DIVERSIFYING THE SUBURBS: RENTAL SUPPLY AND SPATIAL INEQUALITY

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Abstract

Insufficient rental supply in American suburbs limits mobility for financially constrained households unable to afford homeownership. I find that reallocating suburban single-family homes to rentals reduces spatial inequality by increasing access to desirable neighborhoods for non-White and younger households. In my reduced-form analyses, I exploit the entry of large-scale corporate landlords and leverage property-level data on home prices, rents, and tenant characteristics. Corporate landlords pay a 9% premium to acquire owner-occupied homes, increasing rental supply in suburbs where it is scarce and expensive. This expansion of rental supply lowers rents while raising home prices. To assess the distributional consequences, I develop a quantitative spatial equilibrium model with segmented housing markets. Converting ownership homes to rentals benefits down payment-constrained households by reducing barriers to high-amenity neighborhoods. However, the estimated non-pecuniary benefits of homeownership suggest that households who can marginally afford a home lose out.

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1. Introduction

Owning a single-family home in the suburbs is widely seen as a key marker of the American dream.[1] Nevertheless, many U.S. households cannot afford homeownership due to financial constraints. Households unable to make a down payment are left with no choice but to rent. At the same time, renters are also constrained as to where they can live because not all neighborhoods have sufficient rental housing supply. 85% percent of suburban single-family homes are owner-occupied, limiting renters' access to the suburbs that families often move to in search of better schools and safer neighborhoods.[2]

Recently, a policy debate has emerged regarding corporate single-family rental (SFR) landlords who purchased a large number of suburban single-family homes and converted them to rentals beginning in 2012. In response to concerns that landlords crowd out prospective homebuyers, policymakers across political parties such as Kamala Harris and JD Vance, have proposed bills that would restrict corporate landlords.

What are the inequality and welfare consequences of reallocating owner-occupied housing into rentals and the policies that limit it? To answer this question, I proceed in three steps. In step 1, I study *how* corporate SFR landlords expand rental supply where the housing stock has traditionally been heavily owner-occupied. I begin by assembling a dataset that tracks landlords' property acquisition since their entry in 2012. I estimate landlords' willingness-to-pay by exploiting repeated sales of a property and I establish revealed-preference evidence of their business strategy.

In step 2, I estimate the effects of converting owner-occupied housing into rentals on housing affordability and access to neighborhoods. The key empirical challenges include changes in local housing stock and demographic compositions over time, as well as the endogenous entry of landlords. To address these concerns, I assemble granular property-level panel data on home prices, rents, and tenant characteristics. Then, I estimate the direct effects of corporate landlords through property-level event studies, leveraging variations in acquisition timing and controlling for composition effects with property fixed effects. The identifying assumption is that, conditional

[1] According to a recent survey, 89% of U.S. households consider owning a home "either essential or important to their vision of the [American Dream]" (Wolfe 2024).

[2] See Glaeser (2011): "The most fundamental fact about rental housing in the United States is that rental units are overwhelmingly in multifamily structures. This fact surely reflects the agency problems associated with renting single-family dwellings."

on fixed effects, acquisition by a corporate landlord is uncorrelated with time-varying unobserved determinants of property-level outcomes. I observe parallel pre-trends, followed by a sharp change in outcomes after a property is converted from owner-occupied to rental housing. I then show that property-level effects aggregate to neighborhood-level changes using Census tract-level event studies. For tract-level analysis, I find that the results are robust to controlling for the likelihood of landlord entry where identification relies on the conditional independence assumption (CIA).

In step 3, I develop a quantitative spatial model featuring segmented ownership and rental markets to conduct welfare analyses. The model features heterogeneous households that decide on location and housing tenure—either owning or renting—subject to financial constraints. Rental housing is supplied by local atomistic landlords and a large-scale corporate landlord who incur location-specific operational costs. Using the estimated model, I evaluate the distributional consequences of converting owner-occupied housing to rentals and conduct counterfactual analyses.

I have three strands of empirical findings. First, corporate SFR landlords exploit scale economies to alleviate the high costs of supplying rentals in the suburbs. Corporate landlords (1) enter Census tracts where rentals are *ex ante* expensive *and* scarce, (2) concentrate geographically to build local scale rather than diversifying across distant regions, and (3) achieve scale by paying an average 9% purchase premium. Data on operational expenses reveal cost efficiencies associated with scale, which justify landlords' decisions to pay high prices for geographic concentration.

Second, corporate SFR landlords expand rental supply while reducing the availability of homes for purchase, which lowers rents and raises home prices. I show that 70% of properties landlords acquire were previously owner-occupied, and that landlords cause an average 0.8 percentage point decline in Census tract-level homeownership. While the cost of buying a home for prospective buyers increases, rents decrease by 2-3%. This finding aligns with the pro-competitive effects of expanding rental supply in areas where it was previously limited and expensive.

Third, reallocating owner-occupied housing to rentals reduces disparities in access to desirable neighborhoods. When a property is converted to a rental, financially constrained households who could not afford homeownership move in. The new tenants are more likely to be Black, younger, lower-income, and lower-wealth compared to the incumbents. The in-migration reduces neighborhood-level residential segregation. In response, households living closer to newly arrived renters are more likely to move out of the neighborhood than those living farther away from these

renters, even within the same Census tract. This pattern is not explained by sales to corporate landlords, transitory migration, or capital gains, suggesting that households' preferences for neighborhood composition drive the out-migration.

What do these empirical findings imply for welfare? My results suggest that changes in housing costs alone fail to capture the full welfare effects of reallocating owner-occupied housing to rentals, as it also shifts households' access to neighborhoods and endogenous amenities. I incorporate these welfare margins into a quantitative spatial equilibrium model to conduct a structural analysis.

On the demand side, households are heterogeneous in initial wealth and have non-homothetic preferences. Households choose their location and housing tenure to maximize utility, but must make a down payment to buy a home.[3] This down payment constraint restricts households' choice set based on their wealth and home prices. To account for non-pecuniary benefits of homeownership, amenities are specific to each neighborhood-housing tenure combination, allowing the utility of homeownership to exceed that of renting in the same neighborhood. The endogenous amenities component captures how households relocate not only due to changes in house prices, but also because of a neighborhood's demographic composition (Bayer et al. 2024; Diamond 2016).

Local and corporate landlords supply rental housing to maximize profit. Local property owners who are endowed with one unit of housing choose either to rent out their property, incurring location-specific operational costs, or to sell it to an aspiring homeowner. A large-scale corporate landlord enters the market by purchasing properties from current homeowners and landlords. While acquiring more homes reduces average operational costs through scale economies, it is increasingly costly. The increasing marginal cost of market penetration arises from the heterogeneity of incumbent owners, which leads to an upward-sloping supply. To expand in a local market, a corporate landlord must offer higher prices to persuade homeowners with strong neighborhood preferences or local landlords who are more profitable to sell. Based off these tradeoffs, the corporate landlord chooses an optimal scale, expanding rental supply in the markets they enter.

I estimate the scale economy parameter directly from the empirical repeat sales estimate of landlords' willingness to pay to expand in a local market. The estimate indicates that a landlord owning 100 units in a Census tract earns 7% more profit compared to 100 separate landlords combined.[4]

[3] Surveys suggest that down payment constraint is the number one barrier to homeownership (Goodman et al. 2018).

[4] The initial entry of corporate SFR landlords is modeled as a negative shock to the fixed cost of entry into local housing markets. This is motivated by how corporate SFR landlords initially relied on bulk property sales, obtaining

The remaining elasticities are estimated using the Generalized Method of Moments (GMM), with exposure to corporate SFR landlords as the instrument. The elasticity of endogenous amenities with respect to neighborhood composition is identified through the demographic shift caused by corporate landlords converting owner-occupied housing to rentals. Changes in rental return driven by lower rents and higher home prices provide the variation needed to identify rental supply elasticity.

Given the estimated elasticities, I recover the location and housing tenure-specific amenities that rationalize the data as an equilibrium of the model. The model unobservables reveal that non-pecuniary benefits of homeownership are substantial. On average, the amenities associated with homeownership are 40% greater than those associated with renting in the same location. This finding is consistent with survey evidence showing that most Americans prefer owning to renting.

Similarly, I recover the location-specific costs of supplying rentals and find that these costs are higher in suburban areas compared to urban areas. One potential driver of this cross-sectional heterogeneity is the prevalence of geographically dispersed single-family homes, which are more expensive to maintain and manage compared to apartment buildings (Mayer and Shiller 2006).

Using the quantified model, I conduct two counterfactual exercises. First, I simulate the entry of corporate landlords into the suburbs. A reduction in rents and barriers to high-amenity suburbs benefits low-wealth households who are predominantly renters. However, households who could marginally afford a home lose out, as they are priced out of homeownership. Due to the non-pecuniary benefits of homeownership, a one-unit decrease in owner-occupied housing supply harms households more than the corresponding one-unit increase in rental supply benefits them. Although wealthy households are relatively price-insensitive, they suffer due to endogenous dis-preferences for neighboring renters. Capital gains from house price appreciation attenuate their welfare loss.

Second, I evaluate the impact of policies regulating local rental markets. Rental caps that limit rental supply to 40% of local housing stock distort household decisions and lead to a one percent decrease in aggregate welfare. Policies forcing large-scale landlords to sell a portion of their portfolio back to the market increase aggregate welfare by expanding the housing supply available to homebuyers who prefer and can afford to own. However, this policy harms low-wealth households for whom homeownership was already unattainable.

initial scale at a low cost, and how they access cheap financing through the Commercial Mortgage-Backed Security (CMBS) market. Institutional details are reviewed in Section 2.

These findings help explain the widespread voter support for bills aimed at regulating landlords (Elmendorf et al. 2024). Households prefer to own. However, reallocating owner-occupied housing to rentals benefits financially constrained households and reduces residential segregation. Although policies that limit rental supply can increase aggregate welfare, they are regressive.

Literature — Recent literature in real estate investigates how housing market frictions affect housing costs in response to credit supply shocks (Greenwald and Guren 2021), tax incentives for landlords (Levy 2022), and entry of Airbnb (Calder-Wang 2022). I contribute to this literature in two ways. First, I empirically show that rental supply frictions in the suburbs negatively affect both rental affordability and residential segregation by exploiting a unique shock that significantly increased suburban rental supply. Second, I perform welfare analyses using a quantitative spatial equilibrium model accounting for how segmentation between ownership and rental markets affects welfare through various spatial margins beyond housing affordability.

A related literature studies the role of housing constraints on households' unequal access to neighborhoods. Compared to literature that focuses on housing policies designed to reduce disparities (Bergman et al. 2024; Bézy et al. 2024; Chetty et al. 2016; Diamond and McQuade 2019), I show that an increase in rental supply through the private market achieves similar effects and reduces residential segregation by satisfying latent demand for suburban rentals.

A growing body of literature studies single-family rental landlords (Austin 2022; Billings and Soliman 2023; Coven 2023; Gorback et al. 2024; Gurun et al. 2023; Hanson 2023; Ihlanfeldt and Yang 2021; Ma 2024; Mayock and Vosters 2024; Mills et al. 2019). I summarize this literature in Appendix Section A. To the best of my knowledge, this paper is the first to conduct a welfare analysis of corporate SFR landlords. Furthermore, I assemble property-level data on home prices, rents, and residential segregation, and present novel property-level evidence on both the consequences of corporate landlords and the scale economies they achieve in rental supply.

Finally, my model builds on the quantitative spatial equilibrium literature reviewed by Redding and Rossi-Hansberg (2017). I incorporate financial constraints to homeownership as choice set constraints and frictions in rental housing supply, extending the literature on the role of housing in spatial inequality (Almagro et al. 2024; Couture et al. 2024; Diamond 2016; Gechter and Tsivanidis 2023; Gupta et al. 2023; Hsieh and Moretti 2019; Parkhomenko 2022).

The rest of the paper is organized as follows. Section 2 provides background information and describes the data. Section 3 outlines key facts about corporate SFR landlords. Section 4 presents a reduced form analysis of the effects of corporate SFR landlords. Section 5 introduces the spatial model, which is estimated in Section 6. Section 7 presents welfare and counterfactual analyses. Section 8 concludes.

2. Background and data

2.1. Corporate single-family rental (SFR) landlords in the United States

In this paper, I study corporate SFR landlords in the United States who buy single-family homes to rent out in the long-term market. I focus on 23 large-scale SFR landlords operating in Florida, Georgia, North Carolina, and South Carolina that have a significant presence in these markets. Figure 1 shows a photo of a typical single-family rental property owned by a corporate landlord, captured from my tour of several of these properties.

Corporate SFR landlords are unique in two key ways. First, unlike other large-scale landlords who typically develop and operate multifamily rentals in urban areas, corporate SFR landlords focus on purchasing existing detached single-family homes in the suburbs. Second, the single-family rental market has traditionally been dominated by local mom-and-pop owners who manage a small number of properties. In contrast, corporate SFR landlords own a large number of homes not only within but also across neighborhoods.[5]

2.2. Bulk sales and the Commercial Mortgage-Backed Security (CMBS) market

Corporate SFR landlords entered the market in 2012. Figure 2 shows the cumulative number of properties purchased over time by corporate SFR landlords in my sample.

The figure highlights two key events that help explain the rise of corporate SFR landlords beginning 2012. First, in the aftermath of the 2008 Housing Crisis, foreclosed properties were often sold in bulk, with some purchases facilitated by the Federal Housing Finance Agency (FHFA).

[5] A related literature studies other classes of real estate investors who share similar features with corporate SFR landlords. Post-crisis corporate investors helped with price recovery (Lambie-Hanson et al. 2022), had positive price spillovers (Ganduri et al. 2023), and are more likely to be buy-and-hold investors as opposed to short-term investors in search of capital gains (Garriga et al. 2023); out-of-town buyers drive up prices (Gorback and Keys 2020), displace local residents (Li et al. 2024), and incur welfare losses for renters (Favilukis and van Nieuwerburgh 2021).

The FHFA launched a pilot program in 2012 to auction off bundles of government-owned REO (Real Estate Owned) properties to investors (Federal Housing Finance Agency 2012). Some corporate landlords in my sample acquired their initial properties through these bulk sales, which allowed them to quickly build initial scale. Second, rent-backed securitization in the Commercial Mortgage-Backed Security (CMBS) market launched in 2013. That year, *Invitation Homes* completed the first-ever rent-backed securitization. Similar securitizations followed, including a 2017 securitization by *Invitation Homes* backed by Fannie Mae. These securitizations provided large-scale landlords with access to cheap capital, allowing them to expand in ways smaller landlords could not.

The growth of corporate SFR landlords has generated scrutiny and raised concerns specifically about their impact on housing affordability. I survey recently proposed bills and policies aimed at regulating corporate landlords, including a federal bill backed by the Kamala Harris campaign, in Appendix Section A. I contribute to this public discourse by investigating the causes and consequences of corporate SFR landlords using reduced form analyses with granular microdata and a structural model.

2.3. Prior efforts to institutionalize the single-family rental sector

It is worth noting that there were earlier attempts to institutionalize the single-family rental sector. *Redbrick*, a company established in 2003 acquired hundreds of homes across the United States with the aim of running a long-term rental business (Hagerty 2005). However, within a few years, the *Wall Street Journal* reported that the company had "concluded that it is too costly to manage those homes" and was attempting to sell off their properties (Hagerty 2008).

The 2008 article, which ran under the subtitle, "Redbrick's Model of Scattered Bets Is Cautionary Tale," quotes Tom Skinner, the company's founder and a doctorate in economics from MIT: "…fixing leaky toilets and other common problems is much more complicated in a diverse array of homes than in an apartment building where fixtures are standard and the manager can walk from unit to unit." Mr. Skinner echoed the challenges of managing single-family rentals in the suburbs in an interview with Mayer and Shiller (2006):

> *Robert Shiller: But, strangely, there are very few professionals who invest in single-family homes. Why not? I spoke to Thomas Skinner, managing partner and founder of*

Redbrick Partners, which, although it bills itself as the biggest institutional investor in and manager of single-family homes in the United States, owns only about 1,000 homes. Skinner told me that about a third of all rentals in the United States are single-family homes, but that virtually all of these are managed by very small mom-and-pop operations. He told me, "It is operationally complex to put together an organization that owns and manages hundreds or thousands of geographically dispersed housing units." There is the difficulty of someone outside the community buying homes at a good price, given their incredible diversity of characteristics. There is also the problem of monitoring all the tenants, who not only might fail to maintain the homes but might actively destroy value.

In Section 3, I explore how the current iteration of corporate SFR landlords differs from this prior attempt. I show revealed-preference evidence that the new landlords alleviate the high operational costs of supplying rentals in the suburbs by geographically concentrating their portfolio. These anecdotal evidence and empirical findings suggest that insufficient rental housing in the suburbs prior to corporate landlord-entry could be due to high operational costs of supplying rentals. I revisit this idea in my structural model by recovering location-specific costs of supplying rentals and showing that they are higher in the suburbs where corporate landlords enter compared to other areas.

2.4. Data

Central to my empirical analyses is granular microdata on property transactions and assessments, which I merge with household-level address history data. I also use property-level rents from rental listings and commercial mortgage servicing data. I summarize each data source below, with further details available in Appendix Section B.1.

Property-level transactions and assessment — Property transaction and assessor data are obtained from ATTOM. The assessor data contain detailed property characteristics, including the number of bedrooms and bathrooms, as well as the property's latitude and longitude. Transaction-level data contain information such as prices and mortgage associated with each unique sale of a property.

I use the buyer's name and mailing address to identify properties purchased by corporate SFR landlords. Identifying corporate SFR landlords remains challenging because investors often use multiple names. Previous studies rely on lists of investor names and addresses gathered from internet searches and Form 10-Ks. I complement this approach by using an external North Carolina dataset that identifies property-level purchases by 23 large corporate SFR landlords. Using these datasets, I create a property-level panel of ownership. Details on the methodology for identifying corporate SFR landlords are provided in Appendix Section B.2.

Property-level rent data — Granular rent data in the U.S. housing market is challenging to obtain. Publicly available data sources often lack sufficient geographic and time-series coverage (e.g., the Zillow Observed Rent Index, which begins in 2014 for a subset of ZIP Codes) or quality adjustments (e.g., the American Community Survey).[6] To overcome these limitations, I leverage property-level listing data on asking rents from the Multiple Listing Service (MLS). This dataset covers the entire United States from 2010 onwards and contains the latitude and longitude of each property as well as property characteristics. Using this dataset, I evaluate the effects of corporate SFR landlords on rental affordability, controlling for property quality and granular geography-time trends.

Household-level address history data — I merge property-level data with residential history data from Data Axle. This dataset provides demographic information on households residing in each property. Using this information, I track the origin and destination of households moving into corporate-owned properties, as well as of other households in the same neighborhood.[7]

Commercial real estate data — Corporate SFR landlords rely on commercial mortgages to finance property acquisitions. I use data on commercial mortgage loans originated for corporate SFR landlords, as well as their securitizations in the Commercial Mortgage-Backed Security (CMBS) market. This dataset provides key information on corporate SFR landlords' financing and operational

[6] Due to these limitations, recent studies use the 1-year American Community Survey (ACS) Public Use Microdata Sample (PUMS), which provides unit-level contract rent and property characteristics for a 1% sample of households. The most granular level of geography in PUMS data is a PUMA region. In densely populated areas like New York City (Calder-Wang 2022), a PUMA region represents a small neighborhood, whereas in less populated areas, such as the suburbs, it often spans one or more counties.

[7] Data linkages between property-level transactions, assessment data, and address history data were performed by the Fisher Center for Real Estate and Urban Economics at the University of California, Berkeley. The algorithm uses both street addresses and exact latitude and longitude coordinates from each dataset. For additional details on the procedure, see Kermani and Wong (2024).

costs. This data is provided by TREPP.

Other public data sources — I use the 5-year American Community Survey (ACS) to evaluate the impacts of corporate SFR landlords on neighborhood-level characteristics, such as homeownership and demographic composition. I primarily use data at the Census tract and ZIP Code levels. I supplement my baseline property-level rent analysis, which leverages MLS data, with the 1-year ACS Public Use Microdata Sample (PUMS) (Ruggles et al. 2023). Lastly, I incorporate household wealth data from the 2013 Survey of Consumer Finances (SCF) into my quantitative analyses.

3. Three facts about the entry and expansion of corporate SFR landlords

In this section, I present three facts about the pattern of entry and expansion of corporate SFR landlords that suggest landlords exploit scale economies to alleviate the high costs of supplying suburban rentals. These empirical facts inform subsequent reduced form analyses of corporate landlords' impacts and the structural model.

Fact 1. Corporate SFR landlords entered suburbs where rentals are scarce and expensive

Corporate SFR landlords are most concentrated in the suburbs of major metropolitan areas in southern states starting. Panel A in Figure 3 shows a heatmap of the total number of properties acquired by corporate SFR landlords in each ZIP Code between 2012 and 2013. These figures show a high concentration of corporate SFR landlords in the outskirts of major cities such as Atlanta, Georgia, and Charlotte, North Carolina.

The suburbs most impacted by corporate SFR landlords are characterized by *ex ante* high homeownership rates (i.e., limited rental supply) and high rent-to-price ratios (i.e., expensive rentals).[8] As of 2011, prior to corporate SFR landlords' entry, these Census tracts had an eight percentage point higher median homeownership rate and a four-year shorter median price-to-rent ratio compared to other Census tracts. Figure 4 similarly shows that corporate SFR landlords' market penetration increases with *ex ante* homeownership rates (Panel A) and rent-to-price ratios (Panel B).

[8] A related literature in real estate documents and investigates the sources of the time-series and spatial dispersion in homeownership rates and rental yields in the United States (Demers and Eisfeldt 2022; Desmond and Wilmers 2019; Halket 2024).

Fact 2. Corporate SFR landlords geographically concentrate their operation

After entering the market, corporate SFR landlords concentrate their operations geographically. Figure 3 shows the total number of properties acquired by corporate SFR landlords in each ZIP Code between 2012 and 2020. Compared to their geographic concentration in the first two years (Panel A), corporate SFR landlords show minimal geographic diversification in subsequent years (Panel B), focusing instead on increasing concentration in their initial areas of entry and expanding radially to adjacent locations. Landlord-level regression results (Panel C) confirm this observation. Each additional property acquired by a corporate SFR landlord in a given Census tract predicts the purchase of 0.4 more properties in that Census tract the next year.

It is *ex ante* unclear whether geographic clustering is the dominant strategy for corporate SFR landlords. On the one hand, clustering limits the financial gains from diversification, reducing landlords' ability to mitigate risks from local housing and labor market shocks. Furthermore, geographic concentration can lead to cannibalization in the rental market.

On the other hand, local scale economies arise from geographic concentration. As I describe in Section 2, prior attempts at institutionalizing the SFR sector found that operating a geographically dispersed set of properties is too costly. Annual disclosures and executive interviews also indicate that the gains from geographic concentration, primarily due to reduced operational costs, are substantial.[9] Large landlords' limited spatial expansion and increasing local concentration align with their strategy of achieving cost efficiency by building local scale.[10] I revisit this intuition in establishing **Fact 3**.

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[9] According to the 2012 SEC filing, *Invitation Homes*, one of the largest corporate SFR landlords, designed their portfolios to "capture the operating benefits of local density as well as economies of scale that [they] believe cannot be readily replicated," "through disciplined market and asset selection" (Invitation Homes Inc. 2017). Similarly, *American Homes 4 Rent* states that they "believe that in-house property management enables [them] to optimize rental revenues, effectively manage expenses, realize significant economies of scale, and standardize brand consistency…" (American Homes 4 Rent 2019).

[10] Despite the local scale achieved by large landlords, the single-family rental sector remains dominated by atomistic landlords, resulting in low market concentration. The Herfindahl-Hirschman Index (HHI) at the Census tract level is below 100, while in the multifamily sector, it exceeds 2,500 in some New York City Census tracts (Calder-Wang and Kim 2024; Watson and Ziv 2024). In the existing literature, Gurun, Wu, Xiao and Xiao (2023) find that increased market concentration from mergers of corporate SFR landlords leads to higher rents, they attribute part of this to potential improvements in neighborhood amenities, such as reduced crime. Thus, while market power in the single-family rental market is a valid policy concern, I abstract away from this consideration in this paper and leave it for future research.

Fact 3. To achieve local scale, corporate SFR landlords exhibit high willingness-to-pay

An open question is *how* corporate SFR landlords achieve local scale in housing markets with few rentals supplied despite high rent in equilibrium. I find that corporate SFR landlords achieve local scale by paying a premium to acquire properties. Then, I show that landlords' incentives for geographically concentrating their portfolio drives their high willingness-to-pay.

