

In addition to above explanatory variables, we control for a host of property characteristics. On average properties in our sample, properties are 30 years old and have 169 units. 18% have had renovation activity in the past 5 years; the occupancy rate is on average is 93 percent with lows of 82 percent and highs of 100 percent.

We also have access to characteristics of the loan. We have access to static variables at origination, including the original loan balance, if the loan has a balloon repayment feature, if the loan has lock-out period for prepayment. We have dynamic loan characteristics including the current loan interest rate, the loan-to-value (LTV) ratio, the age of the loan and the delinquency rate. The average current age of a loan in our sample is 4.8 years. On average, the observations in our sample have LTV ratios at origination of 72 percent, the vast majority have balloon features (96%) and lock-out provisions preventing penalty-free loan prepayment (88%). The average delinquency rate is 16 percent.

Next, as motivation for our empirical specification, we examine our summary statistics for the renter protection levels. Our renter protection score (RPS) has an average value of 12.6 and the value varies from 5 in the bottom 5th percentile to 19 in the top 99th percentile. The alternate RPS has a mean value of 46 with the highest potential value of the index being 100.[18]

[17] We also considered income per capita, but this metric is very highly correlated with GDP per capita. All of the results we include are robust to inclusion of this income metric in lieu of the GDP metric.

[18] However, no state has a perfect 100; Vermont is the highest scoring state with a 90.

We also report summary statistics for the sub-components of the index that are associated with a yes/no answer and which are normalized to range between 0 and 2; the specific policies for each state are reported in Table 1 and the averages across states are in Table 2. The median for the maximum security deposit is 1.5 months of rent, the maximum is three months and the minimum is one month. The deadline to return the deposit when the tenant leaves is on average 30 days but in some states it can take up to 60 days. Similar amount of days are needed when the tenant is notified about an increase in the rent. In at least half of the states, the tenant has the option to withhold rent for the failure to provide essential services or to pay for the repairs and deduct the costs from the rent. On average, the tenant requires 5.7 days notice when the tenancy agreement is terminated for non-payment. When the lease in violated in another way, the average termination notice is 10 days. Additionally, for a regular termination of month-to-month leases, the landlord needs to give on average 30 days notice to the tenant. In some states this can be only three days and in others up to 60 days. After receiving notice, the tenant has on average 20 days to recover abandoned property. The maximum amount is 90 days and the minimum is zero days.

5 Methodology

We have two objectives: to look at the effect of renter protection on (1) pricing of multifamily buildings and (2) their investment and credit performance over time. We first look at initial cap rates; specifically, we examine the the role of initial NOI and building value at loan origination to assess to what extent the effects are associated with pricing and not with NOI. Secondly, we assess the performance over time by looking into annual NOI and mortgage delinquency rates at the building level. The breath of the data puts us in a unique position to explore both, pricing effects as well as performance of buildings which might be driven by the type of renter protection laws established in each state.

We calculate the initial cap rates based on the initial NOI of the building divided by the initial valuation of the property at loan origination. The valuation is taken as the equivalent of the purchase price as credit-constrained borrowers will aim to secure valuation no less than the purchase price. A negative relationship between initial cap rates and the renter protection score (RPS) means that investors pay more for a building in a high RPS state all else equal. This is because they perceive it as less risky. Buildings which are located in states with more stringent protection of tenant rights, might be more attractive to investors as those buildings might guarantee higher future cash flows (i.e. NOI) or more stable cash flows and less void periods. On the other hand, to observe a positive relationship, investors in high RPS states must fear that they will not be able to exercise the same level of control over the management of tenants and rents as they would in a low RPS state and hence prefer to pay less for an otherwise identical building.

As discussed above, initial cap rates are not time-varying, and therefore our model is conducted as a cross-sectional regression with the initial cap rate for different loan vintages. We use loan level data for 2000-2016. The model is estimated as a pooled OLS regression using a number of building-level and regional controls and fixed effects. Equation (1) illustrates the cap rate model:

$$r_{im} = \alpha + \delta RPS_s + \theta Z_{cm} + \beta X_{im} + \gamma V_l + \rho H_m + \phi S_{sm} + \epsilon_i. \tag{1}$$

r_{im} is the dependent variable which is either the initial cap rate, the NOI at loan origination or the valuation for property at loan origination i at loan origination time m. Note that the loan level information can be interpreted at building level as each loan is provided for one building. RPS_s is the renter protection score for state s, which is static over time. Z_{cm} is a vector of tract-level variables at the time m of loan origination including the socio-demographic variables for tract c. X_{im} is a vector of control variables for property (loan) i

(only one loan is observed for each property) at the time of loan origination m. The control variables include property characteristics and loan characteristics. V_l is a vector of fixed effects for loan originator l. H_m stands for fixed effects for year of loan origination m. S_{sm} stands for state level variables. Finally, α is the unknown intercept. ϵ_i is the error term. We cluster standard errors by property age. Alternatively we cluster the errors at the zip code level and the significance of our key variables is not impacted. We also cluster standard errors by property age.

Furthermore, we look at how renter regulation affects delinquency and NOI over time. For this purpose, we estimate an unbalanced panel of loan level data for 2000-2016 with new loans entering and other loans exiting the sample over this sample period. We use random effects and estimate the model using generalized least squares (GLS).[19] The results remain robust using a fixed effects model instead.

Equation (2) illustrates the baseline model:

$$y_{it} = \alpha + \delta RPS_s + \theta Z_{ct} + \beta X_{it} + \gamma V_l + \rho H_m + \delta W_t + \phi S_{sm} + u_{it} + \epsilon_{it} \tag{2}$$

with y_{it} being the dependent variable which is either (1) a dummy for delinquency or (2) the log of NOI per unit, or (3) the year-on-year NOI growth rate for property (loan) i and year t. The property has a loan originator l, year of loan origination m and is located in census tract c and state s. W_t stands for time (year of observation) fixed effects, and u_{it} is the between-entity error term; ϵ_{it} is the within-entity error term. We cluster standard errors by loan ID.

[19] We also estimate a logit unbalanced panel model for the delinquency rate and our results are similar.

6 Results

Our main objective is to assess the effect of renter protection on pricing and performance. First, we look at how investing in a multifamily property in locations with varying levels of renter protection, as measured by our renter protection score (RPS) affects the pricing, in order to assess what investors think of renter protection policies – are they increasing the riskiness of the asset or instead decreasing it. Second, we examine whether the performance of that same property would change depending on RPS. The performance is measured as annual NOI, annual change to the NOI (NOI growth rate), as well as annual loan delinquency rate.

6.1 Effect of renter protection on pricing

Initial cap rates are associated with the yield agreed between the buyer and the seller and reflect the pricing of property risk. We can observe the property value at the time of transaction as well as the annual NOI. Since we do not have updated property values after loan origination we can only observe the cap rates at the point of loan origination, and refer to these cap rates "initial cap rates". The initial cap rate is calculated as the initial NOI divided by the initial valuation of the property which should be in most cases the same as the purchase price.[20] A negative relationship between initial cap rates and renter protection score (RPS) means that investors pay less for a similar building in a high RPS state, accounting for the NOI at loan origination. This can be due the investors perceiving the building as more attractive or less risky.

Table 4 shows the baseline pricing results, including separate models for initial cap rate, NOI at origination and value of the building at origination. The models are cross-sectional regressions including dummies for loan, year, and loan originator. Standard errors are clus-

[20]Results are similar when we exclude refinanced loans from the sample, as these property values are appraisal values, not true transaction prices.

tered by property age but remain robust using different ways of clustering, such at the zip code level. To control for locational differences, we include state-level economic variables such as the lagged logarithm of the state population as well as the lagged logarithm of the GDP. As a robustness test, we also include county fixed effects and the results remain consistent.[21]

We find that a higher RPS is associated with significantly lower initial cap rates.[22] Cap rates in high RPS states might be low because rents are low. To test for this assumption, we decompose the cap rate into its two components - the NOI at origination and the property value at loan origination. This will help us understand whether the required yield is channeled via NOI, is a result of pricing alone, or is driven by both channels. For the value equation, we also include NOI in order to assess the pure price effect. We find for the impact of RPS on both NOI and value at origination are significantly positive. Low cap rates are not associated with lower rents. These results suggest that the net effect on cap rates is associated with perceived lower risk in investing in such states. The significantly positive effect of RPS on property value, after accounting for NOI, suggests that multifamily housing in states with high renter protection are in more demand or in fewer supply and therefore achieve a higher value. A similar result is observed for eviction rates and minority shares with both NOI and value being significantly lower in census tracts where eviction rates and minority shares respectively are higher. Tracts with higher median rent are associated with significantly higher NOI as one would expect. They are also associated with higher value. The share of renter occupied housing is associated with significantly higher prices, but not significantly higher NOI, which explains the significantly higher cap rates. The positive effect of building occupancy rate for cap rates is associated with two forces, first a higher

[21]Using income per capita instead of GDP per capita does not impact our findings. Tables with these alternate specifications are available upon request.

[22]Loan age in this table takes the value of one or two years as we only focus on the initial cap rate, i.e. a cross section of the first two years on the loan life. Therefore, it is rather used as a control and is not interpreted economically.

NOI for such buildings, and second, a lower value for such buildings. So, despite the high NOIs achieved for such buildings, their value seems to be significantly lower. A building that has recently been renovated is associated with significantly higher value, at the NOI is only marginally significantly positive, however, this does not translate into lower cap rates. This is an important finding as it may suggest that capital and operating expenditure do not always change the risk perception of investors.

In order to further understand the investor attitudes towards renter protection and how RPS affects the income stream over time, we look at time-varying performance data. These data track individual properties over time on an annual basis. We can see whether a property located in a higher RPS state would perform better and hence decrease the risk which investors perceive prior to investing and which impacts initial cap rates.

6.2 Effects of renter protection on performance

NOI The results for the time-varying NOI are presented in Table 5. The data is organized in an unbalanced panel format with some of the variables including NOI varying in each year. The panel model is estimated with random effects. We use the same explanatory variables as in Table 4.

RPS significantly positively affects annual NOI. A one point increase or an 8% in the renter protection score is associated with an increase in NOI by 2.52 percentage points. The effect is economically significant. For the mean value of annual NOI per apartment in our sample, which is close to $4,000, a 2.55% equates to approximately $100 increase in annual NOI per unit. This result is smaller that the 9.3% in Ambrose and Diop (2018) where the authors assess how state-level variation in regulations affects rent payments and find that renter protection is associated with higher regulatory costs of screening tenants and as a result, landlords charge higher rents. They find that the most regulated states (a dummy variable in their case) have 9.3 percent higher rents. The difference in those results can stem

from the fact that we estimate the effect on NOI, which is determined by both rent and operating expense, while Ambrose and Diop (2018) estimate the effect on rents. The models do a good job in capturing variations in NOI; the between, within and overall R-squares are 0.43, 0.13 and 0.4 respectively. We also control for lagged eviction rates, lagged median rent, lagged racial minority share, and lagged renter share in addition to building-level controls. All control variables are significant. The lagged eviction rate has a significantly negative effect on current annual NOI, which may hint to negative externalities for rents in areas with high evictions. Buildings located in high-rent tracts are also associated with high annual NOI, as one would expect. If the median rent in a census tract goes up by 1%, NOI in our sample of multifamily housing increases by 4.5%. This means that the effect of having high local rents leads to more than proportionally higher NOI for our sample of institutional real estate. Census tracts with high share of renters and counties with high population density are also associated with higher property NOI. This may be explained with landlords having more choice for tenants and the possibility to screen those tenants.

In terms of property characteristics, we observe that large buildings have significantly lower NOI per unit which may be related to a more challenging task finding new tenants. Older buildings are associated with significantly lower NOI. That may be due to landlords not being able to charge as high rents as the median area rent but it can also be due to higher capital expenditures. To control for the latter, we also include a dummy for recent renovation, which has a significantly negative effect on annual NOI. This finding demonstrates that in the short term capital expenditure would lower NOI as the rent may not be adjusted immediately. This may be because rents are normally fixed for at least one year prompting to their lagged response. Building occupancy rate is associated with a significantly positive effect on NOI. If building occupancy increases by one percentage point, NOI per unit would increase by 182%. The effect is large as building occupancy is at the building level and NOI is at the unit level. The average building has about 170 units. A one percentage point increase of

occupancy would mean 1.8-2.8 more units are rented on an annual basis.

From the above results, we can conclude that RPS has an overall significantly positive effect on rental income over time. Relating this to investors paying lower cap rates in those states suggests that investors are not so much driven by rental expectations but rather the cap rates in those states are associated with higher prices.

Delinquency While investors anticipate higher future rental income in areas with high RPS, they still require a lower initial cap rate. Another possible explanation of the negative relationship can be linked to delinquency. As we use loan level data, we are able to assess the effect of renter protection on the likelihood of a loan taken on the respective multifamily building to default, depending on whether it is a high or a low RPS state. As mentioned above, another reason for the negative RPS-cap rate relationship can be due investors perceiving properties in high RPS as being lower risk. One of those risks is associated with the risk of default. Therefore we regress delinquency on RPS and the same control variables as in the baseline models. We also include loan specific variables such as lagged loan interest rate, a dummy for whether the loan has a lock-up period and a dummy if the loan is balloon. We also include the average loan-to-value (LTV) ratio as well as the NOI per unit. The model uses a sample of approximately 95,000 loan-year observations. We define delinquency as a loan payment which is more than 30 days late.[23] The delinquency is a dummy variable which is observed every month. For the purposes of the estimation, we use annual data and therefore assign a value of one, if the loan has been delinquent at least once during the year and a value of zero otherwise. Our delinquency models are panel regressions with random effects controlling for the year of observation, loan origination year and loan originator.[24] The standard errors are clustered by property age. The results are reported in Table 5. We

[23]We do not find significant differences in our results if we use alternative measures of delinquency, such as 60+ days late or 90+ days late.