Landlords pay a 9% premium on average — I estimate corporate SFR landlords' willingness-to-pay exploiting repeated sales of a property. I control for unobserved property characteristics in addition to a rich set of observed hedonics and local housing market trends.

$$\ln \textit{Price}_{ist} = \beta \textit{SFR Buyer}_{ist} + \underbrace{\underbrace{\alpha_i}_{\text{Property}} + \underbrace{\gamma X_{it}}_{\text{Hedonic-Time}} + \underbrace{\zeta_{g(i)t}}_{\text{Geography-Time}}}_{\equiv \chi_{it}} + \epsilon_{ist} \tag{1}$$

SFR Buyer$_{ist}$ is a binary variable indicating whether the buyer of property i in sale s, occurring in year t, is a corporate SFR landlord. Property fixed effects control for time-invariant characteristics (e.g., whether the house is south-facing). Hedonic-time controls account for variations in time-varying property characteristics (e.g., a garage renovation) not captured by property fixed effects, as well as changes in the value of the same characteristic over time (e.g., the increased value of a large garage which can double as a home office in 2020 compared to 2012). Lastly, I control for time-geography trends using fixed effects at different levels, ranging from ZIP Code-year to street-month.

The identifying assumption is that conditional on controls and geography-time fixed effects, the identity of the buyer, *SFR Buyer*$_{ist}$, does not correlate with unobserved characteristics of the transaction that also affect prices. When this assumption holds, (1) identifies the parameter of interest β, the percent price premium that corporate SFR landlords pay to acquire properties.[11]

Table 1 reports the results from the repeat-sales regression. Across different specifications, I consistently find that corporate SFR landlords pay an approximately 9% premium over other

[11] For unobserved characteristics to pose threats to identification, such features must be time-variant, omitted from the set of hedonics already included in the model, and cannot be common local market trends. One such scenario is when corporate landlords are particularly good at identifying properties that are momentarily in a good shape due to unobserved factors (e.g., the current tenant took great care of the lawn). In Appendix Section C.2, I discuss this hypothesis and show evidence suggesting that such bias is unlikely.

buyers. In the baseline specification, which includes property fixed effects, hedonic-time controls, and ZIP Code-year fixed effects, the corporate landlord premium is 10.4% (Column 2). In the most restrictive specification, which includes street-month fixed effects, the premium is slightly attenuated to 8.7% (Column 6). The R^2 is consistently high, ranging from 86.2% to 96.3%.

The sign and magnitude of the observed purchase premium contradict findings in the real estate literature, which suggest that cash and algorithmic buyers typically pay a discount (Buchak et al. 2022; Reher and Valkanov 2024).[12] Reassuringly, the 9% premium paid by corporate SFR landlords is supported by anecdotal evidence. In an industry report interview, a director at a major corporate SFR landlord states that they are willing to pay 10% above market price for properties "in [their] buy box" (Jodka 2022).[13] This anecdote suggests that the stickiness of corporate SFR landlords' location preferences may drive their high willingness-to-pay.[14]

Landlords pay the premium to build local scale — *Why* do corporate landlords pay high prices? I find that corporate SFR landlords pay a premium to concentrate their rental portfolio geographically. I establish this finding by extending the baseline repeat sales regression (1).

$$\ln Price_{islt} = \mu Local\ Scale_{slg(i)t} + \underbrace{\alpha_i}_{\text{Property}} + \underbrace{\alpha_l}_{\text{Landlord}} + \underbrace{\gamma X_{it}}_{\text{Hedonic-Time}} + \underbrace{\zeta_{g(i)t}}_{\text{Geography-Time}} + \epsilon_{islt} \tag{2}$$

$Local\ Scale_{slg(i)t}$ represents the landlord l-specific scale—the size of the rental portfolio—in location $g(i)$ at the time property i is acquired in sale s. It is a time-varying measure of the landlord's local portfolio size. The coefficient μ represents the additional price premium that corporate SFR landlords pay to increase their local market scale.

Table 2 reports the results. In the preferred specification, a one percent increase in local scale

[12] Reher and Valkanov (2024) find that cash buyers pay an 11% discount compared to mortgaged buyers, attributing this to sellers' aversion to the uncertainties of mortgaged offers. Corporate SFR landlords often use commercial mortgages and are not true cash buyers, but they do not pose the same transaction risks as conventional residential mortgages. This suggests that corporate SFR landlords should be able to acquire properties at a discount. Buchak, Matvos, Piskorski and Seru (2022) find that "iBuyers," who use algorithmic pricing, pay an average 4% discount. Corporate SFR landlords rely on similar algorithms to identify properties (Invitation Homes Inc. 2021; Raymond 2024), yet they pay a premium.

[13] The "buy box" is an industry term used to specify properties within an investor's targeted locations and characteristics.

[14] In Appendix Section C.2, I show that the corporate SFR landlords' spurchase premium is robust to controlling for cash purchases and in subsample analyses limited to non-distress sales and properties never involved in distress sales.

at the Census tract level is associated with a 0.9% additional price premium (Column 1). Using non-parametric bins of landlord scale instead of a continuous measure yields similar results. The first 50 purchases are associated with a 0% price premium, while each subsequent bin shows an increasing premium (Columns 5-8).[15]

Columns 2 and 4 report results for the same regression at the ZIP Code level, a larger geographic unit than a typical Census tract. The price premium for the continuous scale measure is 0.3%, one-third of the baseline Census tract-level estimate. The purchase premium using non-parametric bins is also smaller, though it increases with landlord scale, similar to the Census tract-level results. Overall, the premium associated with scale at the Census tract level is three times larger than that at the ZIP Code level. In Appendix C.1, I show direct evidence that operational costs, such as maintenance and property management, decrease as landlords' scale increases.

These results are consistent with the evidence that local scale leads to cost efficiencies. Landlords are willing to pay a premium to build local scale that gives them operational benefits. However, these gains diminish with spatial sparsity, highlighting the localized nature of scale economies in rental supply. What this finding also highlights is that the costs of acquiring additional properties grow as corporate landlords expand their portfolios. This potentially serves as a natural check on the scale of corporate landlords, limiting their ability to expand.

4. Consequences of corporate SFR landlords on housing markets and neighborhoods

In this section, I present my key findings on the consequences of corporate SFR landlords. Using property-level event studies, I establish that corporate landlords convert owner-occupied homes to rentals and that this conversion reduces barriers to neighborhoods for financially constrained households who cannot afford homeownership. Expansion in rental supply lowers rents, and raises home prices. In response, incumbents who are more exposed to the new renters are more likely to move out of the neighborhood. Furthermore, I find that the property-level effects of corporate

[15] These findings rule out misinformation as a potential driver of the corporate SFR landlords' purchase premium. Corporate landlords who are out-of-town investors may overestimate property values by failing to account for local factors (Chinco and Mayer 2016). However, the results show that the purchase premium increases with landlords' local scale—a measure of prior exposure to and experience in the market—suggesting that adverse selection or misinformation is unlikely to explain their overpayment. If landlords overpaid due to poor information, they should correct this over time as they gain local experience. Instead, corporate SFR landlords exhibit higher willingness-to-pay as they increase their local market exposure, contradicting this intuition. The misinformation channel is discussed further in Appendix Section C.2.

landlords aggregate to neighborhood-level changes, as evidenced by Census tract-level event studies. In Census tracts where corporate landlords enter, homeownership decreases and residential segregation decreases.

4.1. Empirical design

Property-level event study — One empirical challenge is that local housing stock and demographic compositions change over time. To control for composition effects, I leverage my property-level panel on home prices, rents, and tenant characteristics. I control for property fixed effects to account for unobserved, time-invariant property characteristics. Another challenge is the endogenous entry of landlords into a neighborhood. To address this concern, I estimate the direct effects of corporate landlords using property-level event studies, exploiting variations in when properties are acquired by landlords. Specifically, I estimate the following event-study regression.

$$\textit{Property Characteristics}_{it} = \sum_{k \neq -1} \beta_k \underbrace{\textit{Years Since SFR Purchase}_{it}^{k}}_{\equiv \mathbb{1}\{t - \textit{Year SFR Purchased } i = k\}} + \underbrace{\alpha_i}_{\text{Property}} + \underbrace{\zeta_{g(i)t}}_{\text{Geography-Time}} + \epsilon_{it} \quad (3)$$

Identification relies on the parallel trends between the treated properties and other properties within the same neighborhood, defined as a Census tract. When this assumption is satisfied, β estimates the direct effects of corporate SFR landlords on property-level outcomes. Throughout the various outcomes, I observe parallel pre-trends followed by a sharp change in property-level outcomes around the time when a property is converted from owner-occupied housing to a rental. This suggests that properties acquired by a landlord were not on differential pre-existing trends in property-level characteristics such as tenancy status or household characteristics.

Census tract-level event study — I then investigate whether the effects observed at the property level aggregate to neighborhood-level changes. To do this, I conduct Census tract-level event studies, leveraging the variation in the timing of corporate landlords' entry.

$$\textit{Tract Characteristics}_{jt} = \sum_{k \neq -1} \beta_k \underbrace{\textit{Years Since SFR Entry}_{jt}^{k}}_{= \mathbb{1}\{t - \textit{Year SFR Entered } j = k\}} + \underbrace{\alpha_j}_{\text{Neighborhood}} + \underbrace{\zeta_{g(j)t}}_{\text{Geography-Time}} + X_j\gamma + \epsilon_{jt} \quad (4)$$

It is important to note that the identification does not assume random entry of landlords. Instead, the identification assumption is that in the absence of corporate landlord entry, Census tracts with and without landlord entry would have evolved similarly, conditional on fixed effects and time-invariant *ex ante* covariates.

Two institutional details about corporate landlords strengthen this assumption. First, corporate landlords are limited in their scope for selecting Census tracts based on anticipated, tract-specific trends. As outlined in Section 2, corporate landlords initially relied on bulk sales to acquire properties, often in pre-packaged pools determined by the seller (e.g., FHFA). This restricted the landlords' ability to cherry pick specific properties or Census tracts (Ganduri et al. 2023). Consistent with this intuition, Table 3 shows balance of key covariates—share White households and median household income—between Census tracts where landlords enter in 2012, and those where they do not.

Moreover, once corporate landlords enter a Census tract, they tend to increase concentration within the tract or expand radially outward to adjacent tracts to capitalize on localized scale economies, as I demonstrate in Section 3. This strategy differs from a strategy of selecting neighborhoods in other regions based on pre-existing trends, and highlights corporate landlords' dependence on building scale around initial entry points. These factors motivate including geography fixed effects such as a county or ZIP Code fixed effects in the baseline specification. With the inclusion of geography fixed effects, the parallel trends assumption is that Census tracts where landlords enter are not on differential trends controlling for geography-specific trends.

Second, I leverage the predictability of landlord entry. Table 3 shows that *ex ante* neighborhood characteristics and geography fixed effects explain nearly 50% of the variation in large landlords' entry into Census tracts. In my baseline specification, I include control for these factors to mitigate potential omitted variable bias (OVB). For robustness, I also apply a predictive model for landlord entry and use inverse probability weighting (IPW) to account for the likelihood of treatment where identification relies on the conditional independence assumption (CIA). Although balance is not required for identification, these checks reinforce confidence that the tracts with and without corporate landlord entry would not have differed systematically in outcomes.[16]

[16] I also find that the results are robust to heterogeneity-robust estimators (Callaway and Sant'Anna 2021).

4.2. Results

Corporate SFR landlords reallocate owner-occupied housing to rentals — The first step in my analysis is to examine whether corporate SFR landlords reallocate owner-occupied housing to rentals and decrease local homeownership. While it might seem obvious that property acquisition by landlords would reduce the number of owner-occupied housing, the effect is not necessarily straightforward. If corporate SFR landlords primarily acquire properties that are already renter-occupied, their entry changes the identity of the landlords without necessarily affecting properties' tenancy status. This distinction is essential for understanding whether corporate landlord entry directly impacts local homeownership levels.

To evaluate whether corporate SFR landlords reallocate properties from the ownership segment to the rental segment, I leverage data on the tenancy status of each property and exploit variations in the timing of each property's sale to a corporate SFR landlord. I identify the exact date a property is sold to a corporate SFR landlord using housing transactions data and infer the tenancy status—whether a property is owner-occupied or renter-occupied—from annual property assessment data. I then estimate the following property-level event study regression.

$$\mathbb{1}\{\textit{Unit is Owner-occupied}\}_{it} = \sum_{k \neq -1} \beta_k \textit{Years Since SFR Purchase}_{it}^{k} + \alpha_i + \zeta_{g(i)t} + \epsilon_{it} \quad (5)$$

Years Since SFR Purchase$_{it}$ represents the relative time to the year that a corporate SFR landlord acquires property i. Census tract-year fixed effects, $\zeta_{g(i)t}$, control for common neighborhood-level trends. Identification relies on the parallel trends assumption: in the absence of a corporate SFR landlord purchase, the housing tenure status of properties that are eventually acquired by corporate SFR landlords and that of other properties in the same neighborhood would have followed similar trends.

Panel A of Figure 5 presents the results, with two key takeaways. First, the effect is large and negative, indicating that a significant fraction of properties purchased by corporate SFR landlords are converted from owner-occupied to rental properties. Descriptive evidence reveals that approximately 70% of properties acquired by corporate landlords were previously owner-occupied, implying that these acquisitions result in a reallocation to rental status rather than merely a change

in landlord identity. Second, the effects persist for at least six years following the sale, suggesting that these properties remain in the rental market rather than returning to homeownership.[17] This observation aligns with empirical evidence and institutional background which suggest that corporate SFR landlords focus on long-term rental yield over capital gains (Garriga et al. 2023).[18] As a result, only a small fraction of properties they acquire are resold on the market, potentially to homeowners to re-occupy.

Does the conversion of individual properties from owner-occupied housing to rentals aggregate to neighborhood-level changes in homeownership? I now present evidence indicating that neighborhood-level homeownership decreases following the entry of corporate SFR landlords. To capture this effect, I exploit the staggered entry of corporate SFR landlord across neighborhoods and estimate the following Census tract-level event study regression.

$$\textit{Homeownership}_{jt} = \sum_{k \neq -1} \beta_k \underbrace{\textit{Years Since SFR Entry}_{jt}^{k}}_{=\mathbb{1}\{t-\textit{Year SFR Entered}_j=k\}} + \underbrace{\alpha_j}_{\text{Neighborhood}} + \underbrace{\zeta_{g(j)t}}_{\text{Geography-Time}} + X_j\gamma + \epsilon_{jt} \quad (6)$$

Years Since SFR Entry$_{jt}$ represents the relative time to the year that a corporate SFR landlord first acquires a property in Census tract j. I also incorporate county-year fixed effects, $\zeta_{g(j)t}$, to control for broader geography trends. Identification relies on the conditional parallel trends assumption: absent the entry of corporate SFR landlords, Census tracts with and without such entry within the same county would have exhibited similar trends in homeownership rates, controlling for relevant *ex ante* characteristics.

Panel B of Figure 5 presents the results from the Census tract-level event study regression on homeownership. Following the entry of corporate SFR landlords, local homeownership declines by approximately 0.8 percentage point, with this effect persisting for at least six years beyond the initial year of entry. This sustained drop in homeownership is consistent with earlier property-level evidence indicating that few properties acquired by corporate SFR landlords are sold back to the market.[19] Additionally, there is no significant pre-trends, which suggests that neighborhoods with

[17] The gradual decline in homeownership following the discrete jump is likely due to property assessments not occurring annually.

[18] Landlords often face frictions in selling properties due to FHFA-imposed restrictions on bulk sale acquisitions and rules governing CMBS transactions.

[19] This evidence further suggests that neither new construction of owner-occupied housing nor the reconversion of rental properties back to owner-occupied status offsets the initial reallocation caused by corporate SFR landlords.

landlord entry were not trending differently before entry.[20]

Home prices rise and rents fall — Earlier findings on corporate SFR landlords' purchase premium which I describe in Section 3 suggest that these landlords directly increase barriers to homeownership. By paying high prices and making "all cash"-like offers, they may outcompete prospective homebuyers looking to buy the same home through mortgage financing.

Another way that corporate landlords can drive up the costs of homeownership is by reducing the supply of homes available for purchase, leading to higher equilibrium home prices. Simultaneously, converting owner-occupied properties into rentals expands the supply of rental housing, potentially lowering rents. To estimate these procompetitive effects, I leverage property-level transaction prices and listing rents, estimating property-level event studies.

$$\ln \textit{Cost of Housing}_{ijt} = \sum_{k \neq -1} \beta_k \underbrace{\textit{Years Since SFR Entry}_{jt}^{k}}_{=\mathbb{1}\{t-\textit{Year SFR Entered } j=k\}} + \underbrace{\alpha_i}_{\text{Property}} + \underbrace{\zeta_{g(j)t}}_{\text{Geography-Time}} + X_j\gamma + \epsilon_{ijt} \quad (8)$$

Years Since SFR Entry$_{jt}$ represents the relative time to the year that corporate SFR landlords first purchase a property in Census tract j. The dependent variable, *Cost of Housing*$_{ijt}$, is either the sales price or listing rent of property i in location j at time t. Property fixed effects, α_i, control for time-invariant property characteristics, addressing unobserved quality variations in the rental stock—a potential source of bias if ownership and rental markets are segmented by quality.[21]

Note that this formulation differs from the property-level event study regression equation (6). Instead of property acquisition, the treatment variable is whether corporate landlord entered the Census tract where the property is located. The identification assumption is that in the absence of corporate landlord entry, properties located in Census tracts with landlord entry would have evolved similarly to properties located in other Census tracts. Again, the identification does not hinge on

[20] I also estimate a long-difference specification, measuring the change in homeownership from 2011—the year prior to any property acquisitions by corporate SFR landlords—to 2020, against the corresponding change in corporate activity over this period. Note that corporate activity was mechanically zero in 2011.

$$\Delta \textit{Homeownership}_{j,2011-20} = \alpha + \beta \Delta \textit{SFR Share}_{j,2011-20} + \epsilon_j \quad (7)$$

Panel C of Figure 5 reports these results, showing that homeownership decreases linearly with corporate landlord activity at the Census tract level.

[21] For instance, corporate SFR landlords rent entire properties, unlike smaller mom-and-pop landlords who may rent out individual rooms or basements in single-family homes. Thus, corporate landlord entry could shift the quality distribution of the rental stock, which would mechanically increase the median rent.

random entry of landlords. To add credibility to the the parallel trends assumption, I control for geographic time trends using county-year fixed effects, $\zeta_{g(j)t}$, and time-invariant *ex ante* covariates X_j as I discuss in Section 4.1.

Figure 6 presents the results. Landlords lead to moderate price changes, with rents decreasing by approximately 2% (Panel A) and home prices increasing by 1.5% (Panel B) on average. These findings align with the pro-competitive effects of expanding rental supply in areas where it was previously limited and expensive, at the expense of reducing the supply of homes for prospective homebuyers. In Appendix Section C.3, I present results using rents and prices from the PUMS data.

Financially constrained households move into rental units — Who moves in when properties are converted from owner-occupied housing to rentals? Understanding changes in the spatial sorting of households resulting from the reallocation of housing is important, as it can impact welfare beyond changes in housing costs.

To investigate who moves into neighborhoods following the conversion of properties into rentals, I conduct a property-level event study. I leverage a property-household-level panel dataset, which I construct by merging household address history data with property-level information. From this dataset, I observe the characteristics of tenants residing in each property over time. I then estimate the following property-household-level event study regression.

$$\textit{Household Characteristics}_{it} = \sum_{k \neq -1} \beta_k \underbrace{\textit{Years Since SFR Purchase}_{it}^{k}}_{\equiv \mathbb{1}\{t - \textit{Year SFR Purchased } i = k\}} + \underbrace{\alpha_i}_{\text{Property}} + \underbrace{\zeta_{g(i)t}}_{\text{Geography-Time}} + \epsilon_{it} \tag{9}$$

Years Since SFR Purchase$_{it}$ represents the relative time to the year when a corporate SFR landlord acquires property i. I also include geography-by-time fixed effects, $\zeta_{g(i)t}$, where $g(i)$ denotes the Census tract containing property i. The dependent variables, *Household Characteristics*$_{it}$, include measures of financial constraints, such as Debt-to-Income (DTI) ratio, as well as other characteristics such as the race and age of the head of household, household income, household wealth, and number of children, as estimated by the data vendor using proprietary data ranging from voter registration to vehicle purchase data. Identification relies on the parallel trends assumption: in the absence of corporate SFR landlord purchases, the characteristics of households residing in prop-

erties acquired by corporate landlords and in other properties within the same Census tract would have trended similarly.

Panels A and B of Figure 7 illustrate that properties purchased by corporate SFR landlords immediately begin to host households that are more financially constrained. Panel A shows that households moving into these rental properties are significantly less likely to meet the conventional Debt-to-Income (DTI) requirement—total monthly debt payments relative to income—necessary to obtain a mortgage for the same property.[22] These households are nearly 30% less likely to satisfy this mortgage qualification compared to incumbent households.

Panel B shows that households moving into SFR properties are also two percentage point more likely to be Black compared to the existing residents. In Appendix Section C.4, I further show that incoming households tend to have lower income, lower wealth, and are younger compared to incumbents. These results support the notion that households moving into SFR properties are financially constrained and that demographic characteristics, such as race, often serve as strong proxies for financial constraints. Overall, rental supply by corporate SFR landlords increases neighborhood access for financially constrained households who might otherwise be unable to afford owner-occupied housing in the same area.

Where do these households move from? Using the same property-household panel data, I find that in-migrant renters tend to move from poorer neighborhoods compared to other movers. Panel C of Figure 7 presents a binned scatter plot of the median income in the destination Census tract against the median income in the origin Census tract for migrant households. The fitted line for households moving into corporate SFR landlord-owned properties lies above that for other migrant households, indicating that SFR movers experience a larger increase in neighborhood income upon moving. Combined with previous findings, this spatial reallocation pattern suggests that converting owner-occupied housing to rentals facilitates the in-migration of financially constrained renters into more desirable neighborhoods.

Incumbents endogenously sort out in response to renter entry — How do incumbent households respond to the arrival of renters? It is well documented that homeowners' antagonism toward renters is one of the key drivers of the *NIMBY* movement, which often seeks to limit housing supply through

[22] Conventional GSE loans require a DTI ratio below 43%.

policies such as single-family zoning.[23] Thus, the endogenous sorting of households in response to renter entry may have significant implications for spatial sorting in equilibrium.

Motivated by this, I examine whether incumbent households respond to the entry of renters by exiting the neighborhood. To do so, I exploit variation in the proximity of incumbent homeowners to properties that are eventually purchased by a corporate SFR landlord and subsequently rented out. Specifically, I estimate the following cross-sectional regression.

$$\mathbb{1}\{\textit{Household Move Out}_{it}\} = \beta_t \ln \textit{Distance to Nearest SFR Property}_i + \zeta_{g(i)} + \epsilon_{it} \tag{10}$$

Distance to Nearest SFR Property$_i$ represents the Euclidean distance between property i and the nearest property eventually acquired by a corporate SFR landlord. To avoid mechanical effects, I exclude households who sell directly to corporate SFR landlords. I also restrict the sample to households who have lived in the same property for at least four years before corporate landlord entry, focusing on incumbent households who are more attached to the neighborhood. I then control for granular geography-time fixed effects to isolate the effects of renter entry from broader neighborhood changes (Bayer et al. 2024). The approach compares households who are more exposed to a new renter neighbor, based on *ex ante* proximity to properties that will become rentals, to households farther from the new rental properties within the same neighborhood. I estimate (10) separately for each calendar year for a range of years before and after the entry of corporate SFR landlords in neighborhood $g(i)$.

Panel D of Figure 7 shows the results. Households closer to new rental properties move out at a higher rate than other incumbent households in the same neighborhood. A 1% increase in distance to the nearest SFR property is associated with a one percentage point decrease in the likelihood of moving out. Prior to the entry of corporate SFR landlords, distance to properties that would eventually become rentals does not influence out-migration decisions. The out-migration is not driven by aggregate neighborhood-level changes, because they are absorbed in geography fixed effects. Instead, these results suggest that households respond directly to the presence of renters

[23] A *New York Times* article titled "As Renters Move In, Some Homeowners Fret" quotes Ms. Amador who says "when the people buy a house, the people's more nice…Renters, they don't care about neighbors. We don't know who's going to move in. We worry all the time because we don't know. I have children." (Dewan 2013). Ironically, at the time of the interview, Ms. Amador was herself a renter, having lost her home during the foreclosure crisis.

nearby, potentially due to perceived disamenities associated with renter neighbors.[24]

Aggregate neighborhood-level segregation decreases — Finally, what do the in-migration of financially constrained households and the endogenous out-migration of nearby incumbents imply for aggregate neighborhood-level outcomes? To answer this question, I estimate the Census tract-level event study equation (6) using measures of residential segregation as outcomes.

$$Segregation_{jt} = \sum_{k \neq -1} \beta_k \underbrace{Years\ Since\ SFR\ Entry_{jt}^{k}}_{=\mathbb{1}\{t-Year\ SFR\ Entered_j=k\}} + \underbrace{\alpha_j}_{\text{Neighborhood}} + \underbrace{\zeta_{g(j)t}}_{\text{Geography-Time}} + X_j\gamma + \epsilon_{jt} \quad (11)$$

$Segregation_{jt}$ includes measures of demographic composition and diversity at the Census tract level. Panels E and D of Figure 7 present the main results. After the entry of corporate SFR landlords, the share of non-White households increases (Panel E), which also raises White households' exposure to Black households at the Census tract level (Panel D).[25]

5. A spatial model of residential choice with financial constraints to homeownership

My empirical findings suggest that changes in home prices and rents alone do not fully capture the welfare implications of converting owner-occupied homes to rentals. To incorporate the various channels of welfare, I develop a spatial equilibrium model of neighborhoods with segmented ownership and rental markets. On the demand side, the model features households with heterogeneous initial wealth who sort into neighborhoods according to their financial constraints on homeownership. Homeowners prefer living near other homeowners and endogenously respond to changes in neighborhood demographic composition. On the supply side, landlords provide rental housing while facing neighborhood-specific costs. Corporate landlords benefit from economies of scale by operating a large number of rental properties, which affords them cost efficiencies relative to individual mom-and-pop landlords, although they encounter increasing marginal costs as their market presence expands.

[24] This result is robust to controlling for transaction prices, suggesting that capital gains do not explain the out-migration.

[25] In Appendix Section C.4, I show the robustness of these results to alternative segregation measures, such as the exposure of White households to Black households, the "evenness" of the spatial distribution of racial groups, and the share of Black households.

5.1. Setup

Environment — I consider a setting in which households with heterogeneous initial wealth choose their residential location and housing tenure (i.e., whether to own or rent) within a metropolitan area, defined as a city and its suburbs, embedded in a wider economy (i.e., the United States). Neighborhoods are indexed by $j \in \{1, \ldots, J\}$. Each neighborhood contains two types of housing differentiated by tenure—rental housing and owner-occupied housing—indexed by $h \in \{\underline{o}wn, \underline{r}ent\}$. The total housing stock in neighborhood j is fixed at $\bar{H}_j = H_{jo} + H_{jr}$.[26] Households, indexed by ω, are heterogeneous in their initial endowment m^ω, drawn from an exogenous, economy-wide wealth distribution. Thus, the initial distribution of households across the wealth spectrum, $L(m)$, forms the total population $\bar{L} = \int_m L(m)\, dF(m)$.

The model is static and features two stages. In the first stage, local atomistic property owners are each endowed with one unit of housing and maximize returns by deciding between selling the property to a household or becoming a local landlord and renting it out. Households choose a location and housing tenure pairing to maximize their indirect utility.

In the second stage, a corporate landlord enters the housing market. This corporate landlord differs from local atomistic landlords in two ways: it can own multiple properties and operate across various neighborhoods. The corporate landlord benefits from economies of scale, as operational costs decrease with the size of its local rental portfolio. However, it faces increasing marginal market penetration costs due to the heterogeneity in acquisition costs from incumbent owners. Weighing these factors, the corporate landlord optimally determines the scale of its rental portfolio. As such in the second stage, rental housing is supplied by both local atomistic landlords and the corporate landlord. Households and local landlords re-optimize in response to the entry of corporate landlords.[27]

[26] To focus on the reallocation margin, I abstract away from new construction and assume that total housing supply in each location is fixed.

[27] The model features a single corporate landlord, abstracting from competition *among* large-scale landlords or rent-setting power by the corporate landlord. However, the corporate landlord still faces competition from atomistic landlords who, as data suggests, dominate this market. Additionally, as described in subsequent sections, increasing marginal market penetration—property acquisition—limit the corporate landlord's expansion.

5.2. Stage 1. The economy before the corporate landlord

I begin by describing the decisions of households and local landlords in stage 1, the initial state of the economy without a corporate landlord. I then outline how the choice environment changes in stage 2 with the entry of a corporate landlord. For simplicity, I suppress stage superscripts where possible.

Households — Households consume one unit of housing by choosing the location-tenure pair (j, h) that maximizes their utility.[28] However, financial constraints restrict households' ability to own a home: households can only own in neighborhoods where their initial endowment m meets or exceeds a certain fraction of the local house price p_{jo}.[29] There is no similar constraint on renting. Households also derive additional utility from amenities specific to their chosen location-tenure (j, h), which depend endogenously on the demographic composition of the neighborhood.

Preferences — A household ω with initial endowment m^ω selects a location j and housing tenure h to maximize its indirect utility:

$$v^\omega_{jh} = B_{jh}(w_j + m^\omega - p_{jh})\eta^\omega_{jh} \tag{12}$$

Choosing the location-tenure pair (j, h) provides households with amenities B_{jh}, wage w_j, and idiosyncratic amenities η^ω_{jh}. The cost of living is simply the cost of housing, p_{jh}. Motivated by my empirical findings on the out-migration of incumbent households in response to incoming renters, I assume that local amenities B_{jh} consist of a fundamental term, $\bar{B}_{jh}$, and an endogenous component that depends on the demographic composition of the neighborhood.

$$B_{jh} = \bar{B}_{jh} \cdot \left(\frac{L_{jh}}{L_{jh^-}} \right)^\rho \tag{13}$$

[28] Unit demand for housing introduces a simple non-homotheticity in housing consumption based on disposable income (see Couture et al. 2024). This approach differs from the typical Cobb-Douglas utility over a numeraire good and housing, which assumes a constant γ share of disposable income is allocated to housing: $p_{jo}h^\omega_j = \gamma(w_j + m^\omega)$.

[29] This restriction resembles a down-payment constraint, which is a significant barrier for many prospective homebuyers. In a survey of single-family rental tenants, 64% reported that the inability to afford a down payment and closing costs was their main barrier to homeownership, compared to other factors such as low credit scores (52%) (Galante et al. 2018). See also Goodman, McCargo, Golding, Bai and Strochak (2018).

L_{jh^-} is the population of the opposite tenancy status, and ρ captures the strength of households' homophily preferences, i.e., their (dis)preferences for living near neighbors of the opposite housing tenure. Idiosyncratic preferences η^{ω}_{jh} are distributed as EV2 with a shape parameter $\nu > 1$. The scale parameter is normalized to 1, as it simply enters multiplicatively with B_{jh}.

The difference between $\bar{B}_{jo}$ and $\bar{B}_{jr}$ captures households' preferences for homeownership relative to renting. This formulation allows households to derive non-pecuniary benefits from homeownership, which popular narratives suggest may be substantial.[30] Furthermore, the benefits of homeownership may vary across different locations.

Financial constraint — Households face financial constraints to homeownership. I model this as an explicit constraint on the choice set of households that depend on their initial endowment. Specifically, households must have endowment m large enough to satisfy a local "*loan-to-value* (LTV)" limit to qualify for homeownership. Accordingly, the set of neighborhoods where a household with endowment m can choose to become a homeowner is determined by local home prices and an exogenous parameter θ that determines the stringency of financial constraints to homeownership.

$$O(m) = \{j : m \geq (1-\theta)p_{jo}\} \tag{14}$$

Renters are not subject to a similar choice-set constraint. Thus, the set of location-tenure pairs (j, h) that a household with endowment m can choose from is the union of neighborhoods where they can own a home and those where they can rent.

$$\mathcal{I}(m) = \{(j, o) : j \in O(m)\} \cup \{(j, r) : j \in \{1, \ldots, J\}\} \tag{15}$$

Housing demand — Extreme value preference shocks yield a straightforward expression for the equilibrium share of households with endowment m who choose location-tenure (j, h).

$$\lambda_{jh}(m) = \frac{(B_{jh}(w_j + m - p_{jo}))^{\nu}}{\sum_{(k,s)\in\mathcal{I}(m)}(B_{ks}(w_k + m - p_{ks}))^{\nu}} \qquad \text{from} \max_{jh\in\mathcal{I}(m^{\omega})} v^{\omega}_{jh} \tag{16}$$

[30] In a recent survey, 89% of Americans responded that "owning a home is either essential or important to their vision" of achieving the "American dream" (Wolfe 2024).

Combined with unit housing demand, total housing demand for (j, h) is given by aggregating housing demand across the wealth distribution.

$$H_{jh}^D = \int_m H_{jh}^D(m)\, dF(m) = L_{jh} \qquad H_{jh}^D(m) = \lambda_{jh}(m) \cdot L(m) = L_{jh}(m) \tag{17}$$

Landlords — Landlords are indexed by ι and belong to one of two types: local (l) atomistic landlords and a global (g) corporate landlord. Both types of landlords invest in rental housing to maximize profits. A local landlord makes a discrete choice between selling their property and operating it as a rental. In contrast, the global landlord chooses the optimal scale of their rental portfolio in each location to maximize profits.

Iceberg operational cost — Investing in a rental property incurs an *ad valorem* iceberg operational cost, c_j^ι that is composed of a location fundamental term $\bar{c}_j$ and the landlord's local scale, H_j^ι.

$$c_j^\iota(H_j) = \bar{c}_j \cdot (H_j^\iota)^{-\mu} \tag{18}$$

The parameter $\mu \in [0, 1)$ governs the extent to which marginal operational costs decrease with local scale, capturing the strength of scale economies in rental supply. This formulation is motivated by empirical evidence, corporate landlords' annual reports, and insights from industry experts, which suggest that costs related to maintenance, renovation, and management decrease with a landlord's scale within a locality.[31]

Atomistic landlords' problem — A local atomistic property owner l is endowed with a single unit of housing in location j. The owner can either sell the property to a household or rent it out. If they decide to rent it out and become a local landlord, they incur an operational cost of $\bar{c}_j^l \cdot (1)^{-\mu} = \bar{c}_j$. Additionally, landlords are heterogeneous in their idiosyncratic productivity in rental provision, ϵ_j^l, which enters their returns multiplicatively. Accordingly, property owner l makes a discrete choice between selling the property at price p_{jo} or renting it out to earn $\frac{p_{jr}}{\bar{c}_j}\epsilon_j^l$.

Assuming ϵ_j^l follows an EV2 distribution with shape parameter κ, the total rental supply pro-

[31] The local landlord's operational cost is a special case of the corporate landlord's cost function, as $\bar{c}_j \cdot (1)^{-\mu} = \bar{c}_j$. Similarly, if $\mu = 0$, there are no returns to scale, and the corporate landlord faces the same costs as atomistic landlords, with $\bar{c}_j \cdot (H_j)^0 = \bar{c}_j$.

vided by local landlords is expressed as the following.

$$H_{jr}^{S,local} = \underbrace{\frac{\left(\frac{p_{jr}}{p_{jo}\bar{c}_j}\right)^{\kappa}}{\left(\frac{p_{jr}}{p_{jo}\bar{c}_j}\right)^{\kappa}+1}}_{\equiv \pi_{jr}^{local}} \cdot \bar{H}_j \qquad \text{from } \max\left(\frac{p_{jr}}{\bar{c}_j}\epsilon_j^l,\ p_{jo}\right) \tag{19}$$

Market clearing in stage 1 — The equilibrium in the absence of a corporate landlord is given by the vector of home prices and rents, $\mathcal{P} = \{p_{jo}, p_{jr}\}$, consisting of $2 \times J$ unknowns that clear the ownership and rental markets between households and local landlords, resulting in $2 \times J$ equations.

Definition 1. *Given model parameters* $\{\theta, \nu, \rho, \kappa, \mu\}$*, location characteristics* $\{B_{jh}, w_j, \bar{c}_j, \bar{H}_j\}$*, and an exogenous wealth distribution* $\Phi(m)$*, a spatial equilibrium of the model is a distribution of location and tenure choice by endowment* $\{H_{jh}^D(m)(\mathcal{P})\}$*, landlords' housing supply* $\{H_{jh}^S(\mathcal{P})\}$*, and housing costs* $\mathcal{P} = \{p_{jo}, p_{jr}\}$ *such that: (1) households choose the location and tenure pair* (j, h) *that maximize their utility; (2) local landlords make an optimal investment decision; (3) rental markets clear; (4) homeownership markets clear; and (5) local population sums up to total population.*

I reproduce the equilibrium equations in Appendix Section D.1.

5.3. Stage 2. Entry of the corporate landlord

At the beginning of stage 2, a corporate landlord enters the economy, taking the stage 1 equilibrium as given. Since the corporate landlord begins without any property endowment, it must acquire existing properties from incumbent owners. I refer to the cost of property acquisition as the market penetration cost (Arkolakis 2010).

Market penetration cost faced by the corporate landlord — Due to the inframarginality of incumbent owners, the corporate landlord faces increasing marginal market penetration costs. In Appendix D.2, I describe in detail the model structure that generates these increasing costs and formally characterize them. Here, I summarize the intuition.

As the corporate landlord acquires more properties in the local market j, they must do so either from incumbent homeowners with stronger idiosyncratic preferences for the neighborhood, ν_{jo}^{ω}, or

local landlords with high idiosyncratic profitability, ϵ_j^l. To induce these inframarginal incumbents to sell (i.e., to deviate from their optimal decision in stage 1), the corporate landlord must pay increasingly higher prices. For the quantitative analysis and estimation of key model parameters, I use the following non-parametric formulation of market penetration cost, f_j.

$$f_j(H_j^g) = \sum_{h=1}^{H_j^g} f_j'(h) \tag{20}$$

h denotes the order in which the corporate landlord acquires each property in j. The corporate landlord faces increasing marginal market penetration costs, while purchasing the initial property from the marginal incumbent willing to sell at the market price. The following conditions summarize these relationships.

$\frac{\partial f_j'(h)}{\partial h} > 0$	*Increasing marginal market penetration cost*
$f_j'(H_j^g) = \max_{h \in \{1,\ldots,H_j^g\}} f_j'(h)$	*Cost of acquiring the last property*
$f_j'(1) = p_{jo}$	*Cost of acquiring the first property*

The corporate landlord's problem — The corporate landlord chooses the optimal number of properties to acquire and operate as rentals in each location j, denoted by H_j^g. In making this decision, they balance the benefits of returns to scale (which lower operational costs) against the increasing market penetration costs.

$$\max_{H_j^g} \tilde{\Pi}_j^g(H_j^g) = H_j^g \cdot \frac{p_{jr}}{\bar{c}_j \cdot (H_j^g)^{-\mu}} - f_j(H_j^g) - \tau_j \tag{21}$$

The corporate landlord also incurs a fixed entry cost, τ_j, preventing entry in locations where even the optimal scale yields negative profits. Solving the corporate landlord's profit maximization problem provides an equation that links the landlord's scale to the endogenous acquisition prices and the

strength of returns to scale in rental supply.[32]

$$H_j^{g^*} = \left(\frac{f_j'(H_j^g) \cdot \bar{c}_j}{p_{jr}} \cdot \frac{1}{1+\mu} \right)^{\frac{1}{\mu}} \Leftrightarrow f_j'(H_j^g) = (1+\mu) \cdot \left(\frac{p_{jr}}{\bar{c}_j} \right) \cdot (H_j^{g^*})^{\mu} \tag{22}$$

Sources of scale economies — Decreasing operational costs and fixed costs of entry generate two sources of scale economies in the model. On the intensive margin, μ determines the optimal scale of a corporate landlord, given entry. On the extensive margin, the fixed cost τ restricts entry to corporate landlords who can achieve a sufficient scale. Figure 8 summarizes these forces. Where the fixed cost of entry is high, it is unprofitable for corporate landlords to enter, even if they would benefit from scale economies. Second, in areas where the local cost of rental provision c_j is low and equilibrium rental supply is already high, achieving sufficient scale is costly.

Market clearing in stage 2 — The equilibrium in the presence of a corporate landlord is characterized by the vector of home prices, rents, and corporate landlords' market penetration costs, $\mathcal{P}^2$, consisting of $3 \times J$ unknowns. These prices jointly clear the "re-sales" market between stage 1 incumbent owners and corporate landlords, as well as the ownership and rental markets between households, local landlords, and corporate landlords, yielding $3 \times J$ equations.

Definition 2. *Given model parameters* $\{\theta, \nu, \rho, \kappa, \mu\}$*, location characteristics* $\{B_{jh}, w_j, \bar{c}_j, \bar{H}_j\}$*, and an exogenous wealth distribution* $\Phi(m)$*, a spatial equilibrium of the model is a distribution of location and tenure choice by endowment* $\{H_{jh}^D(m)(\mathcal{P}^2)\}$*, landlords' housing supply* $\{H_{jh}^S(\mathcal{P}^2)\}$*, and housing costs* $\mathcal{P}^2 = \{p_{jo}, p_{jr}, f_j(H_j^g)\}$ *such that: (1) households choose the location and tenure pair* (j, h) *that maximize their utility; (2) local landlords and the global landlord make an optimal investment decision; (3) rental markets clear; (4) homeownership markets clear; and (5) local population sums up to total population.*

I reproduce the equilibrium equations in Appendix Section D.1.

Summary of model properties and predictions in relation to the empirical findings

Large-scale landlords leverage scale economies to operate in markets where rental supply is *ex ante* costly and equilibrium rents are high. These landlords reallocate owner-occupied housing to

[32] See Appendix Section D.3 for derivations.

rentals, which raises the price of owner-occupied housing while lowering rents. As a result, low-wealth renters, who face financial constraints (due to binding down payment requirements) and exhibit price sensitivity (due to non-homothetic preferences), move into neighborhoods that were previously unaffordable. Endogenous amenities shaped by the homophily preferences of homeowners and renters further contribute to residential segregation. Additional details on model predictions and comparative statics are provided in Appendix Section D.4.

6. Model quantification and estimation

In this section, I describe how I quantify the model and estimate model parameters. A subset of parameters are estimated using unobserved location characteristics as data, which I obtain through model inversion. Therefore, I describe model quantification and the model inversion procedure before deriving the estimating equations and presenting the results.

6.1. Inputs to the quantitative model

Unit of time, geography, and housing tenure — A unit of time indexed by t corresponds to a calendar year. I use data from 2011 (one year before the first entry of corporate SFR landlords) to 2019. A unit of geography j is a Census tract. Consistent with my reduced form analyses, I use data from Florida, Georgia, North Carolina, and South Carolina. Each j has two types of housing tenure indexed by h—homeownership ($h = o$) and renting ($h = r$).

Neighborhood-level characteristics — The model uses data on local population L_{jh}, income w_j, and housing costs p_{jh} as input.[33] I obtain these data from the 5 year ACS at the Census tract-level.

Economy-wide wealth distribution — Households indexed by ω are heterogeneous in their initial endowment of wealth, which is distributed according to an exogenous distribution $\Phi(m)$. I use data from the Survey of Consumer Finances (SCF) 2013 to form 100 equal sized bins of wealth. SCF is particularly well suited for my analyses as its unit of observation is a household, consistent with my model. Furthermore, SCF disaggregates household wealth into subcategories such as housing wealth. I use this information to infer homeownership across the household wealth distribution and to validate my model.

[33] Note that with unit housing demand assumption, local population L_{jh} equals housing supply H_{jh}.

Normalizing house prices and wealth — Income w_j and rent p_{jr} are flow variables whereas raw household wealth m^ω and house price p_{jo} are stock variables. To make stock variables consistent with flow variables, I normalize raw p_{jo} and m^ω to mimic the annual cash flow they generate. Intuitively, the normalized p_{jot} has the interpretation of the "no-arbitrage" price that makes the marginal household indifferent between owning and renting. Normalized m^ω is the additional annual income generated from liquidating wealth throughout the lifetime. For details on these procedures, see Appendix Section E.1.

Assumptions about income — In the quantitative model, income plays a smaller role than wealth. This is because I focus on the financial constraints to homeownership due to down payment constraints, for which household wealth—instead of income—is a more natural determinant of whether the constraints are binding. And so, I choose a universal income level for all households in the baseline specification. Income is normalized to equal a quarter of the median housing rent in the economy, to roughly match households' housing expenditure share (Finlay and Williams 2022).

Calibrated parameters — θ captures the strength of the financial constraints to homeownership. I calibrate $\theta = 0.8$ to match the loan-to-value (LTV) ratio for conventional mortgages in the United States. This replicates how conventional mortgages require households to put down a down payment at least 20% of the home price. ν captures the sorting elasticity of housing demand and governs the strength of household sorting. I calibrate $\eta = 3.0$ following Couture, Gaubert, Handbury and Hurst (2024).

6.2. Model inversion

With the data and calibrated parameters in hand, I use the structure of the model to obtain unobserved location-tenure-specific amenities B_{jh} and location-specific rental supply frictions $\bar{c}_j$. First, amenities B_{jh} are structural residuals that rationalize the location-tenure distribution of households observed in the data.

Proposition 1. *Given data on wage w_j, housing price p_{jh}, wealth distribution $\Phi(m)$, household sorting elasticity ν, and financial constraint θ, there is a unique (up to scale) vector of B_{jh} that rationalizes the distribution of households across space L_{jh}.*

Proof. See Appendix Section E.2. □

Similarly, $\bar{c}_j$ are location-specific costs of rental supply that rationalize the supply of housing observed in the data.

Proposition 2. *Given housing costs p_{jh}, local housing stock $\bar{H}_j$, and estimates of rental housing supply elasticity κ, there is a unique vector of $\bar{c}_j$ that rationalizes the local allocation of housing H_{jh}.*

Proof. See Appendix Section E.2. □

To find $\{B_{jh}\}$, I begin with a guess of $\{\tilde{B}_{jh}\}$ and employ the following iterative process described in Appendix Section E.2. $\bar{c}_j$ can be inverted out exactly.

6.3. Model-consistent estimation

Returns to density in rental housing supply μ — The strength of the returns to scale in rental housing supply is governed by μ. This is a key parameter that distinguishes large corporate SFR landlords from local atomistic landlords. I derive model-consistent estimating equation that relates μ to the corporate SFR landlords' willingness-to-pay for expansion. The intuition is that the greater the operational benefits of scaling up (i.e., a large μ), the larger the incentives for corporate SFR landlords to expand and their willingness-to-pay to acquire more properties. I derive the estimating equation, starting from the optimization problem of the corporate SFR landlord (equation 22).[34] The resulting equation relates landlords' acquisition prices directly to their returns to scale.

$$
\begin{aligned}
& f_j'(H_j^g) = (1+\mu) \cdot \left(\frac{p_{jr}}{\bar{c}_j}\right) \cdot (H_j^g)^{\mu} \\
& \Rightarrow \ln f_j'(H_j^g)(H_j^g > 1) - \underbrace{\ln f_j'(H_j^g)(H_j^g = 1)}_{\equiv \ln p_{jo}} = \mu \cdot \ln H_j^g \\
& \Rightarrow \ln \textit{Price}_{inlt} = \mu \textit{Local Scale}_{ijlt} + \underbrace{\alpha_i}_{\text{Property}} + \underbrace{\alpha_l}_{\text{Landlord}} + \underbrace{\gamma X_{it}}_{\text{Hedonic-Time}} + \underbrace{\zeta_{jt}}_{\text{Geography-Time}} + \epsilon_{injlt}
\end{aligned}
\tag{23}
$$

The estimating equation is exactly the same as (2) in Section 3. I restate the key identification assumption here and refer the reader to the aforementioned section for details. When the correct

[34] See Appendix Section E.3 for details

set of controls and fixed effects are specified, μ identifies the causal relationship between the price premium and landlord scale. The interpretation is then that μ is the percent price premium paid by a landlord with a one percent larger local scale.

Results — As presented earlier in Section 3, I estimate $\mu = 0.009$ in the preferred Census tract-level specification. Interpreted through the lens of the model, the estimate suggests that a one percent increase in the landlord's local scale within a Census tract leads to a 0.9% reduction in their operating costs. The benefits of local scale dissipate with density: with the broader ZIP Code-level specification, I estimate returns to local scale of around 0.3%. Table 2 presents the full set of results.