[24]We also estimated a logit panel model and find similar effects.

find evidence that RPS has a modest negative effect on mortgage delinquency. A one point increase in RPS leads to a statistically significant 0.15 percentage points decrease in annual delinquency. These results are consistent with Ambrose and Diop (2018) where the authors study the role of renter regulation on rent payment defaults. They find that regulation costs for landlords increase their incentive for tenant screening and as a result, landlords experience less tenant defaults in states with higher renter regulation. The low rental default can then lead to lower loan delinquency.

Socioeconomic variables also have a significant effect on delinquency rates. Being in an area with high eviction rates leads to significantly more defaults from investors in multifamily housing as they might struggle to collect rents. A one percentage point increase in local eviction rates, i.e. from 3% which is currently the average to 4%, would lead to 28% increase in the likelihood of a loan going into delinquency at least once a year. Furthermore, increasing the share of ethnic minorities also is associated with higher defaults. Building-level characteristics can also affect loan default. The higher the occupancy rate and the younger the building, the lower the default rate. If a building has recently been renovated, its likelihood to go delinquent is higher. This might be associated with struggling to channel the capital expenditure into rent quickly enough to recover for renovation expenditures. As expected, the higher the NOI, the lower the delinquency will be. A one percentage increase in the NOI per unit leads to 2.3% decrease in loan delinquency. Loan characteristics also affect multifamily loan delinquency. The higher the LTV and the interest rate, the higher the likelihood that a loan becomes delinquent, as those are more risky loans per se.

To summarize, the above results suggest that institutional borrowers of securitized multifamily housing loans default significantly less in more tenant-friendly states, however the effect of renter protection levels on delinquency is relatively modest.[25] Default is most strongly

[25]Additionally, we later show that this result does not hold in all of our robustness tests. However, we find no evidence in any of our tests that higher RPS is associated with *higher* levels of delinquency.

affected by factors associated with the ability to collect rent at regular intervals. The lower credit risk in high RPS states can help explain why investors perceive those buildings as less risky and demand lower cap rates.

6.3 NOI growth and volatility

Here we aim to expand our analysis of the effect of income and cash flows affected by RPS and assess whether investing in buildings located in tighter renter protection states can lead to improving the rental revenue over time. The results are presented in the first column of Table 6. Buildings in high renter protection states have significantly higher NOI growth; a one point rise in the RPS leads to 0.11 percentage points rise in annual NOI growth rates. This suggests that investors are able to capitalize on the safety associated with being in a high RPS state and increase their income over time. High local eviction rates, low share of renter occupation and low building occupancy rate are associated with lower NOI growth.

Finally, another channel through which RPS leads to lower cap rates can be associated with the risk of higher cash flow volatility – i.e. NOI volatility. We use the NOI growth rate for year building and each period and calculate the standard deviation of the NOI growth. There is only one observation for the NOI volatility per building; the variable reflects the average changes in NOI for the period which the building has been securitized in our dataset. We estimate a pooled OLS model, which has the same specification as the baseline models for cap rate. The standard errors are clustered by property age and we control for year of observation, loan origination year and loan originator fixed effects. The results are presented in the second column of Table 6. We see that in this specification, high RPS is associated with low standard deviation (SD) or low volatility. This means that the higher the renter protection, the lower the volatility of the rental cash flow and therefore the lower the risk for institutional investors.

A one point increase in RPS decreases the SD of NOI growth by 0.43 percentage points.

The median SD for NOI growth across the individual properties is 26% while the average is 31%. High eviction rate and high share of racial minorities increases the volatility of the NOI. Instead, high lagged median rent in a given census tract decreases the volatility. Interestingly, higher renter occupancy rate in a census tract is associated with higher rental volatility which might be due to higher turnaround of tenants. In turn, high occupancy rate lowers NOI volatility as one would expect. The more units the building has, the lower its volatility which might be associated with the ability to diversify tenant-specific risk in large buildings. An older building is associated with higher NOI volatility which might be due to larger differences in quality across older buildings and hence larger differences in NOI volatility. Finally, if the building has been renovated recently, its volatility is higher.

Overall, these results suggest that the low cap rates for high RPS states are due to the demand from the institutional investors for low-volatility properties which may be found in states which provide higher levels of renter protection, where tenants may stay longer and have stable tenancy.

6.4 Robustness Tests

We next examine our results using alternate definitions of renter protection for cap rates. We use two different ways of measuring renter protection. First, we use a measure called alternative RPS which is based on RentCafe's own metric of renter protection score and described in Section 3. Second, we use Hatch (2017) classification method of broadly grouping states into pro-business, protectionist, or contradictory tenant-landlord laws. Pro-business states would be those with lower renter protection and higher landlord protection. Protectionist would be the tenant-friendly states. Contradictory are states with a broad mix of some laws favoring tenants and others favoring landlords. In this model (Model 2), pro-business states are used as the base category.

The results are presented in Table 7. We can see that above results are confirmed for

the alternative measures of renter protection.[26] The alternative RPS is associated with significantly lower cap rates. Relative to the states that are classified as pro-business (the base case), we find that policies in states classified as protectionist or contradictory are associated with significantly lower cap rates. Each of the tenant rights individually also has a significantly negative effect on cap rates, in line with the overall effect from the RPS.

In Table 8 we report results including different geographic controls. We report results for the baseline model with no geographic fixed effects and no state time-varying variables, we include a model which has county fixed effects and another model with county and state fixed effects. The results for initial cap rate, NOI and delinquency are reported and the signs remains the same as in the baseline results. However, we do not find statistically significant results for delinquency using county or county and state fixed effects.

We also report results for varying geographies by excluding certain states from the regressions. In Table 9 we can see that the effect of RPS on cap rates and NOI remains robust in each specification. We consistently obtain a negative sign for our delinquency models, but do not find statistically significant results in two of the specifications.

7 Conclusion

Given rental market with a large institutional investor presence, with multifamily housing representing a large proportion of the rental stock, this research sheds light on the regulatory drivers behind the building-level pricing, performance, and risk of multifamily housing from the point of view of institutional investors. Understanding the market microstructure can help us understand the rental market better and tailor regulations accordingly. We explore the effect of state-level variations in renter protection laws on initial cap rates as a metric of

[26]To conserve space we only present results for cap rate. Unreported results are available upon request. We estimate our model for annual NOI and for annual delinquency rate. We find that higher RPS is associated with higher NOI and lower delinqeuncy and are statistically significant.

pricing of multifamily housing across the US. We also look at how renter protection affects rental income and delinquency of the loan attached to the property over time. Finally, we provide a potential explanation of these findings.

Renter protection laws include limits on security deposits, longer periods to evict tenants for non-payment, providing important measures of security for rental tenants. Despite conventional wisdom that making regulations more tenant friendly will be bad for landlords (and tenants), research on this topic is still in its infancy. The US provides a good laboratory to study the role of landlord and tenant legislation for investment activity as there are large state-level differences in renter protection laws. We construct a renter protection score (RPS) for each state using existing classifications and control for alternative ways to account for state-level variations in renter protection. This is not to be confused with rent control, which is not the focus of this paper. Our data comes from information from loans securitized in non-agency CMBS deals and consists of investment grade buildings across the entire US, mostly located in urban areas. We control for socioeconomic census tract-level variation in addition to property characteristics and loan characteristics, including loan terms and delinquency rates. We use a host of model specifications and data samples including pooled Ordinary Least Squares (OLS) regressions, panel regressions with random effects and probit models.

One of the arguments often used in the media when proposing stricter protection of tenants is that investors can perceive regulations strongly favoring tenants as a burden or a barrier to investing in multifamily housing, increasing cash flow risk. Given that the initial cap rate consists of expectations about future rental income and capital expenditure and the current value of the property, we explore the effect of renter regulations on cap rates. On the one hand, high renter protection can lead to higher rents, thus positively affecting cap rates. On the other hand, investors in tenant friendly states may perceive housing as less risky and offer a higher price thus leading to lower cap rates. While cap rates are driven by

rental cash flows, i.e. the NOI, we aim to understand to what extent it is associated with pricing and risk. One explanation for investors agreeing on lower cap rates for multifamily housing in areas with high renter protection can be associated with lower rent volatility. Better tenant protection makes renters feel more secure and stay longer, which can lead to more stable rent revenues. For similar reasons, multifamily housing properties located in areas with high renter protection can be associated with lower delinquency rates. We thus assess the investment performance of multifamily buildings looking at annual NOI, annual NOI growth and annual delinquency as a result of a property being in an area with high renter protection. We also assess how landlord and tenant laws affect the volatility in NOI growth in order to provide evidence for the above risk channel.

We show that multifamily housing located in states with high RPS is associated with lower initial cap rates. This is not driven by expected lower rental income or capital expenditure. On the contrary, those properties are associated with significantly higher NOI over time and experience significantly higher growth of NOI. Instead, investors are willing to agree on higher prices for such buildings as they perceive them lower risk.

In addition, we find some evidence that multifamily housing located in high RPS states is associated with lower loan delinquency risk, although this effect is economically modest. Our results point towards RPS being associated with lowering the risk of investing in and lending against multifamily housing. This risk can be associated with investors and lenders perceiving properties in high RPS as less volatile in their income streams. We test this hypothesis by looking at the effect of RPS on the volatility of NOI growth and find that indeed, the effects are significantly negative. Being in a high RPS state significantly lowers NOI volatility. Therefore, we conclude that contrary to conventional wisdom, renter protection is not 'bad' per se for investors.

The major implication of our findings is that it is important to have a more nuanced view of what institutional frameworks and regulations do to pricing and performance. In the case

of landlord and tenant laws and their effect on multifamily housing pricing and performance, we see that the regulations lower the cash flow risk providing more stable NOI while at the same time leading to significant increases in NOI and NOI growth. However, investors must buy such properties for lower cap rates largely because of the reduced risk and high demand for such properties as a result of being in a state that better protects tenants.

References

Agarwal, Sumit, Brent W. Ambrose, Souphala Chomsisengphet, and Anthony B. Sanders, "Thy Neighbor's Mortgage: Does living in a Subprime Neighborhood Affect One's Probability of Default," *Real Estate Economics*, 2012, *40*, 1–22.

Ambrose, Brent W. and Moussa Diop, "Information Asymmetry, Regulations and Equilibrium Outcomes: Theory and Evidence from the Housing Rental Market," *Real Estate Economics*, 2018.

_ , Steven R. Ehrlich, William T. Hughes, and Susan M. Wachter, "REIT Economies of Scale: Fact or Fiction?," *The Journal of Real Estate Finance and Economics*, 2000, *20* (2), 211–224.

An, Xudong, Yongheng Deng, Joseph B. Nichols, and Anthony B. Sanders, "Local Traits and Securitized Commercial Mortgage Default," *Journal of Real Estate Finance and Economics*, 2013, *47*, 787–813.

Archer, Wayne, Peter J. Elmer, David M. Harrison, and David C. Ling, "Determinants of Multifamily Mortgage Default," *Real Estate Economics*, 2002, *30*, 445–473.

Arnott, Richard and Elizaveta Shevyakhova, "Tenancy rent control and credible commitment in maintenance," *Regional Science and Urban Economics*, 2014, *47*, 72–85.

Chen, Jun and Yongheng Deng, "Commercial Mortgage Workout Strategy and Conditional Default Probability: Evidence from Special Serviced CMBS Loans," *Journal of Real Estate Finance and Economics*, 2013, *46*, 609–632.

Cocola-Gant, A. and A. Gago, "Airbnb, Buy-to-Let Investment and Tourism-Driven Displacement: A Case Study in Lisbon," *Environment and Planning A: Economy and Space*, 2019.

Cotter, John and Richard Roll, "A Comparative Anatomy of Residential REITs and Private Real Estate Markets: Returns, Risks and Distributional Characteristics," *Real Estate Economics*, 2015, *43* (1), 209–240.

Coulson, Edward, Thao Le, and Lily Shen, "Tenant Rights, Eviction, and Rent Affordability," *SSRN*, 2020.

Eppli, Mark J. and Charles C. Tu, "Explaining the Puzzle of High Apartment Returns," Technical Report, NMHC Research Foundation 2018.

Hardin, William G. and Marvin L. Wolverton, "The Relationship between Foreclosure Status and Apartment Price," *The Journal of Real Estate Research*, 1996, *12* (1), 101–109.

_ **and** _ , "Equity REIT Property Acquisitions: Do Apartment REITs Pay a Premium?," *The Journal of Real Estate Research*, 1999, *17* (1/2), 113–126.

Harding, John P., Eric Rosenblatt, and Vincent Yao, "The Contagion Effect of Foreclosed Properties," *Journal of Urban Economics*, 2009, *66*, 164–178.

Hatch, Megan E., "Statutory Protection for Renters: Calssification of State Landlord-Tenant Policy Approaches," *Housing Policy Debate*, 2017, *27*, 98–119.

III, William Hardin, Matthew Hill, and James Hopper, "Ownership Structure, Property Performance, Multifamily Properties, and REITs," *Journal of Real Estate Research*, 2009, *31* (3), 285–306.

Quigley, John M and Robert Van Order, "Explicit Tests of Contingent Claims Models of Mortgage Default," *Journal of Real Estate Finance and Economics*, 1995, *11*, 99–117.

Seshimo, Hiroyuki, "Optimal tenant protection," *Regional Science and Urban Economics*, 2003, *33*, 59–92.

Seslen, Tracey and William C. Wheaton, "Contemporaneous Loan Stress and Termination Risk in the CMBS Pool: How "Ruthless" is Default?," *Real Estate Economics*, 2010, *38*, 225–255.

Vandell, Kerry D., "On the Assessment of Default Risk in Commercial Mortgage Lending," *Real Estate Economics*, 1984, *12*, 270–296.

_ , Walter Barnes, David Hartzell, Dennis Kraft, and William Wendt, "Commercial Mortgage Defaults: Proportional Hazards Estimations Using Individual Loan Histories," *Real Estate Economics*, 1993, *21*, 451–480.

Yildirim, Yildiray, "Estimating Default Probabilities of CMBS with Clustering and Heavy Censoring," *Journal of Real Estate Finance and Economics*, 2008, *37*, 93–111.