Endogenous amenities ρ — Homophilly preferences ρ captures the strength of endogenous sorting of homeowners and renters in response to changes in neighborhood composition. I derive the estimating equation by taking double-differences of equation (13).

$$\Delta \ln \left(\frac{B_{jo}}{B_{jr}} \right) = \underbrace{\Delta \ln \left(\frac{\bar{B}_{jo}}{\bar{B}_{jr}} \right)}_{=0} + 2\rho \Delta \ln \left(\frac{L_{jo}}{L_{jr}} \right) + X_j \beta + \Delta \epsilon_j \tag{24}$$

The Δ-notation denotes relative change ($\Delta \ln x \equiv \ln \frac{x'}{x}$). The first difference (ΔB_{jh}) is with respect to time and the second difference ($\frac{B_{jo}}{B_{jr}}$) is with respect to housing tenure. Fundamental amenities ($\bar{B}_{jh}$) are time-invariant and cancel out from time-differencing. And so, the resulting variation in location-tenure amenities between two equilibria are due to changes in the demographic composition of neighborhoods.

Rental supply elasticity κ — The shape parameter κ of atomistic landlords' idiosyncratic profitability distribution governs how elastically rental supply responds to changes in prices. I derive the odds ratio from equation (19) and the following estimating equation.

$$\Delta \ln \left(\frac{\pi_{jr}^{local}}{1 - \pi_{jr}^{local}} \right) = \kappa \Delta \ln \left(\frac{p_{jr}}{p_{jo}} \right) + X_j \beta + \Delta \epsilon_j \tag{25}$$

The first difference is with respect to time. Note that $\bar{c}_j$ is time-invariant and drops out of the equation. Intuitively, κ measures slope of the tenure supply curve, i.e., how elastically the relative supply of rentals responds to changes in rent relative to price. Similar to the estimation of ρ, I obtain

exogenous variation in relative prices ($\Delta\frac{p_{jr}}{p_{jo}}$) using the exposure to corporate SFR landlords as an instrument for changes in housing tenure composition. The intuition is that the entry of corporate SFR landlords shifts out the supply curve of rental housing, which affects the profitability local atomistic landlords and their resulting investment decision. The magnitude of the changes in the local landlords' investment decision identifies κ.

Estimation using the SFR shock — The identification challenge for estimating ρ and κ is one of reverse causality. Homeowner share in j may change *because* of unobserved changes in the attractiveness of owning of a home there $\Delta\epsilon_j$, not the other way around. However, such shocks must differentially affect the attractiveness of owning and renting. Because of second differencing, shocks that affect ownership and renting amenities equally do not pose a threat to identification thanks to second differencing. Similarly, rental yield ($\frac{p_{jr}}{p_{jo}}$) is an equilibrium outcome of supply and demand, and can change due to changes in quantity $\frac{\pi_{jr}^{local}}{1-\pi_{jr}^{local}}$.

To overcome this challenge, I use the neighborhoods' exposure to corporate SFR landlords as an instrument to obtain exogenous variation in housing tenure composition and rental yield. The underlying idea is that the corporate landlords shift the composition of homeowners and renters in a neighborhood independent of demand factors. Similarly, the entry of corporate landlords shift the profitability of local atomistic landlords through changes in home prices and rents, and not other factors such as those that may affect the productivity of local landlords.

$$\mathbb{E}\left[Z_j \times \Delta\epsilon_j\right] = 0 \qquad\qquad Z_j \in \left\{ \begin{matrix} \mathbb{1}\{\textit{SFR Entry}\}_j \\ \textit{SFR Exposure}_j \end{matrix} \right\} \tag{26}$$

The validity of the instrument relies on its relevance and exogeneity conditional on additional fixed effects. Reassuringly, event study analyses show a lack of pretrends in ($\Delta\frac{\bar{B}_{jo}}{\bar{B}_{jr}}$) prior to the entry of corporate SFR landlords (exogeneity), but a sharp change afterwards (relevance).[35]

Results — I estimate the parameters using the two-step Generalized Method of Moments (GMM) estimation. I present the results in Table 4. I estimate $\rho = 0.130$. To the best of my knowledge, there are no empirical estimates in the existing literature for the strength of endogenous amenities with respect to housing tenure. I estimate $\kappa = 1.849$.

[35] I discuss the details of the identification in Appendix Section E.3.

6.4. Model validation

In Table 5, I summarize the sources of model unobservables and parameters as well as the parameter estimates that I choose for my baseline specification of the quantitative model. With the parametrized model, I investigate whether the model matches the data.

The model replicates a key fact about the U.S. housing market that is relevant to this paper. Panel A of Figure 9 shows that the homeowner share increases sharply at around the 20th percentile of household wealth, consistent with the data from SCF. Low-wealth households have nearly zero housing wealth and the key component of the model that replicates this fact is the financial constraints to homeownership (Campbell 2006). Appendix Section E.4 show additional validity checks such as housing expenditure share across wealth.

7. Welfare, spatial, and policy implications

Using the estimated model, I evaluate the welfare and spatial consequences of the entry of corporate SFR landlords. I find substantial distributional effects across the household wealth distribution and decompose the changes in welfare into what is due to changes in prices, changes in neighborhood access, endogenous amenities, and capital gains from house price changes. I then evaluate counterfactual policies, including a "rental cap" policy that directly limits the supply of rentals in neighborhoods.

7.1. Changes in welfare across heterogeneous households

The spatial framework delivers the following expression for representative utility of households with endowment level m.

$$V(m) = \left(\sum_{(k,s)\in\mathcal{I}(m)} (B_{ks}(w_k + m - p_{ks}))^{\nu} \right)^{\frac{1}{\nu}} \tag{27}$$

Expected utility in period 2 is conditional on location-tenure in period 1. For homeowners, capital gains are location-specific. For renters, period 1 location does not enter the expected utility.

Changes in expected utility across the wealth distribution — I now decompose the change in expected utility to highlight how households across the wealth distribution are differentially affected by the global landlord shock. Ignoring capital gains from house price changes (i.e., initial housing tenure status), I decompose the change in welfare for a household with initial endowment m into two components.

$$\begin{aligned}\ln \hat{V}(m) &= \frac{1}{\nu} \ln \left(\frac{\sum_{(q,z)\in\mathcal{I}'(m)} (B'_{qz}(w'_q + m - p'_{qz}))^\nu}{\sum_{(k,s)\in\mathcal{I}(m)} (B_{ks}(w_k + m - p_{ks}))^\nu} \right) \\ &= \frac{1}{\nu} \ln \left(\underbrace{\sum_{(q,z)\in\mathcal{I}'(m)\cap\mathcal{I}(m)} \lambda_{qz}(m) \cdot \hat{u}^\nu_{qz}(m)}_{(1)} + \underbrace{\sum_{(q,z)\in\mathcal{I}'(m)\cap(\mathcal{I}\setminus\mathcal{I}(m))} \lambda'_{qz}(m) \cdot \hat{V}^\nu(m)}_{(2)} \right)\end{aligned} \tag{28}$$

(1) captures Δ common utility from location-tenure pairs included in both choice sets and (2) captures Δ average utility, scaled by share choosing "new" pairs available only in the new choice set. These roughly correspond to the changes in welfare due to changes in cost-of-living and those due to changes in neighborhood access, respectively.

Initial homeownership status — To allow for incumbent households to gain from house price appreciation, I consider an extension where local home price changes are rebated back to homeowners (Couture et al. 2024). The changes in welfare for incumbent homeowners and renters in neighborhood z—indexed by zo and zr, respectively—are given by the following equation.

$$\begin{aligned}\ln \hat{V}_{(\cdot|zo)}(m) &= \frac{1}{\nu} \ln \frac{\sum_{(k,s)\in\mathcal{I}'(m)} (B'_{ks}(w'_k + \overbrace{m + (p'_{zo} - p_{zo})}^{\equiv m'_{(\cdot|zo)}} - p'_{ks}))^\nu}{\sum_{(k,s)\in\mathcal{I}(m)} (B_{ks}(w_k + m - p_{ks}))^\nu} \\ \ln \hat{V}_{(\cdot|zr)}(m) &= \ln \hat{V}_{(\cdot|\cdot r)}(m) = \frac{1}{\nu} \ln \frac{\sum_{(k,s)\in\mathcal{I}'(m)} (B'_{ks}(w'_k + m - p'_{ks}))^\nu}{\sum_{(k,s)\in\mathcal{I}(m)} (B_{ks}(w_k + m - p_{ks}))^\nu}\end{aligned} \tag{29}$$

Note that renters' welfare is independent of their initial location.[36]

[36] Note that for those who resided in z who stay in z, the common component of their utility is given by the following.

$$\hat{u}_{(zo|zo)} = \frac{B'_{zo}\,(w'_z + m^\omega - p_{zo})}{B_{zo}\,(w_z + m^\omega - p_{zo})} \qquad \hat{u}_{(zr|zr)} = \frac{B'_{zr}\,(w'_z + m^\omega - p'_{zr})}{B_{zr}\,(w_z + m^\omega - p_{zr})} \tag{30}$$

Thus, homeownership "insures against" price increases.

7.2. Model results

The impacts of corporate SFR landlords — Consistent with the empirics and the model that highlight the operational benefits of scale in rental supply, I simulate the entry of corporate SFR landlords with a negative shock to the local cost of rental supply. I calibrate the scale of the shock by what is implied by the observed scale of corporate landlords across different neighborhoods and the estimated returns to scale μ. I describe the algorithm for solving for a counterfactual equilibrium in Appendix Section E.5.

Homeownership — Figure 9 summarizes the main model results. Panel B shows overall decline in homeownership across the household wealth distribution. The decrease in homeownership is concentrated among middle-wealth households who are both more price sensitive and are likely to face binding financial constraints to homeownership. This segment of the households are "marginal homebuyers" who are priced out of the homeownership market due to how corporate SFR landlords reduce homeownership supply and raise prices. However, low-wealth households experience minimal changes in their access to homeownership, because they are unable to access homeownership even in the absence of corporate SFR landlords. They are "always renters" due to financial constraints.

Welfare — Panel C shows the welfare consequences of corporate SFR landlords. Low-wealth, always-renter households benefit from lower in rents, but middle-wealth, marginal homeowners suffer a welfare loss. The latter is due in large part to direct homeownership benefits which are substantial: households on average derive 30% additional utility from owning a home relative to renting within the same neighborhood. Wealthy households who are relatively price-insensitive still suffer due to endogenous dis-preferences for neighboring renters.

Panel D shows the welfare results, but with capital gains rebated back to homeowners as described in equation 1. Capital gains reverse the fortune for lower-middle-wealth households. Incumbent homeowners benefit from increasing home prices, which offset the negative welfare effects of prospective homeowners being priced out of the homeownership market. Similarly, for high-wealth households, capital gains from house price appreciation attenuate their welfare loss.

Spatial sorting — Panels E and F highlight the spatial consequences of corporate SFR landlords. The increase rental housing supply allows low-wealth households to move into high-amenity neighborhoods as renters. For always-renter households, financial constraints to homeownership prevent them from moving to high-amenity suburbs, and increasing rental housing supply remove these barriers to neighborhood entry.

Counterfactual policies that restrict rental supply — I evaluate two forms of rental restriction policies. One is a rental cap policy that is being discussed at various levels from municipalities to Homeowners' Associations (HOAs) in response to corporate SFR landlords. The policy institutes a cap on the fraction of rental housing that can be supplied in the neighborhood. I simulate this policy by imposing a 40% rental cap at the Census tract level. Another policy at the federal level would reduce rental supply by increasing the cost of operations. I simulate this policy by forcing corporate landlords to reduce their supply by 10% across all neighborhoods.

Figure 10 summarizes the results from counterfactual exercises. Rental caps distort household decisions and result in aggregate welfare loss. Low-wealth households who are predominantly renters are particularly harmed by the policy. Relative to the equilibrium with corporate SFR landlords, forcing landlords to sell benefits middle-to-high wealth-households at the expense of low wealth-households. Households who prefer to own and can own benefits from increased access to homeownership, but low-wealth households lose out from a decrease in rental supply.

8. Conclusion

Recently, policymakers and housing advocates have presented bills that would restrict institutional single-family rental landlords and limit rental supply. This paper provides the rationale underlying the widespread support for such policies, but it also sheds light on the costs. The median household prefers homeownership to rentals because of the non-pecuniary benefits from owning a home. Therefore, they lose out when homes are reallocated away from the ownership market to the rental market. At the same time, a large fraction of U.S. households rent because of liquidity constraints. Some households cannot afford the down payment and other households do not satisfy the minimum credit requirement to qualify for a mortgage. These households are more likely to be non-White and younger than the median household, and benefit from a greater rental supply that

improves access to desirable neighborhoods.

The findings highlight a core issue: an insufficient rental supply makes access to neighborhoods unequal across households. While corporate landlords provide one way of diversifying American suburbs, they are hotly contested and imperfect. This paper lays out the various economic and non-pecuniary tradeoffs that occur when private actors supply rentals by converting owner-occupied homes, and provide insight to guide future policy development.

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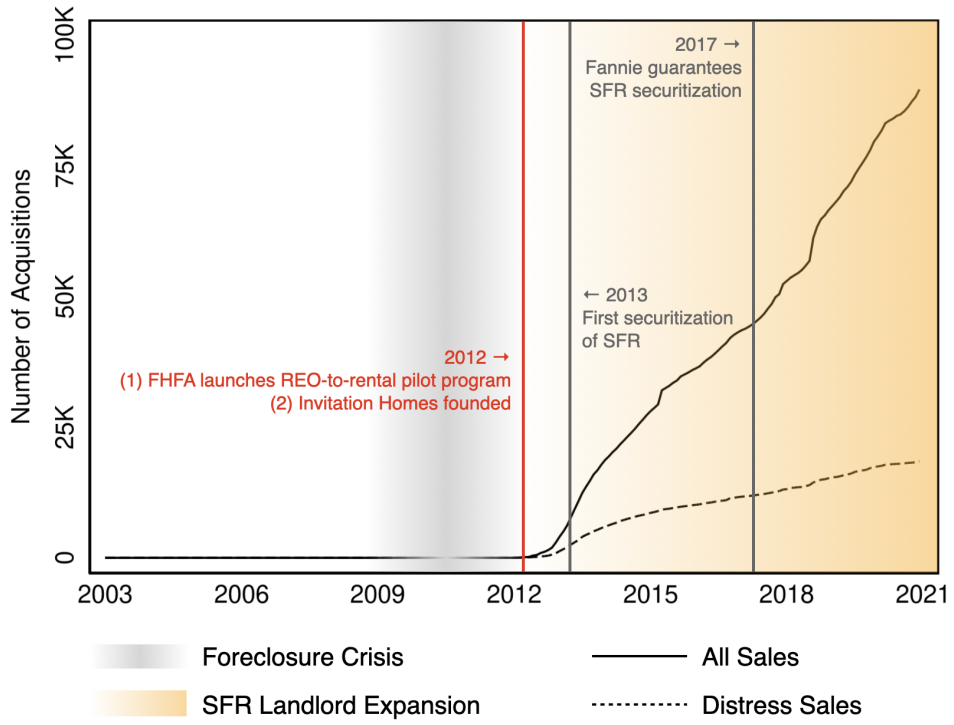
Figures

Figure 1. A single-family rental property

Notes. A typical single-family rental property owned by a corporate landlord. Source: author.

Figure 2. Time series of corporate SFR landlords in the United States



Notes. This figure shows the cumulative count of property acquisitions by one of the 23 large-scale corporate SFR landlords operating in Florida, Georgia, North Carolina, and South Carolina. The solid line represents all types of acquisitions while the dotted line represents acquisitions from distress sales (e.g., foreclosures, short sales, etc.). Whereas more than 30% of all corporate SFR landlord acquisitions in 2012 are from distress sales, such purchases constitute an increasing smaller portion of total purchases in more recent years. Major events in the timeline are as follows.

2012: Private equity firm Blackstone founds Invitation Homes, one of the largest of the corporate SFR landlords to date. Several corporate SFR landlords acquire their initial bundle of properties through bulk purchases of foreclosed properties. Bulk sales were partially facilitated by federal policies introduced in response to the Foreclosure Crisis. In 2012, Federal Housing and Finance Agency (FHFA) launched the REO-to-rental pilot program, where they auctioned off bundles of geographically concentrated foreclosed properties to investors. The program was designed to help local housing markets recover from the foreclosure crisis by providing liquidity from real estate investors. Consistent with this policy objective, the FHFA required winning bidders to supply the acquired properties as rentals for a minimum of three years before they could sell them back.

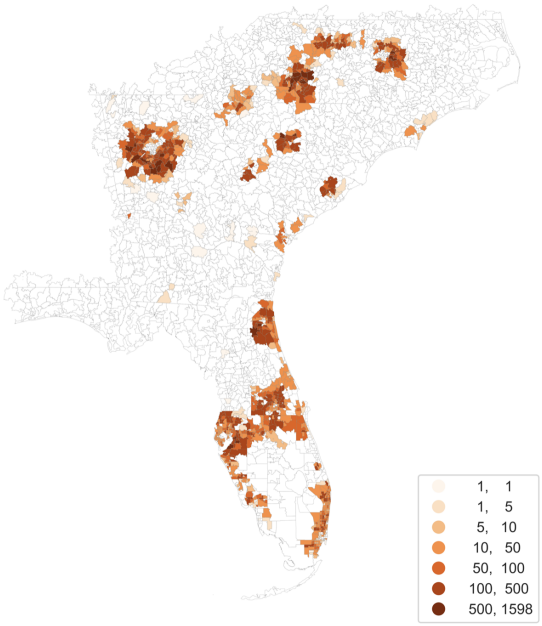
2013: Invitation Homes issues the first SFR securitization in the Commercial Mortgage-Backed Securities (CMBS) market. Many more SFR securitizations follow, providing corporate SFR landlords with cheaper financing to expand their rental portfolio.

2017: Fannie Mae guarantees SFR securitization issued by Invitation Homes. Financing from the government-sponsored enterprise (GSE) removes the default risk for investors who provide funding to corporate landlords like Invitation Homes, which further "reduce borrowing costs and improve funding stability" (Goodman and Kaul 2017).

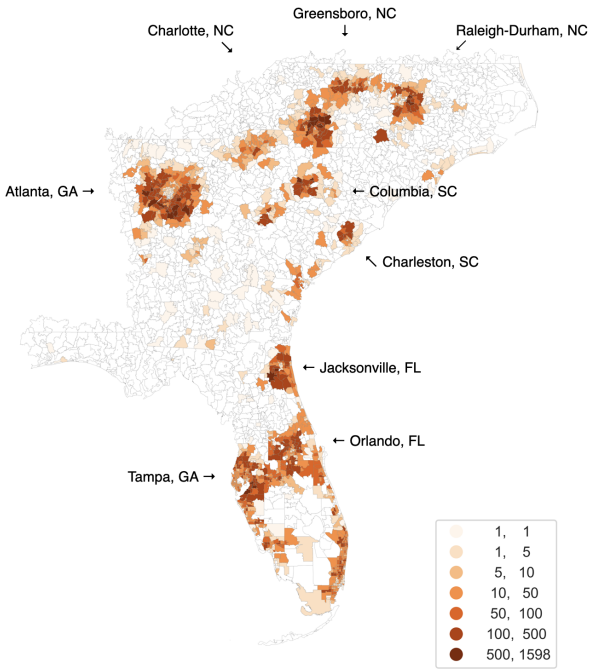
Return to Section 2.

Figure 3. Geography of corporate SFR landlords in the United States

A. Property acquisitions from 2012 to 2013



B. Property acquisition from 2012 to 2020



C. Landlord's expansion

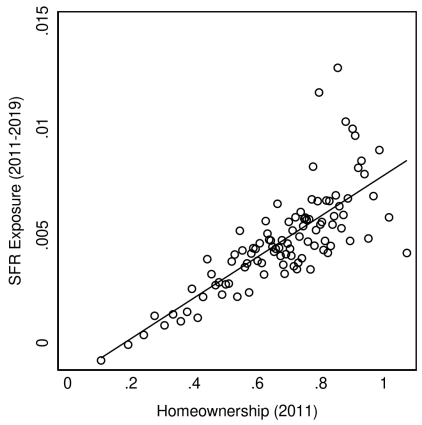
	$Acquisition_t$	
	(1)	(2)
$Acquisition_{t-1}$	0.391	0.416
	(0.007)	(0.008)
Census tract-level	×	
Landlord-Census tract-level		×
Landlord-County-Year F. E.		×
N	15,114	14,564
R-squared	0.160	0.442

Notes. This figure shows where corporate SFR landlords entered and subsequently expanded to. Panel A shows the cumulative number of properties that corporate SFR landlords acquire at the ZIP code-level between 2012 and 2013. Panel B shows the same statistics but for 2012 through 2020. These figures highlight two facts about corporate SFR landlords. First, SFR landlords entered the suburbs of major metropolitan areas in the Southern states such as Atlanta, Georgia and Charlotte, North Carolina. Second, corporate SFR landlords grew their operation over time by increasing concentration in their initial location of entry or expanding radially outward from their initial location to adjacent locations. This contrasts with a strategy diversifying the investment portfolio across distant regions. I describe the key forces that drive the corporate SFR landlords' pattern of entry and spatial expansion in Section 3 and incorporate them in the structural model in Section 5. The table in Panel C confirms the observation from the figures. Landlords acquisition in local housing markets are serially correlated. One additional acquisition by a landlord in the previous year predicts that it acquires 0.4 more properties in the same Census tract.

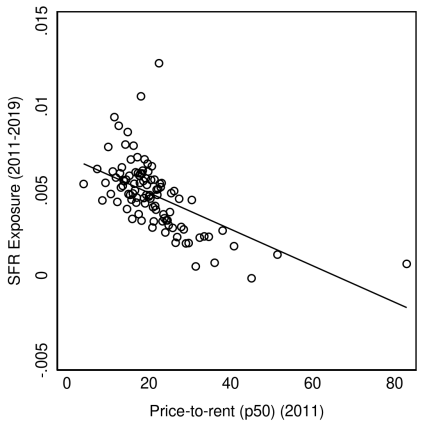
Return to Section 3.

Figure 4. *Ex-ante* characteristics of neighborhoods exposed to corporate SFR landlords

A. Census tract-level homeownership



B. Census tract-level relative price

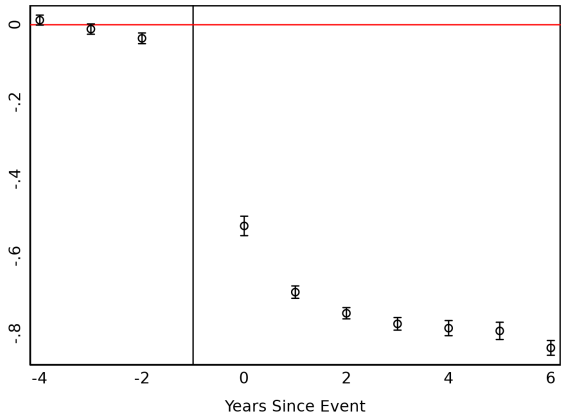


Notes. This figure shows the *ex ante* characteristics of Census tracts where institutional SFR landlords enter. The y-axis is the share of properties purchased by a corporate SFR landlord buyer between 2011 and 2019 relative to the total number of houses in the Census tract as of 2011. The x-axis is the homeownership rate (Panel A) and the price-to-rent ratio (Panel B). These figures show that corporate SFR landlords have the highest concentration in Census tracts where homeownership is previously high (i.e., rental share is low) and rents are expensive relative to home prices. In the model I present in Section 5, I discuss how cross-sectional heterogeneities in the location-specific cost of supplying rentals (and in homeownership preferences) can drive the dispersion of equilibrium homeownership rates and relative rents.

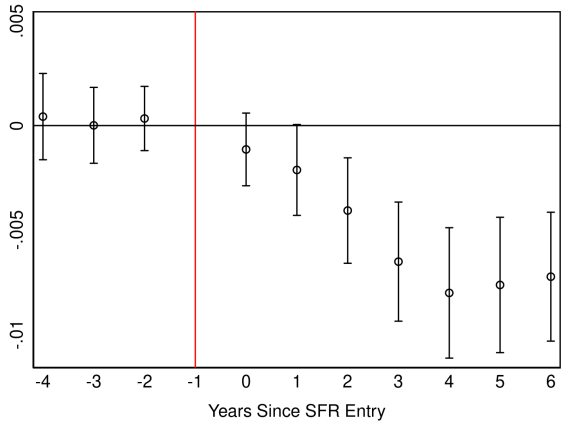
Return to Section 3.