Table 1: Specifics of landlord and tenant laws by state

State	Maximum security deposit for an unfurnished apartment on a one year lease (months)	Deadline for returning security deposit when no deductions are imposed by landlord	Rent increase notice for month-to-month contracts	Tenant has the option to withhold rent for failure to provide essential services (1 yes, 0 no)	Tenant is allowed to repair and deduct costs from rent (1 yes, 0 no)	Required notice needed from landlord before entry	Termination notice required for nonpayment of rent	Regular termination notice for month-to-month lease	Termination notice required for lease violation	How much time the tenant has to recover abandoned property after receiving notice
Vermont	No statue	14	60	1	1	48	14	30, 45, 60	30	60
Hawaii	1	14	45	1	1	48	5	45	10	15
Delaware	1	20	60	1	1	48	5	60	7	7
Rhode Island	1	20	30/60	1	1	48	5	30	20	reasonable
Arizona	1.5	14	30	1	1	48	5	30	10	10
District of Columbia	1	45	30	1	No statue	No statue	30	30	30	90
Nebraska	1	14	30	1	No statue	24	3	30	30	14
Oregon	No statue	31	30	1	1	24	6	30/60	30	15
Alaska	2	14	30	1	1	24	7	30	10	15
Maine	2	30	45	1	1	24	7	30	7	7
Nevada	3	30	45	1	1	24	5	30/60	5	30
Kansas	1	30	30	1	No statue	24	10	30	30	30
South Dakota	1	14	30	1	1	24	0	30	0	30
Washington	No statue	21	30	1	1	48	3	20	10	45
Minnesota	No statue	21	31	1	1	24	14	30	no statue	28
New Hampshire	1	30	30	1	No statue	24	7	30	30	7
New Jersey	1.5	30	30	1	1	24	0	30	30	15
Pennsylvania	2	30	No statue	1	1	24	10	15	30	30
California	2	21	30/60	1	1	24	3	30	3	18
Massachusetts	1	30	30	1	1	No statue	14	30	no statue	no statue
Montana	No statue	10	15	1	1	24	3	15	14	10
Kentucky	No statue	30	No statue	1	1	48	7	30	15	no statue
Tennessee	No statue	30	No statue	1	1	No statue	14	30	14	30
Wisconsin	No statue	21	28	1	No statue	12	14	28	14	30
Iowa	2	30	30	1	1	24	3	30	7	no statue
Oklahoma	No statue	30	No statue	1	1	24	5	30	15	15
North Dakota	1	30	30	No statue	1	24	3	30	3	28
New Mexico	reasonable	30	30	1	No statue	24	3	30	7	30
Michigan	1.5	30	No statue	1	1	No statue	7	30	7	no statue
Utah	No statue	30	15	1	1	24	3	15	3	15
Virginia	2	45	No statue	1	0	24	5	30	21	1
Maryland	2	45	No statue	1	1	No statue	0	30	14, 30	no statue
Missouri	2	30	No statue	1	1	No statue	0	30	10	10
Connecticut	2	30	No statue	1	No statue	24	3	3	15	30
South Carolina	No statue	30	No statue	1	0	24	5	30	14	30
Texas	No statue	30	No statue	No statue	1	24	3	30	0	60
Illinois	No statue	45	No statue	1	1	No statue	5	30	10	no statue
Alabama	1	60	No statue	0	0	48	7	No statue	7	14
New York	No statue	reasonable	No statue	1	1	No statue	3	30	10	no statue
Florida	No statue	15	No statue	1	No statue	12	3	15	7	15
Indiana	No statue	45	30	No statue	No statue	reasonable	10	30	0	90
Ohio	No statue	30	No statue	1	No statue	24	3	30	3	no statue
Colorado	No statue	30/60	21	1	No statue	No statue	3	30	3	no statue
Mississippi	No statue	45	No statue	No statue	1	No statue	3	30	30	no statue
Idaho	No statue	21	15	No statue	0	No statue	3	30	3	reasonable
Louisiana	No statue	30	No statue	0	1	No statue	5	10	5	no statue
Wyoming	No statue	30	No statue	1	0	0	3	No statue	3	22
Georgia	No statue	30	60	No statue	No statue	No statue	0	60	no statue	0
North Carolina	2	30	No statue	No statue	No statue	No statue	10	7	0	30
West Virginia	No statue	60	No statue	No statue	No statue	No statue	0	30	0	30
Arkansas	2	60	No statue	No statue	No statue	No statue	0	30	14	0

Note: Those are different specifics of landlord and tenant laws across states. We control for changes in the laws. Over time staring in the 1970s there has been overall very little changes. We verify each change manually. The data in each columns in in days unless otherwise indicated.

Table 2: Summary statistics on landlord and tenant laws - average across all US states

	Maximum security deposit in months (unfurnished apartment, 1-year lease)	Max days to return deposit (no deductions imposed by landlord)	Rent increase notice period for month-to-month contracts	Tenant has the option to withhold rent for failure to provide essential services (1 for yes, 0 no)	Tenant is allowed to repair and deduct costs from rent (1 yes, 0 no)	Termination notice required for non-payment of rent	Regular termination notice period for month-to-month lease	Termination notice period for lease violation	Days the tenant has to recover abandoned property after receiving notice
max	3	60	60	1	1	30	60	30	90
median	1.5	30	30	1	1	5	30	10	20
mean	1.6	29.7	33.0	1.0	0.9	5.7	28.5	12.3	25.2
min	1	10	15	0	0	0	3	0	0
no statue count	24	0	22	9	15	0	2	3	11

Note: Averages across US states reported. Since the 1970s there have been overall very few changes in those laws. We verify each change manually. The data in each column is in days unless otherwise indicated.

Table 3: Summary statistics

	mean	sd	min	max	p5	p25	p75	p99
NOI per unit	3710.45	4027.17	0.68	415742.03	896.08	1839.72	4518.55	15681.63
Log(NOI per unit)	7.96	0.73	-0.38	12.94	6.80	7.52	8.42	9.66
Initial cap rate	0.05	0.03	0.00	2.78	0.02	0.03	0.06	0.12
Value at origination (in mn USD)	14.84	13.37	0.21	146.15	1.50	4.80	21.07	58.66
Delinquency	0.16	0.37	0.00	1.00	0.00	0.00	0.00	1.00
RPS	12.68	3.66	4.00	22.00	5.00	11.00	16.00	19.00
Protectionist state (d)	0.26	0.44	0.00	1.00	0.00	0.00	1.00	1.00
Withhold rent if repairs not completed	1.36	0.93	0.00	2.00	0.00	0.00	2.00	2.00
Right to Complain	0.86	0.35	0.00	1.00	0.00	1.00	1.00	1.00
Right to form tenant organization	0.75	0.43	0.00	1.00	0.00	0.00	1.00	1.00
Deduct repair cost from rent	1.32	0.95	0.00	2.00	0.00	0.00	2.00	2.00
Eviction Rate	0.03	0.03	0.00	0.17	0.00	0.01	0.04	0.14
Median rent	915.87	418.49	0.00	3501.00	335.00	661.45	1103.89	2273.00
Percentage Renter Occupied	0.41	0.24	0.00	1.00	0.08	0.21	0.58	0.99
African-American percent	0.13	0.19	0.00	1.00	0.00	0.02	0.16	0.91
Hispanic percent	0.17	0.20	0.00	1.00	0.01	0.03	0.24	0.87
Building Occupancy Rate	0.93	0.06	0.01	1.00	0.82	0.92	0.97	1.00
Loan Age (Years)	4.83	3.12	0.00	35.00	1.00	2.00	7.00	14.00
Number of Units	169.19	130.86	1.00	740.00	20.00	68.00	240.00	607.00
Age	30.32	19.69	0.00	114.00	5.00	16.00	39.00	101.00
Density	6206.39	14269.88	0.00	203800.00	73.20	1050.90	5954.00	68985.70
Recent Renovation (d)	0.18	0.38	0.00	1.00	0.00	0.00	0.00	1.00
Interest Rate	6.08	1.38	0.00	9.50	3.81	5.26	7.12	9.00
Lock (d)	0.88	0.32	0.00	1.00	0.00	1.00	1.00	1.00
Balloon (d)	0.96	0.20	0.00	1.00	1.00	1.00	1.00	1.00
Loan Age (Years)	4.83	3.12	0.00	35.00	1.00	2.00	7.00	14.00
ltv	71.79	39.34	2.60	6787.10	47.70	66.37	78.30	122.69
state population (in 100,000)	157.79	113.75	4.94	391.49	27.84	61.79	243.09	391.49
state GDP per capita	48330.58	10818.80	23030.89	188309.51	35047.77	41159.13	54073.05	73113.62
Observations	151519							

Note: Renter protection is measured at the state level. Eviction rate, racial composition, percent renter occupied, density and median gross rent are measured at the census level. Density is measured in population per square mile. Population and GDP per capita are at the state level. All other variables measured at a property (loan) level.

Table 4: Baseline regressions for the role of RPS on multifamily housing pricing

	Initial cap rate	NOI at Origination	Value at Origination
RPS	-0.0004***	0.0064***	0.0107***
	(0.0001)	(0.0023)	(0.0012)
L.Eviction Rate	0.0132**	-1.7870***	-0.8732***
	(0.0060)	(0.1609)	(0.1011)
L.Ln(median rent)	-0.0007**	0.0774***	0.0455***
	(0.0003)	(0.0143)	(0.0080)
L.African-American percent	0.0027***	-0.1529***	-0.1322***
	(0.0010)	(0.0336)	(0.0174)
L.Hispanic percent	0.0070***	-0.2937***	-0.2514***
	(0.0012)	(0.0350)	(0.0181)
L.Percentage Renter Occupied	-0.0025***	0.0394	0.0726***
	(0.0009)	(0.0263)	(0.0126)
L. Building Occupancy Rate	0.0306***	0.7285***	-0.5654***
	(0.0033)	(0.1575)	(0.0903)
Number of Units	0.0000**	0.0045***	0.0014***
	(0.0000)	(0.0001)	(0.0001)
Age	0.0001***	-0.0086***	-0.0039***
	(0.0000)	(0.0007)	(0.0005)
L.lnpop_sqmi	-0.0009***	0.0297***	0.0287***
	(0.0001)	(0.0055)	(0.0027)
Recent Renovation (d)	-0.0004	0.0219*	0.0228**
	(0.0004)	(0.0122)	(0.0096)
L.lnPopulation_state	-0.0010***	-0.0167**	0.0188***
	(0.0003)	(0.0074)	(0.0051)
L.lnPerCapGDP	-0.0067***	0.5853***	0.3405***
	(0.0015)	(0.0433)	(0.0274)
lnNOI			0.6650***
			(0.0151)
Constant	0.1316***	4.7443***	2.9924***
	(0.0143)	(0.4824)	(0.3205)
Observations	21823	21777	21777
r2	0.1300	0.6888	0.8905

Note: The models regress three dependent variables: initial cap rate, NOI at origination and Value at origination. The initial cap rate is calculated as the NOI at loan origination divided by the value at loan origination. All regressions are at the property level. RPS stands for the renter protection score which is constant over time and varying by state. Capital L in front of the variable stays for one year lag. Eviction rate is the percentage of residents who were evicted from their homes in a given year. L.lnpop_sqmi is the lagged population density per square mile expressed in natural logarithms. L.lnPopulation_state is the lagged logged state-level population. L.lnPerCapGDP is the lagged logged state-level GDP per capita. lnNOI is the building NOI at origination which controls for any remaining unobserved property-level heterogeneity. Pooled OLS regression model with fixed effects for year of observation, loan origination year and loan originator. Standard errors are clustered by property age. All socio-economic variables are observed at the census tract level.

Table 5: Baseline panel regressions for the effect of RPS on multifamily housing performance

	NOI	Delinquency
RPS	0.0252***	-0.0015***
	(0.0012)	(0.0006)
L.Eviction Rate	-1.0149***	0.2789***
	(0.0833)	(0.0574)
L.Ln(median rent)	0.0441***	-0.0011
	(0.0075)	(0.0032)
L.African-American percent	-0.4133***	0.0673***
	(0.0219)	(0.0106)
L.Hispanic percent	-0.5398***	0.0413***
	(0.0225)	(0.0094)
L.Percentage Renter Occupied	0.1501***	-0.0105
	(0.0181)	(0.0077)
L. Building Occupancy Rate	1.8257***	-0.5155***
	(0.0756)	(0.0320)
Number of Units	-0.0003***	-0.0000
	(0.0000)	(0.0000)
Age	-0.0048***	0.0003***
	(0.0002)	(0.0001)
L.lnpop_sqmi	0.0589***	-0.0012
	(0.0035)	(0.0015)
Recent Renovation (d)	-0.0330***	0.0218***
	(0.0070)	(0.0044)
Loan Age (Years)	0.0036**	-0.0078***
	(0.0014)	(0.0008)
L.lnPopulation_state	0.0639***	0.0023
	(0.0049)	(0.0022)
L.lnPerCapGDP	0.7562***	-0.0086
	(0.0317)	(0.0123)
L.Log(NOI per unit)		-0.0226***
		(0.0028)
L.Interest Rate		0.0155***
		(0.0027)
Lock (d)		-0.0305***
		(0.0051)
Balloon (d)		0.0286***
		(0.0092)
(mean) LTV		0.0005**
		(0.0003)
Constant	-3.5622***	0.7576***
	(0.3081)	(0.1380)
Observations	97060	95694
r2_w	0.1328	0.0122
r2_b	0.4337	0.1689
r2_o	0.4028	0.0846

Note: The models regress two time-varying dependent variables: property-level NOI over time and loan delinquency over time. RPS stands for the renter protection score which is constant over time and varying by state. Capital L in front of the variable stays for one year lag. Eviction rate is the percentage of residents who were evicted from their homes in a given year. L.lnpop_sqmi is the lagged population density per square mile expressed in natural logarithms. L.lnPopulation_state is the lagged logged state-level population. L.lnPerCapGDP is the lagged logged state-level GDP per capita. L.LogNOI is the NOI per unit over time which controls for any remaining unobserved property-level heterogeneity. For the delinquency model we also include credit variables such as the lagged loan interest rate, whether the loan has a lock-up period, whether the loon is balloon, what the average loan-to-value (LTV) ratio of the loan is. We use a random effects panel regression model controlling for year of observation, loan origination year and loan originator. Standard errors are clustered by loan ID. All socio-economic variables are observed at the census tract level.