Figure 5. Effects of corporate SFR landlord entry on homeownership

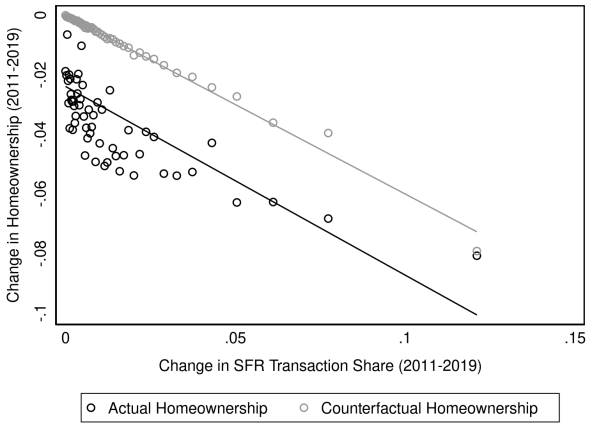
A. Property-level homeownership



B. Census tract-level Homeownership



C. Census tract-level homeownership



Notes. This figure summarizes the effects of corporate SFR landlords on homeownership. Panel A reports results from property-level event study.

$$\mathbb{1}\{\textit{Unit is Owner-occupied}\}_{it} = \sum_{k \neq -1} \beta_k \underbrace{\textit{Years Since SFR Purchase}_{it}^{k}}_{\equiv \mathbb{1}\{t - \textit{Year SFR Purchased } i = k\}} + \underbrace{\alpha_i}_{\text{Property}} + \underbrace{\zeta_{g(i)t}}_{\text{Geography-Time}} + \epsilon_{it}$$

$\textit{Years Since SFR Purchase}_{it}$ is the relative time to the year in which a corporate SFR landlord purchases property i. Consistent with the estimated effects, I find descriptively that approximately 70% of the properties purchased by a corporate SFR landlord were previously owner-occupied housing. Data on property-level homeownership—owner-occupancy status—is inferred using the property assessment panel by comparing the physical address (i.e., the address of the property) and the mailing address of the owner. Panel C shows results from Census tract-level long-difference regression.

$$\Delta \textit{Homeownership}_{j,2011-19} = \alpha + \beta \Delta \textit{SFR Share}_{j,2011-19} + \epsilon_j$$

The y-axis is the change in homeownership and the x-axis is the share of properties purchased by a corporate SFR landlord between 2011 and 2019 relative to the total number of properties transacted in the same time period.

(continued on next page)

Effects of corporate SFR landlord entry on homeownership (cont'd)

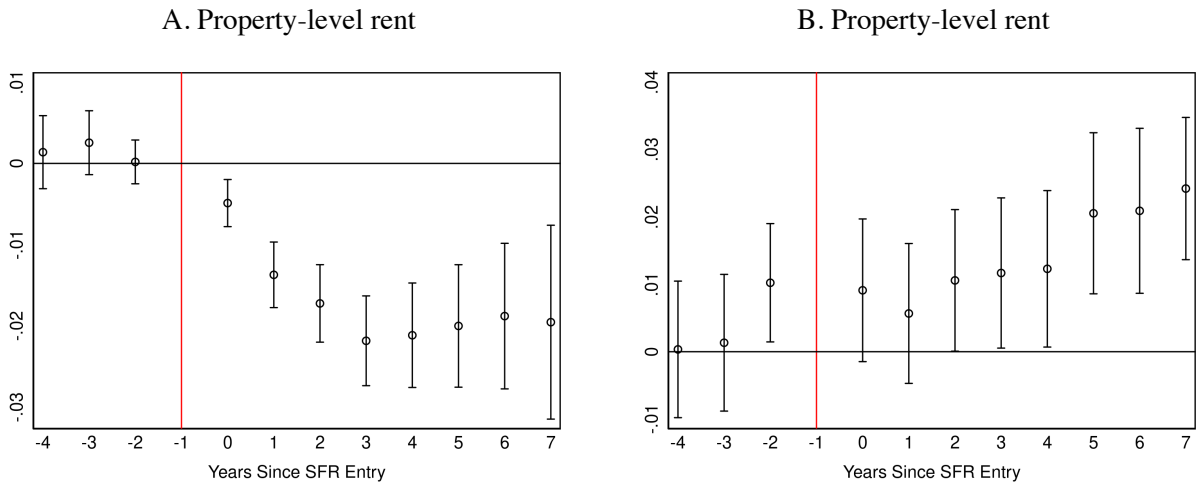
The black line shows actual homeownership where the grey line shows "counterfactual homeownership" computed by dividing the sum of the number of rental properties in 2011 and the number of properties purchased by corporate SFR landlords by total number of properties as of 2011. And so, counterfactual homeownership is the mechanical homeownership rate implied by the entry and expansion of corporate SFR landlords, holding all else fixed. Reassuringly, the gap between actual and counterfactual homeownership is approximately 2 percentage point, similar to the actual aggregate decline in homeownership between 2011 and 2019 in the sample states of Florida, Georgia, North Carolina, and South Carolina. Furthermore, the gap is consistent across the x-axis, which provides descriptive evidence that neighborhoods where the impacts corporate SFR landlords are most pronounced were not on differential trends from other neighborhoods. Panel B shows results from a neighborhood-level event study that further supports this observation.

$$\textit{Homeownership}_{jt} = \sum_{k \neq -1} \beta_k \underbrace{\textit{Years Since SFR Entry}_{jt}^{k}}_{=\mathbb{1}\{t - \textit{Year SFR Entered}_j = k\}} + \underbrace{\alpha_j}_{\text{Neighborhood}} + \underbrace{\zeta_{g(j)t}}_{\text{Geography-Time}} + X_j\gamma + \epsilon_{jt}$$

Years Since SFR Entry$_{jt}$ is the relative time, in number of years, to the year in which a corporate SFR landlord first purchases any property in Census tract j. Both neighborhood-level results suggest that the property-level changes in the homeownership status aggregates up to a neighborhood-level decrease in homeownership. Neighborhood-level data on homeownership is from the aggregated 5 year ACS and the earliest year for which Census tract-level dataset is available is 2009.

Return to Section 4.2.

Figure 6. Effects of corporate SFR landlord entry on property-level prices and rents



Notes. This figure summarizes the effects of corporate SFR landlords on housing costs. Panels A and B show results for property-level event studies.

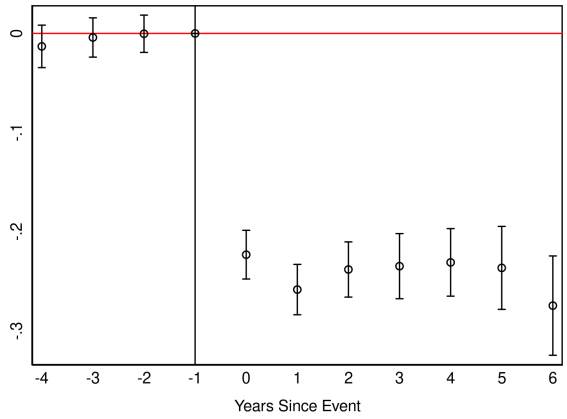
$$\ln \textit{Cost of Housing}_{ijt} = \sum_{k \neq -1} \beta_k \underbrace{\textit{Years Since SFR Entry}_{jt}^{k}}_{=\mathbb{1}\{t - \textit{Year SFR Entered } j = k\}} + \underbrace{\alpha_i}_{\text{Property}} + \underbrace{\zeta_{g(j)t}}_{\text{Geography-Time}} + X_j\gamma + \epsilon_{ijt}$$

Years Since SFR Entry$_{jt}$ is the relative time, in number of years, to the year in which a corporate SFR landlord first purchases any property in Census tract j. *Cost of Housing*$_{ijt}$ is either listed rent from the Multiple Listing Service (MLS) or sales price from housing deeds. Property fixed effects α_i controls for the underlying quality of the property.

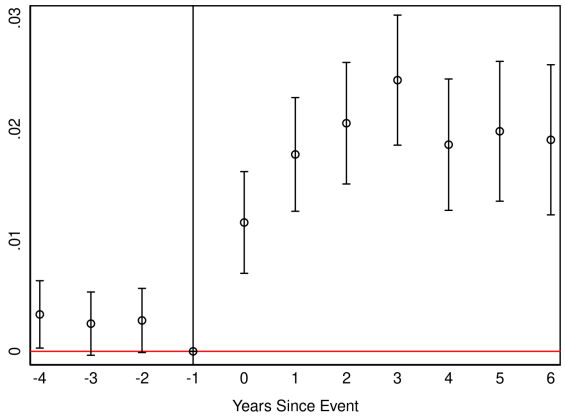
Return to Section 4.2.

Figure 7. Effects of corporate SFR landlords on spatial sorting of households

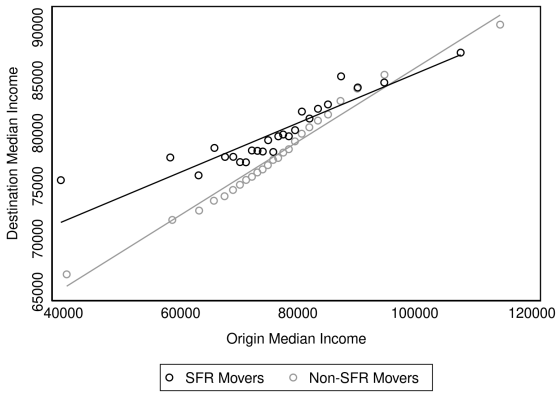
A. Satisfies debt-to-income limit



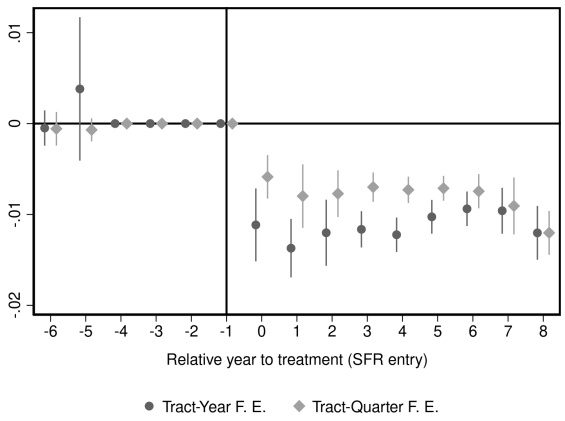
B. Head of the household is Black



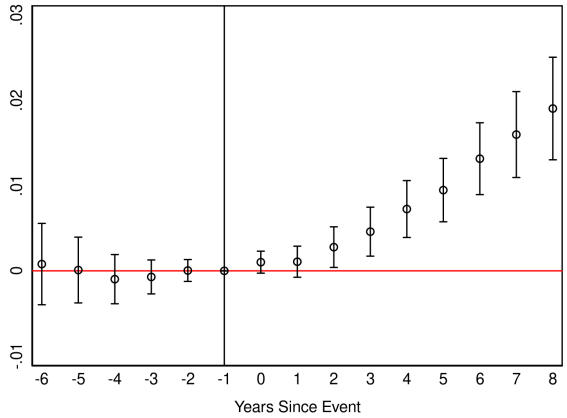
C. Δ neighborhood characteristics of in-migrants



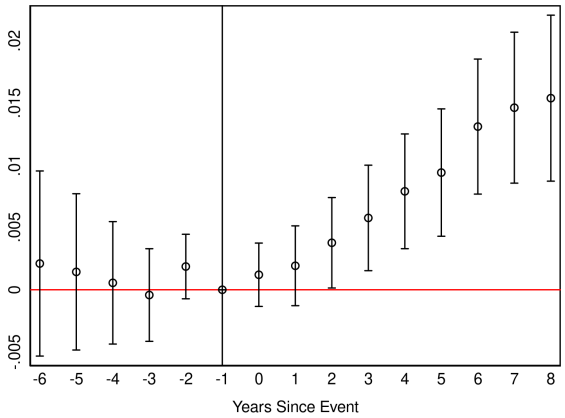
D. Out-migration of incumbent households



E. Non-White share



F. Exposure of Whites to Black



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Effects of corporate SFR landlords on spatial sorting of households (cont'd)

Notes. This figure summarizes the effects of corporate SFR landlords on the spatial sorting of heterogeneous households and the resulting changes in neighborhood-level demographic composition and residential segregation. Panels A and B show results from the property-household-level event study regression.

$$\textit{Household Characteristics}_{it} = \sum_{k \neq -1} \beta_k \underbrace{\textit{Years Since SFR Purchase}_{it}^{k}}_{\equiv \mathbb{1}\{t - \textit{Year SFR Purchased } i = k\}} + \underbrace{\alpha_i}_{\text{Property}} + \underbrace{\zeta_{g(i)t}}_{\text{Geography-Time}} + \epsilon_{it}$$

$\textit{Years Since SFR Purchase}_{it}^{k}$ is the relative time, in number of years, to the year in which a corporate SFR landlord purchase property i. The data is from the property-household-level address history data from DataAxle. Household characteristics are estimated by DataAxle using various data sources including surveys. To focus on households who move into a corporate SFR landlord-owned property, I restrict the sample to investor-owned properties whose tenancy changes within the first three years of the purchase by the investor. Panel A shows that households who move in are likely to have a binding leverage constraint as measured by whether they would satisfy the Debt-to-Income (DTI) ratio—total monthly debt payments relative to income—requirement for a conventional GSE loan. Panel B shows that households who move into an SFR investor-owned property are more likely to be Black compared to incumbent households. In Appendix Figure A.6, I show that households who move into corporate SFR properties have lower income and lower wealth, are younger, and have fewer children compared to incumbents. To summarize, increasing rental housing supply leads to in-migration of financially constrained households who predominantly happen to be more non-White, lower-income, and lower-wealth. Panel C shows the scatter plot of the Census tract-level median income of the destination location (y-axis) against that of the origin location (x-axis). Households who move into the SFR properties "move up" the neighborhood-ladder more so than other households who move, but to a non-SFR property. Next, I evaluate incumbents' response to new renters by comparing the moving propensities of households who are more exposed to new renters and that of households are less exposed. Panel D shows results from the following cross-sectional regression.

$$\mathbb{1}\{\textit{Household Move Out}_{it}\} = \beta_t \ln \textit{Distance to Nearest SFR Property}_i + \underbrace{\zeta_{g(i)t}}_{\text{Geography-Time}} + \epsilon_{it}$$

$\textit{Distance to Nearest SFR Property}_{it}$ measures the physical distance between property i and the nearest property that is purchased by a corporate SFR landlord. I estimate the β separately for each year within a window of time before and after the entry of corporate SFR landlords into neighborhood $g(i)$. In the years before the entry of corporate SFR landlords, the distance between property i and the nearest property that *eventually* becomes an SFR property has no effect on the households' likelihood of moving. However, sharply after the entry of corporate landlords, the distance to the nearest SFR property has a significant and persistent negative effect on the household's propensity to move. In other words, the physically farther a household is from an SFR property, the more likely they are to stay in the same neighborhood. These results indicate that incumbents who are more exposed to new renters, controlling for changes in the neighborhood-level demographic composition (i.e., Census tract-year fixed effects), are more likely to respond by moving out of the neighborhood. One might be concerned that corporate SFR landlords' high willingness-to-pay for geographic concentration (Section 3) might be driving these results. I address this concern by excluding from the sample all properties that are ever purchased by corporate SFR landlords. Lastly, I evaluate whether corporate SFR landlords have an aggregate effect on neighborhood composition by estimating the following event study regression.

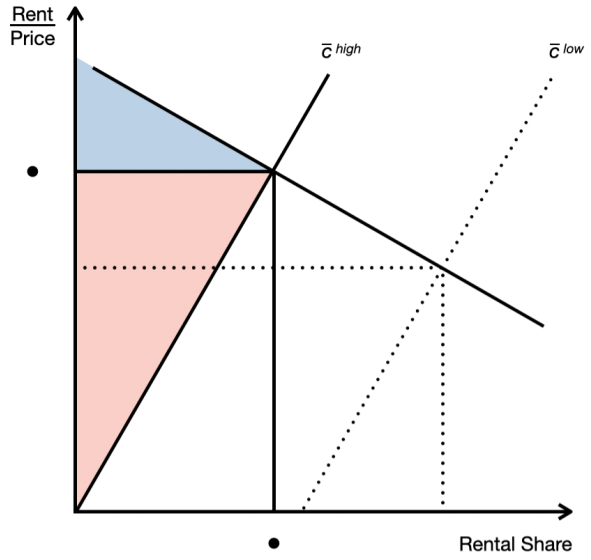
$$\textit{Segregation}_{jt} = \sum_{k \neq -1} \beta_k \underbrace{\textit{Years Since SFR Entry}_{jt}^{k}}_{=\mathbb{1}\{t - \textit{Year SFR Entered}_j = k\}} + \underbrace{\alpha_j}_{\text{Neighborhood}} + \underbrace{\zeta_{g(j)t}}_{\text{Geography-Time}} + X_j\gamma + \epsilon_{jt}$$

Panels E and F show that Census tract-level non-White share increases and that this leads to a reduction in racial segregation as measured by racial exposure of Whites to Blacks. In Appendix Section C.4, I define measures of racial segregation and show robustness of my results across the various measures.

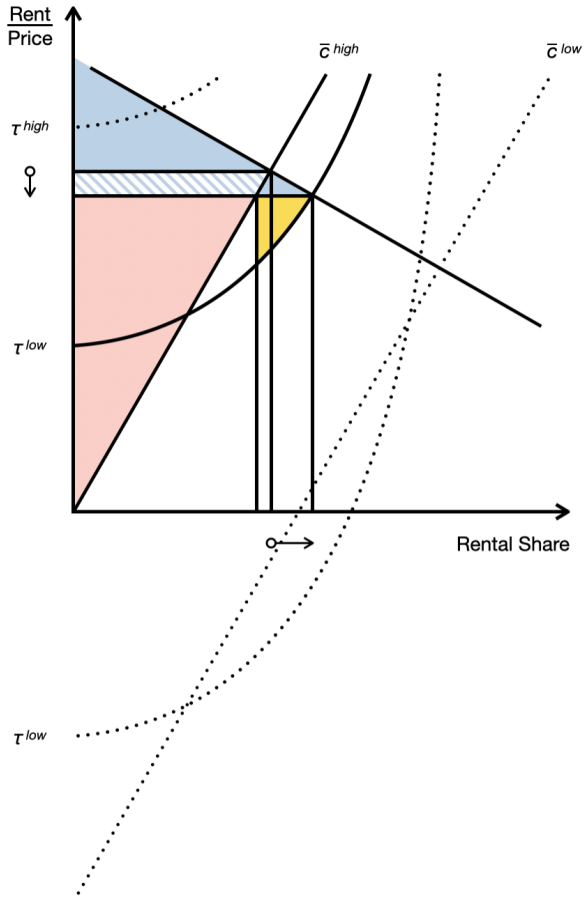
Return to Section 4.2.

Figure 8. Conceptual framework

A. Initial equilibrium without corporate landlords



B. Equilibrium with corporate landlords

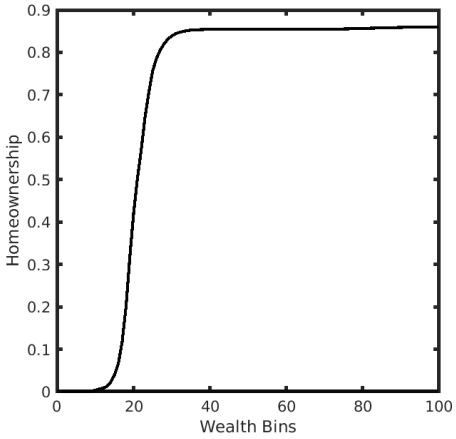


Notes. These figures illustrate the equilibria *with* and *without* corporate SFR landlords. The diagrams represent "tenure supply" and "tenure demand," the relative price schedule at which landlords are willing to supply rentals and households are willing to rent, respectively. Panel A of Figure 8 presents the equilibrium for two locations prior to the entry of corporate SFR landlords. One location where the cost of supplying rentals is high ($\bar{c}^{high}$), few rentals are supplied and rent is expensive relative to home prices compared to the other where the cost is low ($\bar{c}^{low}$). As described in Section 3, corporate SFR landlords enter where homeownership and rent are high, i.e., the $\bar{c}_j^{high}$-type locations. Panel B of Figure 8 presents the equilibrium after the entry of corporate SFR landlords. Cost efficiencies in operating benefits (returns to scale) and the increasing marginal cost of acquisition (costs of scaling up) generate the curvature in corporate SFR landlords' rental supply. And so, where corporate SFR landlords enter, the aggregate rental supply bows outward. Corporate SFR landlords face a location-specific fixed cost of entry τ, such that when the fixed cost is large (τ^{high}), corporate SFR landlords find it unprofitable to enter despite returns to scale in rental supply. I model the "shock" that leads to corporate SFR landlord entry as a negative shock to the fixed cost of entry ($\tau^{high} \rightarrow \tau^{low}$). This is motivated by the evidence that the availability of geographically concentrated bundles of foreclosed properties following the foreclosure crisis—facilitated partially through the 2012 FHFA REO-to-rental pilot program described in the text—and the access to cheap financing through the Commercial Mortgage-Backed Securities (CMBS) market starting 2013 made it easier for corporate SFR landlords to build initial scale. Note also that the level of $\bar{c}$ affects the entry of corporate SFR landlords. Where $\bar{c}$ is low and *ex ante* rental supply is already large, it is costly for corporate SFR landlords to build sufficient scale such that they optimally do not enter. I formalize these conditions in Section 5.

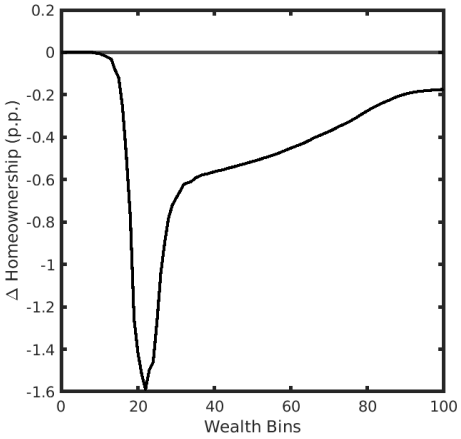
Return to Section 5.3.

Figure 9. Effects of corporate SFR landlords on welfare and residential sorting

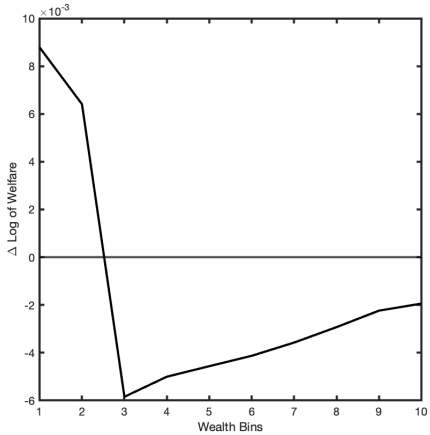
A. *Ex ante* homeownership



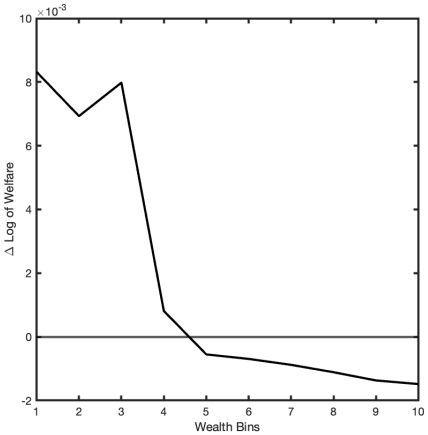
B. Δ homeownership



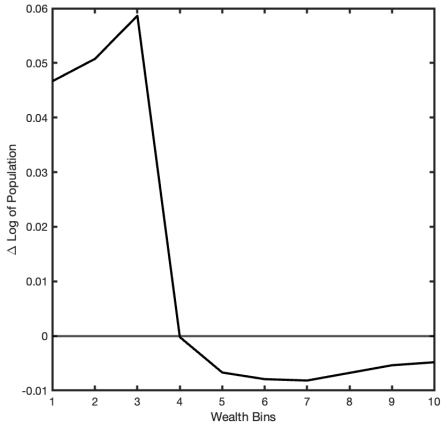
C. Δ Welfare



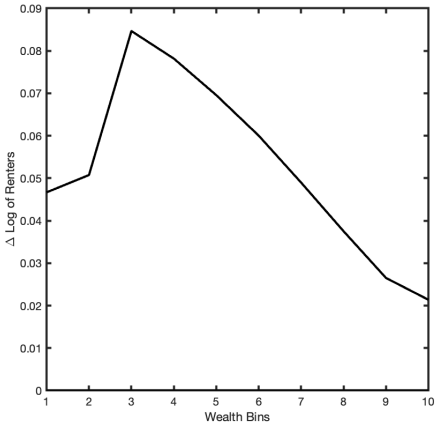
D. Δ Welfare w/ cap. gains



E. $\Delta L_{jh}(m)$ in high amenities nbhd.



F. $\Delta L_{jr}(m)$ in high amenities nbhd.



(continued on next page)

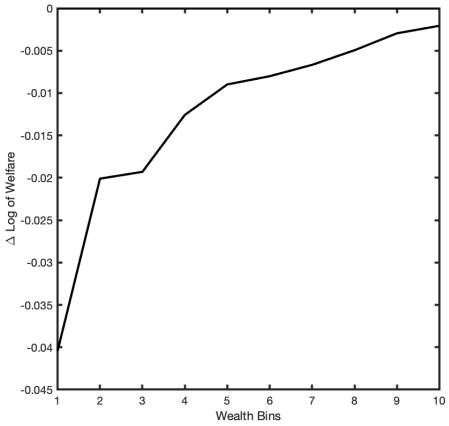
Effects of corporate SFR landlords on welfare and residential sorting (cont'd)

Notes. This figure summarizes the effects of corporate SFR landlords on welfare and spatial sorting of heterogeneous households. Panels A and B show *ex-ante* and changes in homeownership rates across the wealth distribution, respectively. Households who belong to the bottom deciles of the wealth distribution are predominantly renters due to binding financial constraints: there are few neighborhoods with home prices low enough for these households to be able to satisfy the down payment constraint. Panels C through F summarize the welfare and spatial consequences of the entry of corporate SFR landlords. Panel C shows changes in welfare ($\ln \frac{U'(m)}{U(m)}$) across the wealth distribution. Low-wealth households benefit from the reduction in rent from an increase in rental supply, which decreases their housing burden and increases their access to high-price and high-amenity suburbs. Middle-wealth households, however, suffer a welfare loss from a reduction in ownership housing supply. Panel D presents changes in welfare, but with capital gains from home price appreciation redistributed to homeowners. Capital gains attenuate the welfare loss of middle-wealth households. Panel E highlight the spatial consequences of increasing rental supply in the suburbs. Households who are in the bottom wealth-deciles move to high price- and high amenity-neighborhoods that are previously prohibitive to them. Panel F shows that this move is driven by the large increase in the renter population in those neighborhoods.

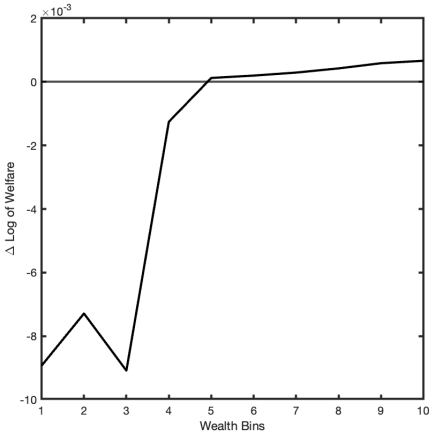
Return to Section 7.2.

Figure 10. Effects of counterfactual rental restriction policies

A. Δ Welfare w/ rental caps



B. Δ Welfare w/ universal rental reduction



Notes. *Notes*. This figure summarizes the welfare effects of counterfactual policies that limit rental supply. Panel A shows changes in welfare that results from a rental cap policy that limits rental supply to 40% of local housing stock. Relative to the baseline economy without rental cap or corporate SFR landlord entry, rental caps distort household decisions and lead to a one percent decrease in aggregate welfare. Panel B shows results from a policy that forces large-scale landlords to sell a portion of their portfolio back to the market. Compared to the equilibrium with corporate SFR landlord, this policy increases aggregate welfare by expanding the housing supply available to homebuyers who prefer and can afford to own. However, low-wealth households for whom homeownership was already unattainable loses from the loss of rental housing.

Return to Section 7.2.

Tables

Table 1. Price premium that corporate SFR landlords pay to acquire properties

	Dependent Variable: $\ln Price$					
	(1)	(2)	(3)	(4)	(5)	(6)
SFR Buyer	0.126	0.103	0.095	0.091	0.082	0.086
	(0.004)	(0.004)	(0.003)	(0.003)	(0.004)	(0.009)
Sample	2012-20	2012-20	2012-20	2012-20	2012-20	2012-20
Property F. E.	×	×	×	×	×	×
Hedonic-Time F. E.		×	×	×	×	×
Zip-Year F. E.	×	×				
Zip-Quarter F. E.			×			
Zip-Month F. E.				×		
Tract-Month F. E.					×	
Street-Month F. E.						×
N	3,167,354	3,166,406	3,154,186	3,115,871	2,751,366	459,172
R-squared	0.861	0.872	0.883	0.898	0.918	0.963

Notes. This table reports estimates of corporate SFR landlord's willingness-to-pay. I estimate the following repeat sales regression.

$$\ln \textit{Price}_{ist} = \beta \textit{SFR Buyer}_{ist} + \underbrace{\underbrace{\alpha_i}_{\text{Property}} + \underbrace{\gamma X_{it}}_{\text{Hedonic-Time}} + \underbrace{\zeta_{g(i)t}}_{\text{Geography-Time}}}_{\equiv \chi_{it}} + \epsilon_{ist}$$

Each observation is a unique property sale s of property i in time t. The estimated β coefficient represents the price premium that corporate SFR landlords pay relative to other buyers. The dependent variable is the log of transaction price. In Column 1, the specification includes property fixed effects and ZIP Code-year fixed effects. Columns 2 through 6 include time-varying hedonics and subsequently more granular geography-time fixed effects. Hedonic characteristics include bins for the number of years since property construction, number of years since renovation, property size, number of bedrooms and bathrooms, a binary variable indicating whether the property is multistory, heating and garage types, and construction quality. Standard errors are clustered by property and reported in parentheses.

Return to Section 3.

Table 2. Price premium that corporate SFR landlords pay to build local scale

	Dependent Variable: ln $Price$							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log of Local Scale (Tract)	0.0095***		0.0140***					
	(0.0030)		(0.0031)					
Log of Local Scale (ZIP)		0.0042		0.0043				
		(0.0029)		(0.0029)				
1-50 Properties (Tract)					0.0153		0.0227**	
					(0.0096)		(0.0093)	
51-100 (Tract)					0.0981***		0.0787***	
					(0.0199)		(0.0200)	
101-150 (Tract)					0.2353***		0.1666***	
					(0.0332)		(0.0319)	
151+ (Tract)					0.2091***		0.1743***	
					(0.0343)		(0.0330)	
1-50 Properties (ZIP)						0.0023		0.0184
						(0.0176)		(0.0175)
51-100 (ZIP)						0.0059		0.0225
						(0.0196)		(0.0194)
101-150 (ZIP)						0.0729***		0.0718***
						(0.0221)		(0.0221)
151+ (ZIP)						0.0905***		0.0869***
						(0.0224)		(0.0224)
Property F. E.	×	×	×	×	×	×		
Tract-Month F. E.	×	×					×	×
Tract-Year F. E.			×	×	×	×		
N	2,797,719	2,797,719	3,164,061	3,164,061	3,164,061	3,164,061	2,797,719	2,797,719
R-squared	0.923	0.923	0.873	0.873	0.873	0.873	0.923	0.923

Notes. This table reports estimates of corporate SFR landlord's willingness-to-pay to expand in a local housing market. I estimate the following repeat sales regression.

$$\ln Price_{islt} = \mu Local\ Scale_{slg(i)t} + \underbrace{\alpha_i}_{\text{Property}} + \underbrace{\alpha_l}_{\text{Landlord}} + \underbrace{\gamma X_{it}}_{\text{Hedonic-Time}} + \underbrace{\zeta_{g(i)t}}_{\text{Geography-Time}} + \epsilon_{islt}$$

Each observation is a unique property sale s of property i in time t involving buyer l. The coefficient of interest μ represents the percent price premium that corporate SFR landlords with a one percent larger local scale pay relative to the baseline buyer who mechanically has scale equal to one. Standard errors are clustered by property and reported in parentheses.

Return to Sections 3 and 6.3.

Table 3. Balance of covariates and predictiveness of entry with geography fixed effects

	(1)	(2)	(3)
Share Non-White			
	0.072	0.061	0.061
	(0.045)	(0.037)	(0.037)
Household Income			
	1831.189	-1459.614	-1436.281
	(2448.403)	(3655.021)	(3655.264)
State F. E.	×		
County F. E.		×	×
Predicted Entry			×
N	6910	6883	6883
R-squared	0.208	0.458	0.461

Notes. This table reports balance of *ex ante* Census tract-level characteristics and the predictiveness of landlord entry. I estimate the following cross-sectional regression.

$$\ln \textit{Landlord Entry}_j^{2012} = \beta \textit{Tract Characteristics}_j^{2011} + \underbrace{\zeta_{g(j)}}_{\text{Broader Geography}} + \epsilon_j$$

Each observation is a unique Census tract j. Standard errors are clustered by county and reported in parentheses.

Return to Section 4.1.

Table 4. Parameter estimates

Parameter	Interpretation	Estimate
ρ	Endogenous amenities	0.130
		(0.016)
κ	Rental housing supply elasticity	1.849
		(0.455)

Notes. This table reports results from the Generalized Method of Moments (GMM) procedure with exposure to corporate SFR landlords as the instrument. ρ is the elasticity of endogenous amenities with respect to neighborhood (Census tract) composition. The demographic shift caused by corporate landlords converting owner-occupied housing to rentals identifies this parameter. κ is the rental supply elasticity. Changes in rental return driven by lower rents and higher home prices provide the variation needed to identify this parameter.

Return to Section 6.3.

Table 5. Summary of model unobservables and parameters

Parameter	Interpretation	Source
Housing demand		
$\theta = 0.8$	Leverage constraint	Loan-to-Value (LTV) limit for conventional GSE loans
$\nu = 3$	Residential sorting elasticity	Couture, Gaubert, Handbury and Hurst (2024)
$\rho = 0.1$	Endogenous amenities	Variation in demographic composition from exposure to SFR (See Table 4)
$\bar{B}_{jh}$	Location-tenure amenities	Model inversion
Housing supply		
$\kappa = 1.8$	Rental housing supply elasticity	Variation in rental yield from exposure to SFR (See Table 4)
$\mu = 0.1$	Returns to scale in rental supply	Landlords' willingness-to-pay to expand (See Table 2)
$\bar{c}_j$	Cost of rental supply	Model inversion

Notes. This table summarizes key parameters and model unobservables of the quantitative model. There are three key findings from model inversion. First, non-pecuniary benefits are large. Amenities from owning in a location is on average 40% larger than amenities from renting in the same location ($\bar{B}_{jo}/\bar{B}_{jr}$). This implies that owning is associated with approximately 34% additional utility. Second, landlords enter high-amenity neighborhoods. Neighborhood amenities averaged across owning and renting, $((\bar{B}_{jo} + \bar{B}_{jr})/2)$ are 9% larger in the Census tracts where landlords enter compared to those where landlords do not enter with a $t - statistic$ of 21.1. Third, landlords enter neighborhoods where rental supply is frictional. Census tracts where landlords enter have cost of rental supply ($\bar{c}_j$) 24% larger than those where landlords do not enter with a $t - statistic$ of 14.3.

Return to Section 6.3.

APPENDIX FOR "DIVERSIFYING THE SUBURBS: RENTAL SUPPLY AND SPATIAL INEQUALITY"

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November 2, 2024

Contents

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A. Additional literature and institutional details

Survey of literature on rental investors — In this section, I review the growing literature on rental investors. Contemporaneous works in the real estate literature exploit aggregate rent data and find mixed results on rents. Coven (2023) estimates a housing demand model and finds that rent decreases following the entry of institutional landlords into neighborhoods using PUMS data. Gorback, Qian and Zhu (2024) and Hanson (2023) find that the entry of institutional landlords lead to an increase in rents using aggregate rent index at the ZIP Code-level and the CBSA-level, respectively. I provide property-level evidence showing that rents *decrease* following the entry of corporate SFR landlords into the neighborhood using property listing-level rent data and a repeat-rent design combined with an event-study design.

Another strand of literature studies the consolidation of institutional landlords and find that mergers increase rent (Austin 2022; Gurun et al. 2023). All aforementioned papers find positive effects of rental investors on neighborhood-level home prices. However, another set of papers finds negative local price spillovers (Billings and Soliman 2023), but positive spillovers on the house price *growth* (Ma 2024) of institutional landlords onto properties within the 500 feet radius. Using property transaction-level data and a repeat-sales design, I show that that corporate SFR landlords lead to an increase in home prices. Furthermore, I find that corporate SFR landlords exhibit a high willingness-to-pay to achieve scale economies, which provides direct evidence on the difficulties that households face when competing with corporate landlords in the purchase market.

Beyond rents and prices, I show both property-level and neighborhood-level event-study evidence that increasing rental housing supply reduces residential segregation. These results are similar with cross-sectional evidence in Coven (2023). Other existing literature find that neighborhoods where the share of single-family rentals increases see a coinciding decline in racial segregation (Ihlanfeldt and Yang 2021), that households residing in corporate SFR landlord-owned properties are more financially constrained than other residents in the neighborhood in the cross-section (Coven 2023), and that an increase in single-family rentals in North Carolina allowed families to move their kids to better school districts (Mayock and Vosters 2024). I establish property-level event study evidence that that after corporate SFR landlords purchase a property, the likelihood that financially constrained households move into the property increases sharply. To this end, my empirical evi-

dence complements the findings by Francke et al. (2023) on how a Dutch policy that banned rental investors prevented in-migration of younger and lower-income households.

I embed these empirical finding in a quantitative spatial equilibrium model to structurally analyze the welfare effects. To the best of my knowledge, this paper conducts the first welfare and distributional analyses of rental reallocation by corporate SFR landlords. Using the model, I also recover households' non-pecuniary benefits for homeownership and location-specific cost of rental supply, which are important for counterfactual and welfare analyses.

Summary of bills proposed to regulate corporate SFR landlords in the United States — Regulating corporate landlords have garnered strong bi-partisan support. Elmendorf, Nall and Oklobdzija (2024) survey 5,000 households and find that policies that restrict "Wall Street" buyers rank as the second most popular housing and non-housing policies combined, only second to a policy that would cap drug prices. In response, lawmakers at both the federal- and state-level have proposed bills that would regulate corporate SFR landlords. I review these policies here.

1. *Stop Predatory Investing Act*

    - Sponsored by Senators Sherrod Brown (D-OH), Ron Wyden (D-OR), Tina Smith (D-MN), Jeff Merkley (D-OR), Jack Reed (D-RI), John Fetterman (D-PA), Elizabeth Warren (D-MA), and Tammy Baldwin (D-WI).
    - Disallows interest or depreciation deductions for investors who acquire 50 or more new single-family rental homes after the date of enactment.
    - Endorsed by Democratic presidential candidate Kamala Harris

2. *End Hedge Fund Control of American Homes Act*

    - Sponsored by representative Adam Smith (D-WA) and Senator Jeff Merkley (D-OR).
    - Require current hedge fund landlords to sell at least 10% of the total number of single-family homes in their current portfolio per year, so they completely divest over 10 years.
    - Imposes 50% of fair market value as tax penalty for future hedge fund purchases.

3. *American Neighborhoods Protection Act of 2023*

- Sponsored by representatives Jeffrey Jackson (D-NC) and Alma Adams (D-NC).
- Imposes a tax of $10,000 per number of single-family homes owned over 75.

4. Ohio Senate Bill 76 *Levy a tax on certain high-volume landlords*

   - Sponsored by state senators Louis W. Blessing, III (R), Nickie J. Antonio (D), Hearcel F. Craig (D), Hearcel F. Craig (D), and Catherine D. Ingram (D)
   - Imposes tax on landlords who own 50 or more single-family, two-family, or three-family properties in a county.

5. California AB2584 *Single-family residential real property: corporate entity: ownership*

   - Sponsored by representatives Jeffrey Jackson (D-NC) and Alma Adams (D-NC).
   - Prohibits landlords who own more than 1,000 single-family properties fro acquiring more properties.

Miscellanea — Below, I compile a collection of quotes that highlight key institutional details regarding corporate SFR landlords.

1 — Michael Stegman, counselor to the Secretary of the Treasury for housing finance policy, speaking about the requirements for investors in the REO-to-rental pilot program (112nd Congress 2nd).

> *I'll highlight just three important requirements of the qualification and bidding process. First, investors who lack experience and expertise to successfully manage large-met numbers of scattered-site properties, who don't have experience in the communities in which the portfolios are located, or who have a history of behavior that could lead to bad results, as Ms. Burns said, will not be eligible to participate. Qualified bidders must agree to provide tenants, out of its own funds, housing counseling and credit repair services, and to provide credit bureaus necessary documentation of tenants' rent, timely rent payments, to help boost their credit scores.*
>
> *Second, effective operating guidelines and compliance and report- ing requirements will be part of the contractual agreement between the Enterprise and the investors.*

We are mindful that this pilot is a transaction between a private seller and private investors, and not a government program. But nevertheless, it is in the interest of the Enterprises, and FHFA, and the taxpayers that properties be well-maintained and the commitments made by winning bidders will be kept.

Finally, requiring a minimum of 3 years of rental occupancy before the majority of homes can be sold is critical to achieving market stabilization goals and attracting capital sources, management expertise, and investors with longer-term investment horizons that FHFA is seeking from its successful bidders.

2 — Representative David Schweikert (R-AZ), speaking of the importance of scale in the context of REO-to-rental pilot program.

Okay. Our models used to always say that we would not even break even until we hit 200 houses in a pool. Just because of the—and that also mattered on our geographic distribution—just because of our property management mechanics. But, ultimately, you may have a group of dentists that all get together and they want to buy 25 houses. God bless them. You may have a REIT that says, we're not playing unless you can give us 1,000 properties and in a geographic, major urban area, because that's the type of money we have to park for our fees and management.

3 — Mary R. Kenney, Executive Director, Illinois Housing Development Authority (IHDA), voicing skepticism about the efficacy of REO-to-rental program in Chicago due to the lack of geographic concentration of properties in foreclosure.

A scattered approach will not be effective. Our understanding is that there are currently 99 properties in the Chicago region, scattered throughout the region. This is not enough to provide a critical mass, will be difficult to manage by the investor, and will likely have no effect on any given neighborhood.

4 — Laurie Goodman, then at Amherst Securities, now at the Urban Institute, in an interview about FHFA's REO-to-rental pilot program.

I think there is a fair amount of money in the wings waiting to buy, investors doing cash raises to buy properties on a large scale…But that means they have to build out a rental organization; it means they build out a management company, because if you're accumulating a hundred homes in Dallas that's very different than running a multifamily building.

B. Data appendix

B.1. Variable sources

- ATTOM property-level transactions data
  - Transaction price
  - Buyer name
  - Buyer mailing address
  - Property address
- ATTOM property-level assessment data
  - Property tenancy status
  - Property address
- InfoUSA household-level data
  - Race inferred from name of head of the household
  - Income, wealth, age
  - Household address
- MLS property-level rent data
  - Listing price
  - Property address
- TREPP commercial mortgage data
  - Property-level operating expenses
  - Cost of capital from securitization
- Survey of Consumer Finances (SCF)
  - Net wealth

- ACS (Census tract-level and ZIP Code-level)
  - Median income
  - Racial composition of a neighborhood

B.2. Data linkages and sample construction

Identifying institutional investors — I identify 23 large-scale corporate landlords based on names and addresses associated with property owners and buyers.

Table A.1. Detecting landlords from names and addresss

Institution	Buyer Name	Buyer Address
INVITATION HOMES	2018-4 IH BORROWER LP	SCOTTSDALE AZ 85261-4900
	2018-2 IH BORROWER LP	1717 MAIN ST STE 2000 DALLAS TX 75201-4657
	SFR JAVELIN BORROWER, LP	1717 MAIN ST STE 2000 DALLAS TX 75201-4657
	IH6 PROPERTY NORTH CAROLINA L.P.	9335 HARRIS CORNERS PKWY STE 150 CHARLOTTE NC 28269-3818
	...	...
PROGRESS RESIDENTIAL	MILE HIGH BORROWER 1 (VALUE), LLC	P O BOX 4090 SCOTTSDALE AZ 85261
AMERICAN HOMES 4 RENT	...	...
AMHERST RESIDENTIAL	...	...
BROOKFIELD ASSET MANAGEMENT	...	...
...	...	...

Sample selection for the repeat sales analyses — I construct the baseline sample following conventions in the existing real estate literature (Avenancio-León and Howard 2022; Berger et al. 2020; DeFusco et al. 2022; Kermani and Wong 2024).

- Residential properties classified as single family home, condominium, duplex, or apartment
- Include only resales and new construction
- Include only arms length transactions
- Include only full consideration transactions
- Remove non-unique transaction id
- Remove transaction value =< 0

- Remove duplicate transaction (same property $\times$ buyer $\times$ seller $\times$ transaction value, but different date), keep only the earliest observation
- Remove if transaction value is below $5,000
- Remove if transaction value is above $1,000,000

C. Empirical appendix

C.1. Descriptive evidence on corporate SFR landlords' cost of operation

Table A.1. Landlord scale and operating expenses

	Dependent Variable: Log of Operating Expenses				
	(1)	(2)	(3)	(4)	(5)
Log of Landlord Scale	-0.065***	-0.036***	-0.057***	-0.097***	-0.110***
	(0.006)	(0.007)	(0.006)	(0.005)	(0.005)
Property F. E.	×	×	×		
ZIP-County-City-Year F. E.	×	×		×	×
Loan Characteristics	×			×	
N	29,253	29,253	30,784	37,505	37,505
R-squared	0.833	0.787	0.750	0.716	0.689

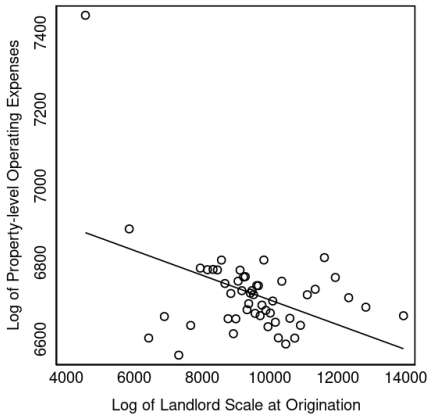
Notes.

$$\ln \textit{Operating Expenses}_{imt} = \beta \textit{Scale}_{mt} + \underbrace{\alpha_i}_{\text{Property}} + \underbrace{\gamma X_m}_{\text{Loan Characteristics}} + \underbrace{\zeta_{g(i)t}}_{\text{Geography-Time}} + \epsilon_{imt}$$

Each observation is a unique property i included in mortgage securitization m in year t. The coefficient of interest β represents the relationship. Standard errors are clustered by property and reported in parentheses.

Return to Sections 3.

Figure A.1. Landlord scale and operating expenses



Notes. This figure shows the relationship between landlords' operating expenses and scale. The y-axis is property-level operating expenses. The x-axis is landlords' scale. The data is from TREPP which aggregates data from prospectuses which are distributed to CMBS investors. The operating expenses and scale are recorded as of the initial securitization date. I include property-level fixed effects as well as ZIP Code-county-city-year-level fixed effects.

Return to Sections 3.

C.2. Additional results on corporate SFR landlords' purchase premium

Cash purchases do not explain purchase premium — Reher and Valkanov (2024) documents a substantial "mortgage-cash" premium in real estate markets where mortgaged buyers pay an average of 11% premium compared to cash buyers. They attribute this finding to seller preferences. Home sellers perceive the transaction risk of mortgaged offers to be large and are willing to sell to cash buyers at a deep discount.

Most transactions involving a corporate SFR landlord buyer are cash transactions, because corporate landlords often rely on bulk financing through mortgage securitization and other non-mortgage financing such as private equity. And so, it is unlikely that the mortgage-cash premium drives the 9% premium that corporate SFR landlords pay to acquire properties. Yet, I replicate the repeat sales specification in Reher and Valkanov (2024) and control for whether a transaction involves a mortgage. The price premium is robust to this specification. Furthermore, across various levels of fixed effects, I roughly match the 11% mortgage-cash premium. Appendix Table A.2 presents the results.

Distress sales and properties do not explain purchase premium — One may be concerned that corporate SFR landlords' reliance on purchasing distress properties in their earlier years of operation drives the purchase premium results. I estimate the baseline repeat sales specification for the sample of transactions that are non-distress sales (Appendix Table A.3) and for the sample of properties that were never involved in a distress sale (Appendix Table A.4).[37] The results are robust to these subsample analyses.

Misinformation does not explain purchase premium — Chinco and Mayer (2016) finds that out-of-town second-house buyers overpay for the same house due to misinformation. One may be concerned that corporate SFR landlords similarly overpay due to an inaccurate information about local housing markets and the collateral values due to their being out-of-town buyers and their reliance on algorithmic buying. This hypothesis would also suggest that misinformation drives corporate SFR landlords to initially overpay, but that they learn to correct themselves over time as they gain more experience in local housing markets.

[37] I define distress sales as transactions in foreclosure auctions, short sales, and REO liquidations.

Appendix Table A.5 presents results that are contrary to this logic. Corporate SFR landlords pay higher and higher prices in local markets as they gain more and more experience in the market across time (columns 1 and 2) and pay higher prices in markets where they *ex post* have more experience (columns 3 and 4).