Table 6: The role of RPS for NOI growth and NOI volatility

	NOI growth	NOI volatility
RPS	0.0011***	-0.0043***
	(0.0003)	(0.0002)
L.Eviction Rate	-0.0895**	0.0704***
	(0.0424)	(0.0253)
L.Ln(median rent)	0.0001	-0.0048***
	(0.0021)	(0.0012)
L.African-American percent	-0.0157**	0.0165***
	(0.0065)	(0.0047)
L.Hispanic percent	-0.0130**	0.0505***
	(0.0059)	(0.0042)
L.Percentage Renter Occupied	0.0116**	0.0095***
	(0.0049)	(0.0029)
L. Building Occupancy Rate	0.2072***	-0.5158***
	(0.0292)	(0.0150)
Number of Units	0.0000***	-0.0001***
	(0.0000)	(0.0000)
Age	0.0000	0.0006***
	(0.0001)	(0.0001)
L.lnpop_sqmi	-0.0006	-0.0001
	(0.0009)	(0.0006)
Recent Renovation (d)	-0.0040	0.0107***
	(0.0030)	(0.0018)
L.lnPopulation_state	0.0033**	-0.0032***
	(0.0013)	(0.0008)
L.lnPerCapGDP	0.0058	-0.0074
	(0.0076)	(0.0046)
Constant	-0.4415***	0.6730***
	(0.0867)	(0.0541)
Observations	81952	21823
r2_w	0.0318	
r2_b	0.1067	
r2_o	0.0520	
r2		0.0763

Note: The dependent variable in the first column is year on year NOI growth. The dependent variable in the second model is NOI volatility, which is defined as the standard deviation (SD) of annual NOI growth. RPS stands for the renter protection score which is constant over time and varying by state. Capital L in front of the variable stands for one year lag. Eviction rate is the percentage of residents who were evicted from their homes in a given year. L.lnpop_sqmi is the lagged population density per square mile expressed in natural logarithms. L.lnPopulation_state is the lagged logged state-level population. L.lnPerCapGDP is the lagged logged state-level GDP per capita. In both models we also include socio-economic variables are observed at the census tract level. We use a random effects panel regression model to estimate the results for NOI growth and in this model we control for year of observation, loan origination year and loan originator and standard errors are clustered by loan ID. We use a pooled OLS model to estimate the results for NOI volatility and in this model we include with fixed effects for year of observation, loan origination year and loan originator and standard errors are clustered by property age.

Table 7: Robustness results for initial cap rates using alternative renter protection metrics

	Base Model	Model 1	Model 2
RPS	-0.0004***		
	(0.0001)		
Alternative RPS		-0.0001***	
		(0.0000)	
Protectionist state (d)			-0.0052***
			(0.0005)
Contradictory state (d)			-0.0025***
			(0.0006)
Observations	21823	21773	21823
r2	0.1300	0.1304	0.1331

Note: Alternative RPS stands for an alternative Renter Protection Score constructed by Rent Cafe using similar data to our RPS variable. Protectionist state and contradictory state are categorizations of state regulations from Hatch (2017). The omitted category in this model is Pro Business. The model specification is as in the baseline models for initial cap rate.

Table 8: Robustness results using geographic controls

	Cap Rate b	Cap Rate c	Cap Rate c&s	NOI b	NOI c	NOI c&s	Delinq b	Delinq c	Delinq c&s
RPS	-0.0004***	-0.0002***	-0.0011**	0.0252***	0.0288***	0.0177***	-0.0015***	-0.0008	-0.0008
	(0.0001)	(0.0001)	(0.0004)	(0.0012)	(0.0017)	(0.0017)	(0.0006)	(0.0008)	(0.0008)
Observations	21823	21823	21823	97060	97060	97060	95694	95694	95694
r2	0.1300	0.1475	0.1427						
r2_w				0.1328	0.1314	0.1330	0.0122	0.0122	0.0122
r2_b				0.4337	0.4837	0.5026	0.1689	0.1747	0.1747
r2_o				0.4028	0.4522	0.4688	0.0846	0.0876	0.0877

Note: We include geographic fixed effects to control for unobserved heterogeneity across counties which might trickle up into state level heterogeneity. "b" stays for baseline with no geographic FEs. "c" stays for county FE. "c&s" stays for county and state FEs. The model specifications are as in the baseline models for initial cap rate, NOI and delinquency.

Table 9: Robustness results excluding influential states

	(1)	(2)	(3)	(4)
	Cap rate ex. top 3	Cap rate ex. CA	Cap rate ex. FL	Cap rate ex. TX
RPS	-0.00029***	-0.00040***	-0.00038***	-0.00031***
	(0.00005)	(0.00006)	(0.00005)	(0.00006)
Observations	15002	21823	19976	16849
r2	0.14886	0.12996	0.14348	0.13032
	NOI ex. top 3	NOI ex. CA	NOI ex. FL	NOI ex. TX
RPS	0.01332***	0.02517***	0.02513***	0.01371***
	(0.00118)	(0.00118)	(0.00120)	(0.00116)
Observations	68967	97060	90062	75965
r2_w	0.12140	0.13280	0.13402	0.12035
r2_b	0.45318	0.43372	0.45195	0.43936
r2_o	0.41658	0.40275	0.41730	0.40745
	Default ex. top 3	Default ex. CA	Default ex. FL	Default ex. TX
RPS	-0.00054	-0.00153***	-0.00089	-0.00126**
	(0.00057)	(0.00056)	(0.00058)	(0.00057)
Observations	67863	95694	88779	74778
r2_w	0.01974	0.01219	0.02128	0.01105
r2_b	0.17927	0.16894	0.16126	0.15406
r2_o	0.09556	0.08459	0.09914	0.07710

Note: The key independent variable, renter protection score (RPS), is reported for each model. Each row represents one of the three dependent variables: initial cap rate, annual NOI and annual delinquency. All control variables in baseline included, but not reported. See table notes for baseline model. Column 1 omits the three largest states (CA, FL, TX) by number of properties present in sample, column 2 omits only California (CA), column 3 omits only Florida (FL), and column 4 omits only Texas (TX).