Column 1 of Table A.5 shows that the price premium is increasing in the corporate SFR landlord's local market penetration as defined as the rolling sum of transaction shares in the same location prior to each new transaction. A one percentage point increase in a landlord's transaction share leads to 2.5% purchase premium. Column 2 shows results using a yearly resetting rolling sum. A one percentage point increase in the transaction share of a landlord in the same year leads to a 0.09% purchase premium. Columns 3 and 4 present results using *ex post* measures of market penetration, i.e., a landlord's cumulative transaction share as of 2020. These findings suggest that corporate SFR landlords' expansionary motives in a given local market entirely explain their purchase premier.

Table A.2. Price premium that corporate SFR landlords pay to acquire properties

	Dependent Variable: $\ln Price$					
	(1)	(2)	(3)	(4)	(5)	(6)
SFR Buyer	0.200	0.168	0.160	0.158	0.146	0.100
	(0.004)	(0.004)	(0.003)	(0.003)	(0.004)	(0.009)
Mortgaged	0.155	0.132	0.133	0.136	0.133	0.094
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Sample	2012-20	2012-20	2012-20	2012-20	2012-20	2012-20
Property F. E.	×	×	×	×	×	×
Hedonic-Time F. E.		×	×	×	×	×
Zip-Year F. E.	×	×				
Zip-Quarter F. E.			×			
Zip-Month F. E.				×		
Tract-Month F. E.					×	
Street-Month F. E.						×
N	3,154,922	3,153,985	3,142,053	3,104,743	2,732,619	455,488
R-squared	0.869	0.878	0.888	0.902	0.923	0.964

Notes.

$$\ln \textit{Price}_{ist} = \beta_1 \textit{SFR Buyer}_{ist} + \beta_2 \textit{Mortgaged}_i + \alpha_i + \gamma X_{it} + \zeta_{g(i)t} + \epsilon_{ist}$$

Each observation is a unique property sales s involving property i in time t. The estimated β coefficient represents the price premium that corporate SFR landlords pay relative to other buyers. The dependent variable is the log of transaction price. In column 1, the specification includes property fixed effects and ZIP Code-year fixed effects. Columns 2 through 6 include time-varying hedonics and subsequently more granular geography-time fixed effects. Hedonic characteristics include bins for the number of years since property construction, number of years since renovation, property size, number of bedrooms and bathrooms, a binary variable indicating whether the property is multistory, heating and garage types, and construction quality. Standard errors are clustered by property and reported in parentheses.

Return to Section 3.

Table A.3. Price premium that corporate SFR landlords pay to acquire properties

	Dependent Variable: $\ln Price$					
	(1)	(2)	(3)	(4)	(5)	(6)
SFR Buyer	0.098	0.098	0.086	0.082	0.075	0.101
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.011)
Sample	Non-dist.	Non-dist.	Non-dist.	Non-dist.	Non-dist.	Non-dist.
Property F. E.	×	×	×	×	×	×
Hedonic-Time F. E.		×	×	×	×	×
Zip-Year F. E.	×	×				
Zip-Quarter F. E.			×			
Zip-Month F. E.				×		
Tract-Month F. E.					×	
Street-Month F. E.						×
N	2,491,190	2,490,278	2,477,694	2,437,852	2,069,904	329,720
R-squared	0.875	0.878	0.889	0.903	0.923	0.962

Notes.

$$\ln \textit{Price}_{ist} = \beta \textit{SFR Buyer}_{ist} + \alpha_i + \gamma X_{it} + \zeta_{g(i)t} + \epsilon_{ist}$$

Each observation is a unique property transaction s involving property i in time t. The estimated β coefficient represents the price premium that corporate SFR landlords pay relative to other buyers. The dependent variable is the log of transaction price. In column 1, the specification includes property fixed effects and ZIP Code-year fixed effects. Columns 2 through 6 include time-varying hedonics and subsequently more granular geography-time fixed effects. Hedonic characteristics include bins for the number of years since property construction, number of years since renovation, property size, number of bedrooms and bathrooms, a binary variable indicating whether the property is multistory, heating and garage types, and construction quality. Standard errors are clustered by property and reported in parentheses.

Return to Section 3.

Table A.4. Price premium that corporate SFR landlords pay to acquire properties

	Dependent Variable: $\ln Price$					
	(1)	(2)	(3)	(4)	(5)	(6)
SFR Buyer	0.092	0.092	0.079	0.075	0.062	0.096
	(0.005)	(0.005)	(0.004)	(0.004)	(0.005)	(0.011)
Sample	Never-dist.	Never-dist.	Never-dist.	Never-dist.	Never-dist.	Never-dist.
Property F. E.	×	×	×	×	×	×
Hedonic-Time F. E.		×	×	×	×	×
Zip-Year F. E.	×	×				
Zip-Quarter F. E.			×			
Zip-Month F. E.				×		
Tract-Month F. E.					×	
Street-Month F. E.						×
N	2,115,917	2,115,016	2,102,028	2,060,774	1,702,187	271,242
R-squared	0.875	0.878	0.890	0.905	0.924	0.962

Notes.

$$\ln \textit{Price}_{ist} = \beta \textit{SFR Buyer}_{ist} + \alpha_i + \gamma X_{it} + \zeta_{g(i)t} + \epsilon_{ist}$$

Each observation is a unique property transaction s involving property i in time t. The estimated β coefficient represents the price premium that corporate SFR landlords pay relative to other buyers. The dependent variable is the log of transaction price. In column 1, the specification includes property fixed effects and ZIP Code-year fixed effects. Columns 2 through 6 include time-varying hedonics and subsequently more granular geography-time fixed effects. Hedonic characteristics include bins for the number of years since property construction, number of years since renovation, property size, number of bedrooms and bathrooms, a binary variable indicating whether the property is multistory, heating and garage types, and construction quality. Standard errors are clustered by property and reported in parentheses.

Return to Section 3.

Table A.5. Price premium paid by corporate SFR landlords and local market penetration

	Dependent Variable: $\ln Price$			
	(1)	(2)	(3)	(4)
SFR Buyer	0.1021	0.1101	-0.0419	-0.4720
	(0.0042)	(0.0037)	(0.1084)	(0.2521)
SFR Buyer × Trans. Share (Flow)	0.0251			
	(0.0061)			
SFR Buyer × Trans. Share (Flow; Year)		0.0009		
		(0.0005)		
SFR Buyer × Trans. Share (Stock; Year)			0.0140	
			(0.0027)	
SFR Buyer × Trans. Share (Stock)				0.0183
				(0.0089)
Sample	2012-20	2012-20	2012-20	2012-20
Property F. E.	×	×	×	×
Zip-Month F. E.	×	×	×	×
N	3,117,066	3,117,066	3,117,066	3,117,066
R-squared	0.887	0.887	0.887	0.887

Note.

$$\ln \textit{Price}_{islt} = \beta_1 \textit{SFR Buyer}_{ist} + \beta_2 \textit{SFR Buyer}_{ist} \times \textit{Experience}_{ilg(i)t} + \underbrace{\alpha_i}_{\text{Property}} + \underbrace{\gamma X_{it}}_{\text{Hedonic-Time}} + \underbrace{\zeta_{g(i)t}}_{\text{Geography-Time}} + \epsilon_{islt}$$

Each observation is a unique property sales s involving property i and buyer l in time t. The coefficient of interest is β, which represents the additional price premium that corporate SFR landlords pay in local markets where they have a high concentration. The variation in the interaction variables *Transaction Share* comes from differences in the timing and the intensity of purchase activities in ZIP Code $g(i)$ across different corporate landlords buyers b. *Trans. Share (Flow)* is the number of distinct previous purchases leading up to sales s involving the same corporate landlord buyer l in $g(i)$ (normalized by the number of all transactions in $g(i)$ leading up to sales s). That is, it indicates the time-series order of transaction s among all acquisitions by l in ZIP Code $g(i)$ (normalized). *Trans. Share (Flow; Year)* is the number of unique previous purchases by l in the same $g(i) \times$ Year (normalized). *Trans. Share (Stock; Year)* is the total number of distinct purchases by l in the same $g(i) \times$ Year (normalized). *Trans. Share (Stock)* is the total number of distinct purchases by l in $g(i)$ between 2012 and 2020 (normalized).

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C.3. Additional results on housing markets

Using PUMS data for housing costs — I complement price and rents analyses with publicly available data from the 1 year American Community Survey (ACS) Public Use Microdata Sample (PUMS). PUMS data is a repeated cross-section and thus, property fixed effects cannot be included to control for unobserved quality. To overcome this challenge, I estimate the following housing market-level event study:

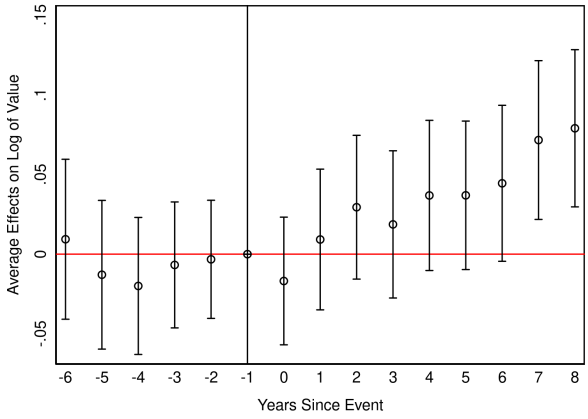
$$\ln \textit{Rent}_{i(jq)t} = \sum_{k \neq -1} \beta_k \underbrace{\textit{Years Since SFR Entry}^{k}_{(jq)t}}_{=\mathbb{1}\{t-\textit{Year SFR Entered}_{(jq)}=k\}} + \underbrace{\alpha_{(jq)}}_{\text{Housing Market}} + \underbrace{\zeta_{g(jq)t}}_{\text{Geography-Time}} + \epsilon_{i(jq)t} \qquad \text{(A.1)}$$

(jq) indicates a housing market, defined as a PUMA region interacted with quality segment. $q(i)$ is a set of unit i's hedonics.[38] Panels A and B of Figure A.2 show that relative rents and rents decrease in the eight years subsequent to corporate SFR landlord entry, respectively. The magnitude of the effects are similar to the what I find in the baseline repeat-rent event study design using MLS data.

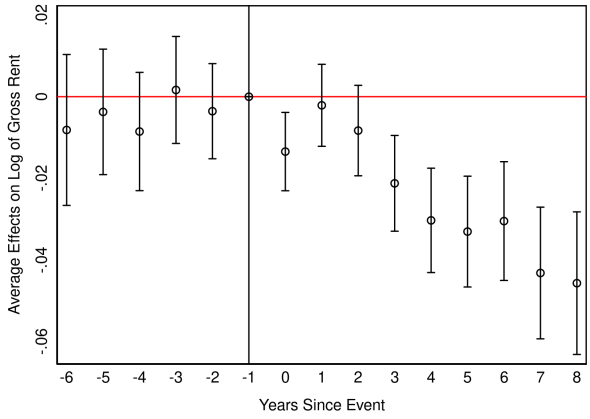
[38] In the baseline housing-market-level specification, the number of bedrooms proxies quality. In the property-level rent regressions, hedonics are the numbers of bedrooms and bathrooms.

Figure A.2. Effects of corporate SFR landlord entry on neighborhood-level characteristics (PUMS)

A. PUMA × segment-level price



B. PUMA × segment-level rent



Notes.

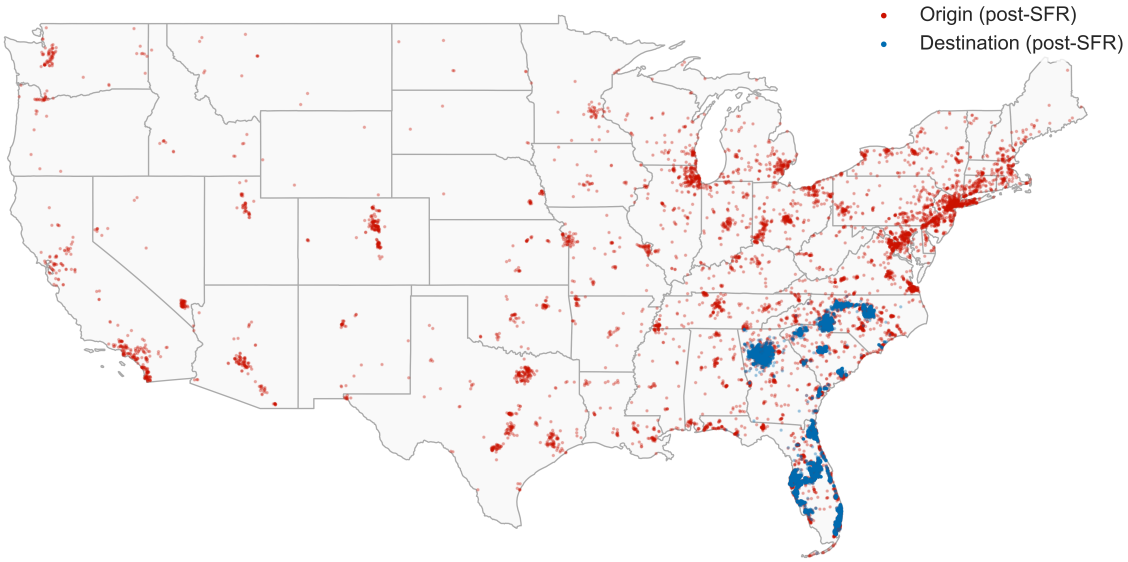
$$\ln \textit{Cost of Housing}_{i(jq)t} = \sum_{k \neq -1} \beta_k \underbrace{\textit{Years Since SFR Entry}^{k}_{(jq)t}}_{=\mathbb{1}\{t - \textit{Year SFR Entered}_{(jq)} = k\}} + \underbrace{\alpha_{(jq)}}_{\text{Housing Market}} + \underbrace{\zeta_{g(jq)t}}_{\text{Geography-Time}} + \epsilon_{i(jq)t}$$

Years Since SFR Entry$_{(jq)t}$ is the relative time, in number of years, to the year in which a corporate SFR landlord first purchases any property in neighborhood or housing market (jq), defined as the interaction between the PUMA region j and housing quality segment q (i.e., number of bedrooms). Thus, I roughly control for the quality of the underlying housing stock. This is particularly important for rents, because distribution of the quality of rental stock may change significantly after SFR investor entry. Panels A and B show results for house price and rent at the housing market-level, respectively.

Return to Section 4.2.

C.4. Additional results on neighborhood access and spatial sorting

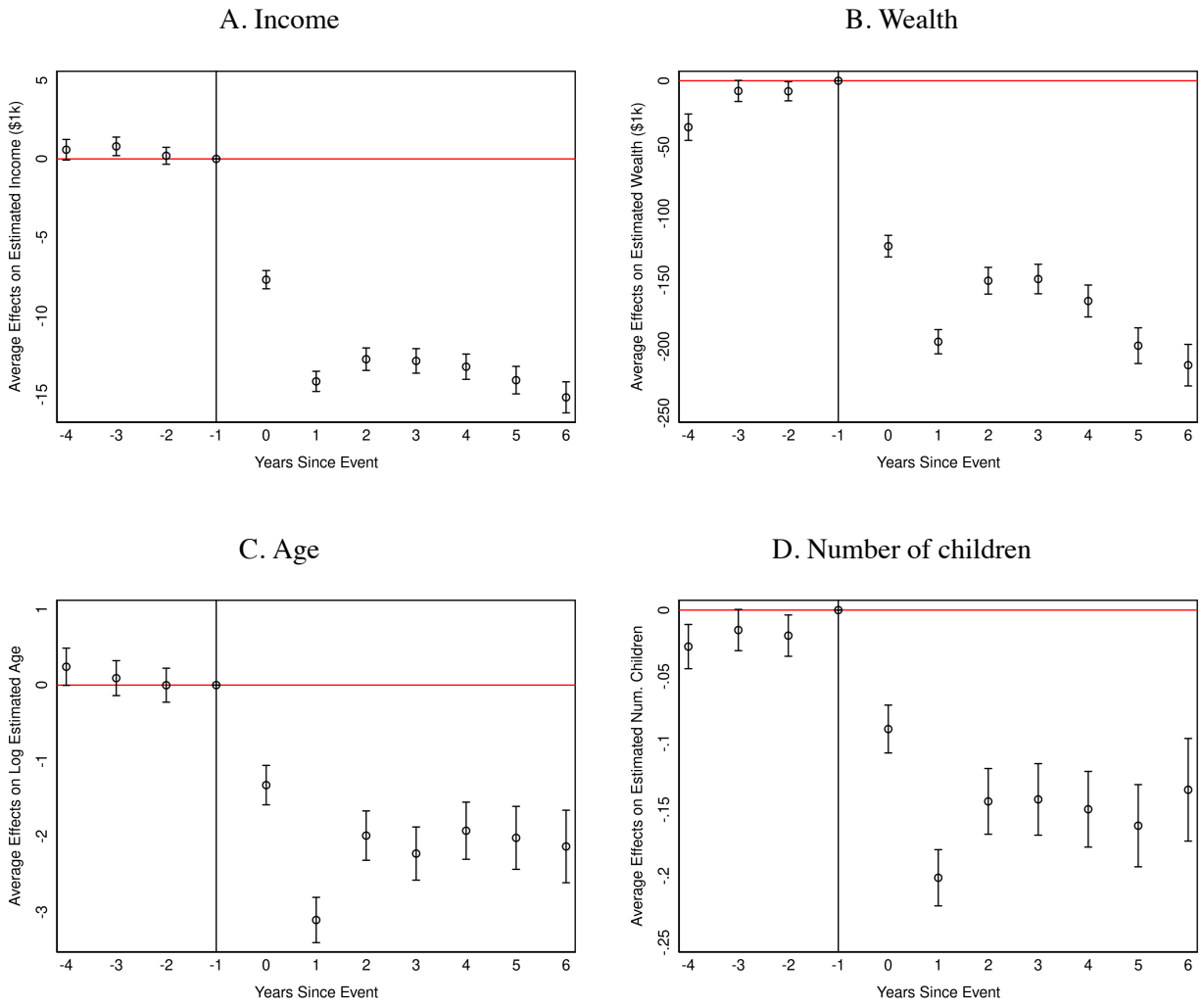
Figure A.3. Origin locations of households who move into an SFR investor property



Notes. Blue dots represent properties owned by SFR investors. Red dots represent the origin location of households who move to an SFR property, i.e., the location of properties resided by the household immediately prior to moving to an SFR property).

C.5. Additional descriptives on corporate SFR landlords

Figure A.4. Effects of corporate SFR landlords on in-migration of households



Notes.

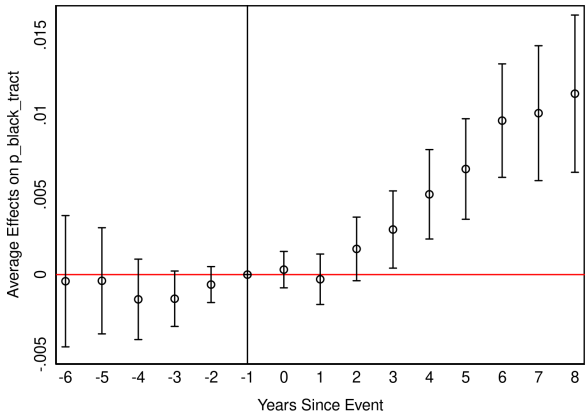
$$\textit{Household Characteristics}_{it} = \sum_{k \neq -1} \beta_k \underbrace{\textit{Years Since SFR Purchase}_{it}^{k}}_{\equiv \mathbb{1}\{t - \textit{Year SFR Purchased } i = k\}} + \underbrace{\alpha_i}_{\text{Property}} + \underbrace{\zeta_{g(i)t}}_{\text{Geography-Time}} + \epsilon_{it}$$

Years Since SFR Purchase$_{it}^{k}$ is the relative time, in number of years, to the year in which a corporate SFR landlord purchased property i. The data is property-household-level panel that tracks the resident of each property over time. Household characteristics are estimated by DataAxle using various data sources including surveys. To focus on households who move into a corporate SFR landlord-owned property, I restrict the treatment sample to investor-owned properties whose tenancy changes within the first three years of the purchase by the investor. Panels A through D show that households who move into an SFR investor-owned property have lower income, lower wealth, are younger, and have fewer children.

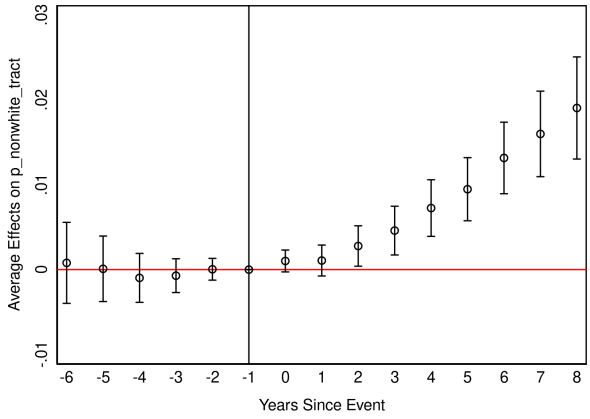
Return to Section 4.2.

Figure A.5. Effects of corporate SFR landlords on neighborhood composition and segregation

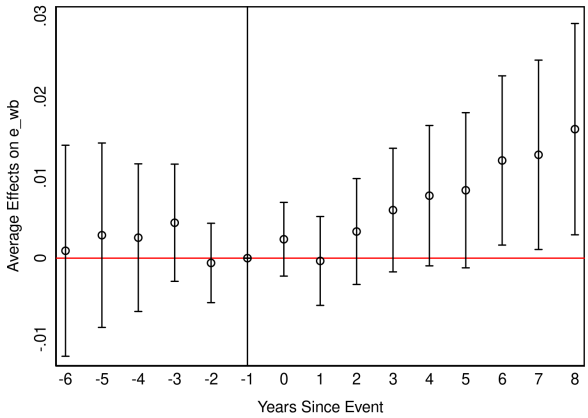
A. Black share



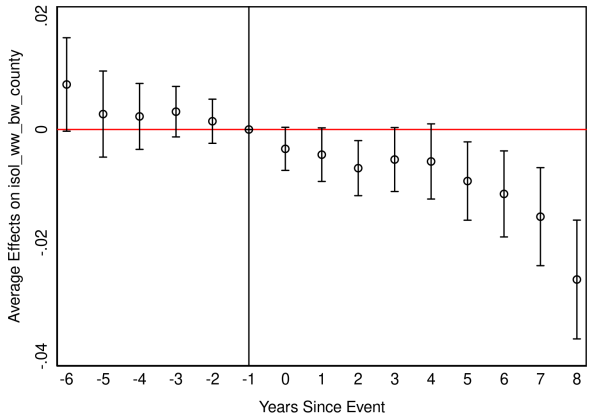
B. Non-White share



C. Evenness of race distribution



D. Racial exposure gap (i.e., "isolation")



Notes.

$$\textit{NBHD Character}_{jt} = \sum_{k \neq -1} \beta_k \underbrace{\textit{Years Since SFR Entry}_{jt}^{k}}_{=\mathbb{1}\{t - \textit{Year SFR Entered}_j = k\}} + \underbrace{\alpha_j}_{\text{Neighborhood}} + \underbrace{\zeta_{g(j)t}}_{\text{Geography-Time}} + \epsilon_{jt}$$

See Appendix Section C.4 for details on variable definitions and construction.