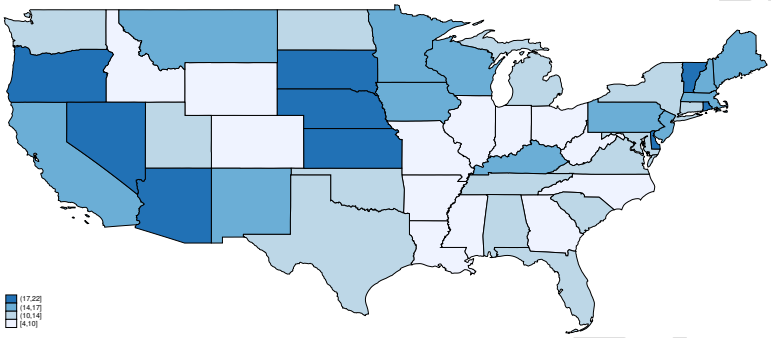

Figure 1: Renter protection index across US states

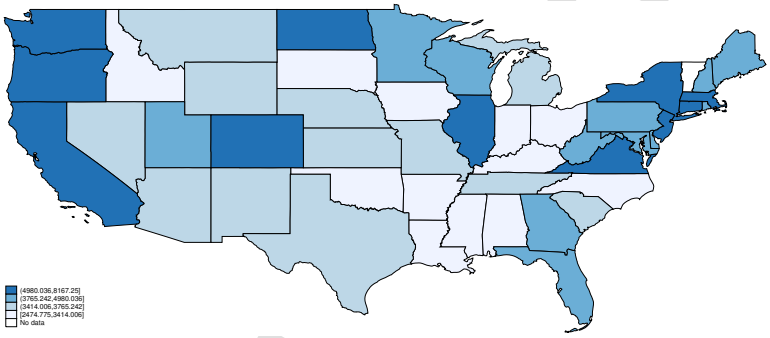

Figure 2: Average NOI per unit across US states

A Appendix: RPS Decomposition Results

Table 10 shows the baseline results using the individual laws that feature within our RPS measure one by one. This table summarizes the results for 33 individual regressions, where each of the 11 individual law or regulations included in the renter protection score was independently regressed on the three outcomes of interest, initial cap rate, NOI, and delinquency.

Table 10: Summary of results by individual law or regulation

	Cap Rate	Log(NOI per unit)	Delinquency
Maximum Deposit Allowed	-	+*	-*
Month-to-month rent increase notice	-*	+*	+
Right to Complain	-	-	-
Right to form tenant organization	-	-	-
Month-to-month nonrenewal notice	+	-	+
Time to return security deposit	-*	+*	-
Deduct repair cost from rent	-	+*	+*
Withhold rent if repairs not completed	-*	+*	-*
Notice required for non-payment eviction	+	-*	-*
Notice required for lease violation eviction	-	+*	-*
Time to recover personal property	+*	- *	+*

Note: This table summarizes the results for 33 individual regressions, where each of the 11 individual law or regulations included in the renter protection score was independently regressed on the three outcomes of interest cap rate, NOI, and delinquency. All control variables and fixed effects included in the baseline models are included in this estimation but are not reported. Statistically significant coefficients at at least the 10% level are indicated with *.

Individual renter laws include the right to withhold rent if repairs are not completed, the right to complain, the right to form a tenant organization and the right to deduct repair cost from rent. All control variables and fixed effects included in the baseline models are included in this estimation but are not reported. Coefficients with statistically significance at least the 10% level are noted in the summary table.

We see some individual laws are not significant while others are and this is the case for all three models. Some laws matter more for some variables (cap rate vs NOI vs delinquency). Therefore, we think that when accounting for the effects of renter protection, it is important to assess the overall effect of the measures in aggregate rather than trying to interpret individual policies.

B Appendix: Summary of Renter Protection Variables

Maximum deposit

Landlord can only require a maximum of 1 month of rent as deposit=2 (11 states)

Landlord can only require a maximum of 1.5-2 month of rent as deposit=1 (16 states)

There is no statute governing the maximum security deposit allowed=0 (24 states)

Rent increase notice

Landlord must provide more than 30 days of notice before increase rent on month to month arrangements= 2 (24 states)

Landlord must provide some notice, but less than 30 days, before rent increase on month to month arrangements=1 (5 states)

There is no statute governing the notice required to increase rent on month to month arrangements=0 (22 states)

Complaint

Tenants have right to file a complaint against landlord with relevant authorities without retaliation from landlord=2 (41 states)

Tenants do not have the right to file a complaint without retaliation/No statute=0 (10 states)

Tenant Organization

Tenants have right to form a tenant organization without retaliation from landlord=2 (21 states)

Tenants do not have right to form tenant organization without retaliation/No statute=0 (30 states)

Termination Notice- Month to Month

Landlord must inform a month to month tenant of termination of arrangement more than one month in advance=2 (6 states)

Landlord must inform a month to month tenant of termination of arrangement one month

in advance=1 (35 states)

Landlord only must provide 15 days or less notice of termination of month to month arrangement/no statute=0 (10 states)

Security Deposit Return

Landlord has a maximum of less than a month to return security deposit to tenant=2 (14 states)

Landlord has one month to return security deposit to tenant=1 (26 states)

Landlord has more than a month to return security deposit to tenant=0 (11 states)

Deduct Repairs from Rent

Tenant has right to deduct cost of completing necessary repairs from rent=2 (31 states)

Tenant does not have the right to deduct repairs from rent/no statute=0 (20 states)

Withhold Rent if Repairs not completed

Tenant has right to withhold rent if repairs necessary for habitability are not completed by landlord=2 (40 states)

Tenant does not have right to withhold rent/no statute=0 (11 states)

Notice given before eviction for tenant non-payment

Landlord must give tenant 10 or more days of notice before filing eviction notice for non-payment of rent=2 (8 states)

Landlord must give tenant between 3-7 days of notice before filing eviction notice for non-payment of rent=1 (33 states)

Landlord is not required to give tenant any notice before filing eviction notice for non-payment of rent/no statute=0 (10 states)

Notice given before eviction for tenant lease violation

Landlord must give tenant 14 or more days of notice before filing eviction notice for lease violation=2 (20 states)

Landlord must give tenant between 7-13 days of notice before filing eviction notice for lease

violation =1 (14 states)

Landlord is only required to give 5 or less days of notice before filing eviction notice lease violation/no statute=0 (17 states)

Time to recover personal property

Tenant must be one month or more to recover personal property after being given notice by landlord=2 (16 states)

Tenant must be given 1-15 days to recover personal property after being given notice by landlord=1 (22 states)

Landlord not required to give tenant any time to recover personal property after giving notice/no statute=0 (13 states)

Paper highlights

- Assess the role of state-level renter protection regulations on the pricing, performance, and risk of multifamily housing.
- Construct a renter protection score (RPS) to measure the extent of renter protection in each state.
- Assemble a dataset of property-level data on commercial mortgage-backed securities (CMBS) and census tract socio-economic variables.
- Assess the role of RPS on initial capitalization (cap) rates, annual net operating income (NOI) and annual loan delinquency rates.
- Contrary to conventional wisdom that renter protection is `bad' for investors, multifamily housing in high RPS states is associated with lower cap rates. Those properties also perform better in terms of NOI and NOI growth and have significantly lower delinquency. This is a result of investors perceiving such properties as lower risk.
- Demonstrate the low cap rates and delinquency can be explained with reduced income volatility as a result of being in a high RPS state.
- From the investor and lender point of view, higher levels of renter protection are not necessarily `bad' but are instead associated with lower cash ow volatility and better income growth prospects.

Author statement

Meagan McCollum: Conceptualization, Methodology, Formal analysis, Data curation, Visualization, Investigation. Reviewing and Editing.

Stanimira Milcheva: Conceptualization, Methodology, Formal analysis, Writing- Original draft preparation, Investigation Visualization, Reviewing and Editing.