Figure A.6. Corporate SFR landlords buy first-time homebuyer home

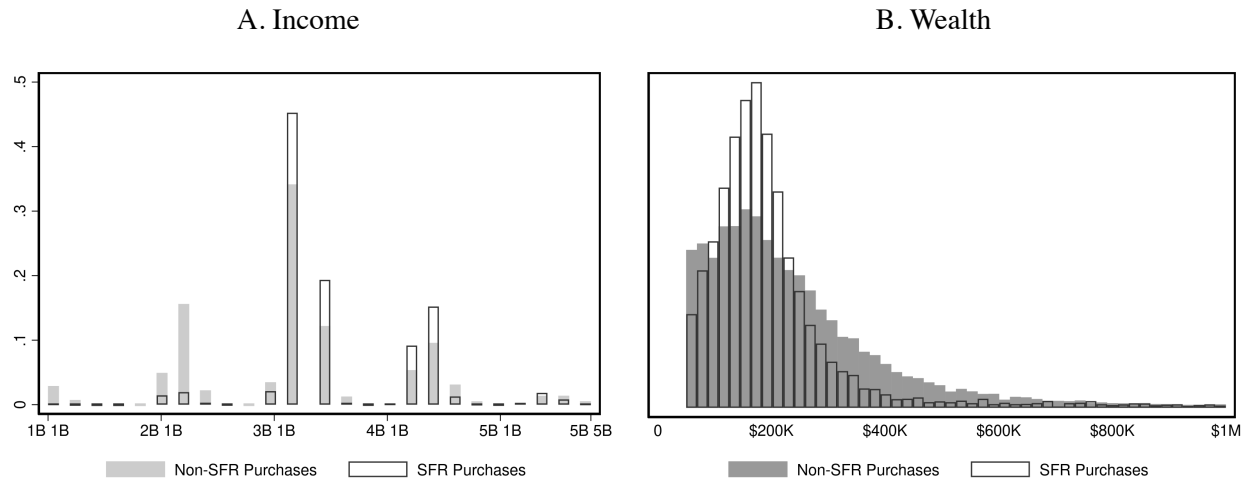
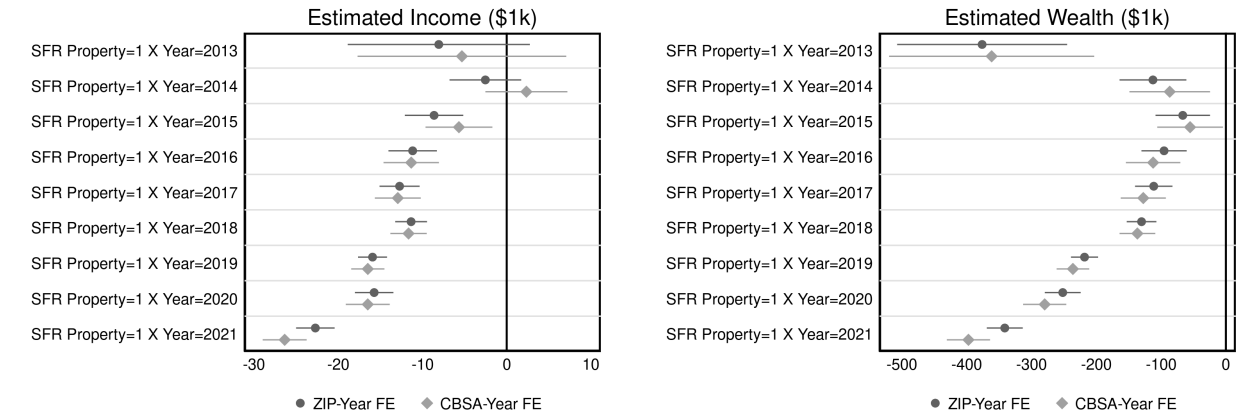


Figure A.7. Tenants of corporate SFR landlords over time



Notes.

$$\textit{Household Characteristics}_{it} = \beta_t \textit{SFR Property}_i + \zeta_{g(i)t} + \epsilon_{it}$$

D. Model appendix

D.1. Equilibrium definitions

Market clearing in stage 1 — The equilibrium in the absence of corporate landlord is given by the vector of home prices and rents $\mathcal{P} = \{p_{jo}, p_{jr}\}$ ($2 \times J$-many unknowns) that clear the ownership and rental markets between households and local landlords ($2 \times J$-many equations).

Definition 3. *Given model parameters $\{\theta, \nu, \rho, \kappa, \mu\}$, location characteristics $\{\bar{B}_{jh}, w_j, \bar{c}_j, \bar{H}_j\}$, and an exogenous wealth distribution $\Phi(m)$, a spatial equilibrium of the model is a distribution of location and tenure choice by endowment $\{H^D_{jh}(m)(\mathcal{P})\}$, landlords' housing supply $\{H^S_{jh}(\mathcal{P})\}$, and housing costs $\mathcal{P} = \{p_{jo}, p_{jr}\}$ such that: (1) households choose the location and tenure pair (j, h) that maximize their utility; (2) local landlords make an optimal investment decision; (3) rental markets clear; (4) homeownership markets clear; and (5) local population sums up to total population.*

1. Households choose the location and tenure pair (j, h) that maximize their utility;

$$\begin{aligned} H^D_{jh}(m) &= \underbrace{\frac{(B_{jh}(w_j + m - p_{jh}))^\nu}{\sum_{(k,s)\in\mathcal{I}(m)}(B_{ks}(w_k + m - p_{ks}))^\nu}}_{=\lambda^D_{jh}(m)} \cdot L(m) \\ H^D_{jh} &= \int_m \underbrace{H^D_{jh}(m)}_{=\frac{(B_{jh}(w_j+m-p_{jh}))^\nu}{\sum_{(k,s)\in\mathcal{I}(m)}(B_{ks}(w_k+m-p_{ks}))^\nu}\cdot L(m)} dF(m) \end{aligned} \tag{A.1}$$

2. local landlords make an optimal investment decision;

$$H^{S,local}_{jr} = \underbrace{\frac{\left(\frac{p_{jr}}{p_{jo}\bar{c}_j}\right)^\kappa}{\left(\frac{p_{jr}}{p_{jo}\bar{c}_j}\right)^\kappa + 1}}_{\equiv\pi^{local}_{jr}} \cdot \bar{H}_j \tag{A.2}$$

3. rental markets clear;

$$H^D_{jr} = H^S_{jr} = H^{S,local}_{jr} + H^{S,global*}_{jr} \tag{A.3}$$

4. homeownership markets clear; and

$$H_{jo}^D = H_{jo}^S = \bar{H}_j - H_{jr}^S \tag{A.4}$$

5. local population sums up to total population.

$$\sum_{(j,h)} H_{jh} = \bar{L} \tag{A.5}$$

Market clearing in stage 2 — The equilibrium in the presence of corporate landlord is given by the vector of home prices, rents, and corporate landlords' market penetration costs $\mathcal{P}^2$ ($3 \times J$-many unknowns) that clear the "re-sales" market between the stage 1 incumbent-owners and corporate landlords, and the ownership and rental markets between households and local and corporate landlords ($3 \times J$-many equations).

Definition 4. *Given model parameters $\{\theta, \nu, \rho, \kappa, \mu\}$, location characteristics $\{\bar{B}_{jh}, w_j, \bar{c}_j, \bar{H}_j\}$, and an exogenous wealth distribution $\Phi(m)$, a spatial equilibrium of the model is a distribution of location and tenure choice by endowment $\{H_{jh}^D(m)(\mathcal{P}^2)\}$, local landlords' housing supply $\{H_{jh}^S(\mathcal{P}^2)\}$, corporate landlords' rental supply $H_j^g(\mathcal{P}^2)$, and housing costs $\mathcal{P}^2 = \{p_{jo}^2, p_{jr}^2, \tilde{f}_j \equiv f_j'(H_j^g)\}$ such that: (1) households choose the location and tenure pair (j, h) that maximize their utility; (2) local landlords make an optimal investment decision; (3) the corporate landlord maximizes profits (4) rental markets clear; (5) homeownership markets clear; and (6) local population sums up to total population.*

1. Households choose the location and tenure pair (j,h) that maximize their utility;[39]

$$\begin{aligned} H_{jh}^{D,2}(m) &= \underbrace{\frac{(B_{jh}^2(w_j+m-p_{jh}^2))^\nu}{\sum_{(k,s)\in\mathcal{I}(m)}(B_{ks}^2(w_k^2+m-p_{ks}^2))^\nu}}_{=\lambda_{jh}^D(m)} \cdot L(m) \\ H_{jh}^{D,2} &= \int_m \underbrace{H_{jh}^{D,2}(m)}_{=\frac{(B_{jh}^2(w_j^2+m-p_{jh}^2))^\nu}{\sum_{(k,s)\in\mathcal{I}(m)}(B_{ks}^2(w_k^2+m-p_{ks}^2))^\nu}\cdot L(m)} dF^2(m) \end{aligned} \tag{A.6}$$

2. local landlords and the global landlord makes an optimal investment decision;

$$H_{jr}^{S,local,2} = \underbrace{\frac{\left(\frac{p_{jr}^2}{p_{jo}^2\bar{c}_j}\right)^\kappa}{\left(\frac{p_{jr}^2}{p_{jo}^2\bar{c}_j}\right)^\kappa+1}}_{\equiv\pi_{jr}^{local,2}} \cdot \bar{H}_j \tag{A.7}$$

3. the global landlord makes an optimal investment decision;

$$H_j^{g^*} = \left(\frac{\tilde{f}_j\cdot\bar{c}_j}{p_{jr}^2}\cdot\frac{1}{1+\mu}\right)^{\frac{1}{\mu}} \tag{A.8}$$

4. the "re-sale" market with corporate landlords clear;[40]

$$\begin{aligned} H_j^{g^*} = &\underbrace{H_{jh}^1(m)\cdot\left(1-\min\left(\frac{\sum_{(k,s)\in\mathcal{I}(m_{jh}^2)}(B_{ks}(w_k+m_{jh}^2-p_{ks}))^\nu}{\sum_{(k,s)\in\mathcal{I}(m)}(B_{ks}(w_k+m-p_{ks}))^\nu},\ 1\right)\right)}_{\textit{Sales by stage 1 incumbent homeowners}} \\ &+\underbrace{H_{jr}^{S,local,1}\cdot\left(\frac{\left(\frac{p_{jr}}{p_{jo}\bar{c}_j}\right)^\kappa}{\left(\frac{p_{jr}}{p_{jo}\bar{c}_j}\right)^\kappa+1}-\frac{\left(\frac{p_{jr}}{\tilde{f}_j\bar{c}_j}\right)^\kappa}{\left(\frac{p_{jr}}{\tilde{f}_j\bar{c}_j}\right)^\kappa+1}\right)}_{\textit{Sales by stage 1 incumbent local landlords}} \end{aligned} \tag{A.9}$$

[39] $F^2(m)$ is the distribution of household wealth in the second stage, with capital gains from selling to the corporate landlord factored in. See Appendix Section D.2 for details on the sales by incumbent homeowners and landlords to the corporate landlord.

[40] See Appendix Section D.2 for details on the sales by incumbent homeowners and landlords to the corporate landlord.

5. rental markets clear;

$$H_{jr}^{D,2} = H_{jr}^{S,2} = H_{jr}^{S,local,2} + H_{j}^{g^*} \tag{A.10}$$

6. homeownership markets clear; and

$$H_{jo}^{D,2} = H_{jo}^{S,2} = \bar{H}_j - H_{jr}^{S,2} \tag{A.11}$$

7. local population sums up to total population.

$$\sum_{(j,h)} H_{jh}^{2} = \bar{L} \tag{A.12}$$

D.2. Model structure that generates increasing market penetration cost

Decision to sell by stage 1 incumbents — As of stage 2, incumbent property owners are composed of households who chose to own a home in stage 1 (instead of rent) and landlords who chose to rent out their property in stage 1 (instead of sell the property). Let $\tilde{f}_j$ be the acquisition cost that the corporate landlord pays in j. Incumbent property owners decide between selling to the corporate landlord and re-choosing—which yields potential capital gains $\tilde{f}_j$—and sticking to their initial choice and forgoing capital gains. The propensity of incumbent owners to sell their property constitutes the supply of homes that the corporate landlord faces.

Supply from stage 1 homeowners — Incumbent homeowners decide between sticking with their stage 1 decision $(j,o)^1$ and selling to the corporate landlord at $\tilde{f}_{j^1}$, then re-choosing $(j,h)^2 \neq (j,o)^1$.

$$\max \left(\underbrace{B_{j^1o}(w_{j^1} + m - p_{j^1o})\eta^{\omega}_{j^1o}}_{\textit{Utility from staying}}, \underbrace{max_{(j,h)\neq(j,o)^1} B_{jh}(w_j + m^2_{j^1o} - p_{jh})\eta^{\omega}_{jh}}_{\textit{Utility from selling and choosing a different pair}} \right) \tag{A.13}$$

More generally, $m^2_{j^1h^1}$ is the stage 2 endowment that would be attained by selling a property in j^1 to a corporate landlord.

$$m^2_{j^1h^1} = \begin{cases} m + \tilde{f}_{j^1} - p_{j^1o} & \text{if } h^1 = o \quad \textit{Incumbent owners} \\ m & \text{if } h^1 = r \quad \textit{Incumbent renters} \end{cases}$$

Homeowners with $\eta^{\omega}_{j^1o^1}$ large enough that staying in $(j,o)^1$ and forgoing capital gains yields higher utility than choosing an outside option. Put differently, homeowners who choose $(j,o)^1$ despite more attractive outside options stay. The more marginal homeowner (smaller $\eta^{\omega}_{j^1o^1}$) sells to a corporate landlord and re-chooses $(j,h)^2 \neq (j,o)^1$.

Homeowners in all other locations j' similarly re-choose given $\tilde{f}_{j'}$. Renters re-choose given endgoenously changing prices. Accordingly, the stage 2 population in (j,h) is the sum of stage 1 population net of outflows (of homeowners who sell) and inflows from other locations.

$$H^2_{jh}(m) = H^1_{jh}(m) - \underbrace{H^{1\to 2}_{jh\to !(j)h}(m)(\tilde{f}_j)}_{\textit{Outflow from } jh} + \underbrace{\sum_{ks\neq jh} \overbrace{H^{1\to 2}_{ks\to !(k)s}(m)(\tilde{f}_k)}^{\textit{Outflow from } ks} \overbrace{\frac{(B_{jh}(w_{jh} + m^2_{ks} - p_{jo}))^{\nu}}{\sum_{qz\neq ks\in\mathcal{I}(m)}(B_{qz}(w_q + m^2_{ks} - p_{qz}))^{\nu}}}^{\textit{Choose } jh \textit{ in stage 2 | Leave stage 1 choice } ks}}_{\textit{Inflow into } jh}$$

Note that the outflow from (j,h), $H^{1\to 2}_{jh\to !(j)h}(m)(\bar{f}_j)$ can be expressed the following way.

$$\begin{aligned} H^{1\to 2}_{jh\to !(j)h}(m)(\bar{f}_j) &= H^1_{jh}(m) \cdot P(\text{Choose } !(j)h \text{ given } \tilde{f}_j \text{ in Stage 2} \mid \text{Choose } (j,h) \text{ in Stage 1}) \\ &= H^1_{jh}(m) \cdot \left(1 - \frac{P(\text{Choose } (j,h) \text{ given } \tilde{f}_j \text{ in Stage 2} \cap \text{ Choose } (j,h) \text{ in Stage 1})}{P(\text{Choose } (j,h) \text{ in Stage 1})}\right) \\ &= H^1_{jh}(m) \cdot \left(1 - \frac{P(\text{Choose } (j,h) \text{ given } \tilde{f}_j \text{ in Stage 2})}{P(\text{Choose } (j,h) \text{ in Stage 1})}\right) \\ &\approx H^1_{jh}(m) \cdot \left(1 - \min\left(\frac{\sum_{(k,s)\in\mathcal{I}(m^2_{jh})}(B_{ks}(w_k + m^2_{jh} - p_{ks}))^{\nu}}{\sum_{(k,s)\in\mathcal{I}(m)}(B_{ks}(w_k + m - p_{ks}))^{\nu}},\ 1\right)\right) \end{aligned}$$

where the joint probability of choosing (j,h) given better outside options (due to capital gains) and of choosing (j,h) given worse outside options is just the probability of choosing (j,h) given better

outside options.

$$
\begin{aligned}
&P(\text{Choose } (j,h) \text{ given } \bar{f}_j \text{ in Stage 2} \cap \text{ Choose } (j,h) \text{ in Stage 1}) \\
&= \\
&P(\underbrace{B_{jh}(w_j + m - p_{jh})\eta^{\omega}_{jh} > max_{ks \neq jh} B_{ks}(w_k + m^2_{jh} - p_{ks})\eta^{\omega}_{ks}}_{(j,h) \textit{ is the best option given better outside options}} \\
&\cap \underbrace{B_{jh}(w_j + m - p_{jh})\eta^{\omega}_{jh} > max_{ks \neq jh} B_{ks}(w_k + m - p_{ks})\eta^{\omega}_{ks}}_{(j,h) \textit{ is the best option}}) \\
&= P(B_{jh}(w_j + m - p_{jh})\eta^{\omega}_{jh} > max_{ks \neq jh} B_{ks}(w_k + m^2_{jh} - p_{ks}))\eta^{\omega}_{ks} \\
&= P(\text{Choose } (j,h) \text{ given } \bar{f}_j \text{ in Stage 2})
\end{aligned}
$$

given $\tilde{f}_j > p_{jo}$.[41]

Supply from stage 1 landlords — Incumbent landlords decide between selling their property to the corporate landlord and continuing to rent out their property and being a landlord.

$$\max\left(\frac{p_{jr}}{\bar{c}_j}\,\epsilon^l_j,\ \tilde{f}_j\right) \tag{A.14}$$

Similar to homeowners, incumbent landlords with ϵ^l_j high enough to such that they have higher idiosyncratic returns even compared to the higher price the corporate landlord is willing to pay, continue to be a landlord. The more marginal landlords sell to the corporate landlord and exits the rental market.

$$H^{S,local,2}_{jr} = H^{S,local,1}_{jr} - \underbrace{H^{S,local,1}_{jr} \cdot \left(\frac{\left(\frac{p_{jr}}{p_{jo}\bar{c}_j}\right)^{\kappa}}{\left(\frac{p_{jr}}{p_{jo}\bar{c}_j}\right)^{\kappa} + 1} - \frac{\left(\frac{p_{jr}}{\tilde{f}_j\bar{c}_j}\right)^{\kappa}}{\left(\frac{p_{jr}}{\tilde{f}_j\bar{c}_j}\right)^{\kappa} + 1}\right)}_{\textit{Outflow of local landlords}}$$

Supply curve of existing homes faced by the corporate landlord — The supply of existing homes to corporate landlord at acquisition cost $\tilde{f}_j$ is the sum of incumbent homeowners and incumbent landlords who sell their property to the corporate landlord. Supply by incumbent homeowners' is governed by the strength of residential elasticity ν. Supply by incumbent local landlords is

[41] Note that if corporate landlord offer $\tilde{f}_j = p_{jo}$, no homeowner will sell to the corporate landlord.

governed by rental supply elasticity κ.

This formulation does not yield a closed form expression for the supply of existing homes. This is mainly due to (1) the changes in the choice sets of households $\mathcal{I}(m^2)$ and (2) endogenous price changes.

Alternative formulation: static, static — A simpler, alternative formulation is one in which the supply of homes to corporate landlords come entirely from local landlords who are initially endowed with the housing stock. This setup is completely static and simultaneous, in the sense that it forgoes the two stage setup. There is one static equilibrium *without* the corporate landlord and another *with* the corporate landlord. All properties are acquired from the incumbent property owner who makes a discrete choice decision between selling the property and renting it out.

Supply from local landlords who are endowed with a property — This setup compromises on realism—it lacks the margin of homeowners selling to the corporate landlord—but yields a intuitive closed-form expression for the increasing market penetration cost that the corporate landlord faces.

$$\begin{aligned} H_j\left(f_j\right) &= \frac{1}{\left(\frac{p_{jr}}{f_j \bar{c}_j}\right)^{\kappa}+1} \cdot \bar{H}_j \\ \frac{\bar{H}_j - H_j\left(f_j\right)}{H_j\left(f_j\right)} &= \left(\frac{p_{jr}}{f_j \bar{c}_j}\right)^{\kappa} \\ f_j &= \left(\frac{H_j\left(f_j\right)}{\bar{H}_j - H_j\left(f_j\right)}\right)^{\frac{1}{\kappa}} \cdot \frac{p_{jr}}{\bar{c}_j} \end{aligned} \tag{A.15}$$

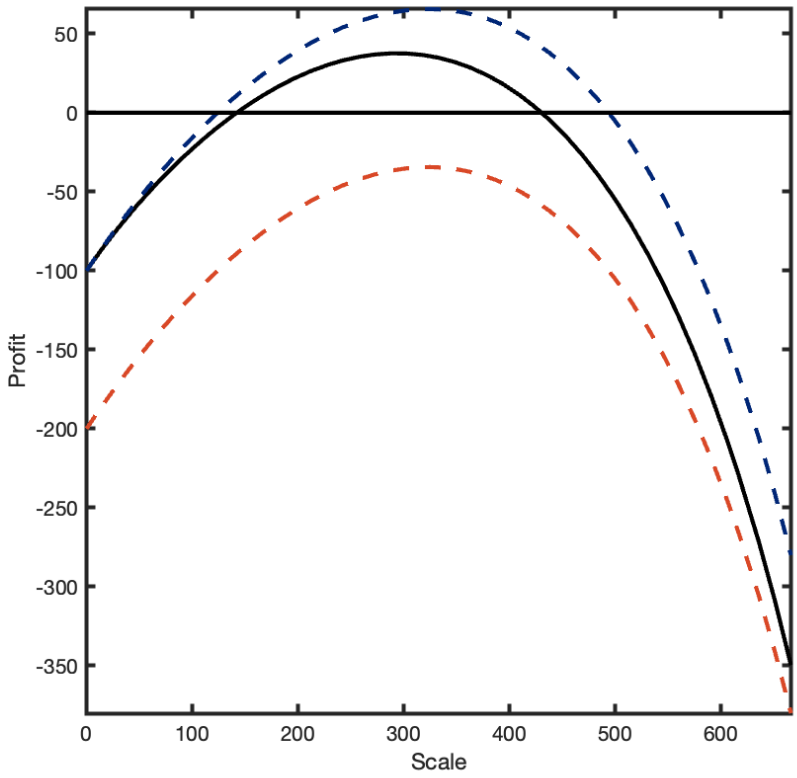
Then, the corporate landlord's profit is given as follows.[42]

$$\tilde{\Pi}_j^g(H_j^g) = \frac{p_{jr}}{c_j} \cdot H_j^g \cdot \left((H_j^g)^{\mu} - (H_j^g)^{\frac{1}{\kappa}} \cdot (\bar{H}_j - H_j^g)^{-\frac{1}{\kappa}}\right) \tag{A.16}$$

This generates a profit curve that is U-shaped in landlord scale. The following example demonstrates this. Given parameter values $\bar{H}_j = 1000$, $\mu = 0.014$, $\kappa = 1.8$, and $\tau_j = 100$, the corporate landlord's profit peaks at around 300 properties. With larger returns to scale $\mu = 0.028$, the profit curve bows out. With larger fixed cost $\tau_j = 200$, the corporate landlord makes negative profits even at their optimal scale.

[42] See Appendix Section D.3 for the corporate landlord's problem

Figure A.1. Corporate landlord's profits



Notes. TBD.

D.3. Corporate SFR landlord's problem

Corporate landlord chooses $H_j^{g^*}$ such that the marginal market penetration cost equals the marginal revenue.

$$\tilde{\Pi}_j^g(H_j^g) = H_j^g \cdot \frac{p_{jr}}{\bar{c}_j \cdot (H_j^g)^{-\mu}} - f(H_j^g) - \tau_j \qquad \textit{Profit}$$

$$f(H_j^g) = \sum_{h=1}^{H_j^g} f_j'(h) \text{ where } \partial f_j'(h)/\partial h > 0 \qquad \textit{Non-parametric market penetration cost}$$

$$(1+\mu) \cdot \frac{p_{jr}}{\bar{c}_j} \cdot (H_j^g)^{\mu} \qquad \textit{Marginal net revenue}$$

$$f_j'(H_j^g) \qquad \textit{Marginal market penetration cost}$$

$$H_j^{g^*} = \left(\frac{f_j'(H_j^{g^*}) \cdot \bar{c}_j}{p_{jr}} \cdot \frac{1}{1+\mu} \right)^{\frac{1}{\mu}} \qquad \textit{Optimal scale}$$

D.4. Equilibrium properties and comparative statics

Sources of residential segregation — The model features several mechanisms that drive the spatial segregation of renters and homeowners. First, heterogeneities in landlording costs lead to differences in equilibrium rental supply in the cross-section. Other forces of residential segregation include (1) the endogenous sorting of households who may prefer to live near homeowners, (2) non-homotheticities in housing consumption that drive high-wealth homeowners to sort into high-price neighborhoods, (3) leverage constraints that restricts the choice set of households depending on their income and wealth, and (4) the initial distribution of household wealth in the economy.

Spatial and housing tenure sorting by wealth — Figure A.1 summarizes the spatial sorting patterns of households in response to housing reallocation. Consider a neighborhood where the ownership benefits outweigh renting benefit (i.e., $B_{jo} > B_{jr}$). Such a neighborhood features a high share of high-wealth homeowners due to non-homotheticities in housing consumption. A reallocation of ownership housing to rentals pushes down rent, resulting in in-migration of renters across the wealth distribution (Panel A). At the same time, the price of owner-occupied housing increases, "pricing-out" middle-wealth households from the homeownership market (Panel B). In aggregate, the share of low-wealth households increase and the share of high-wealth households decrease, while changes in the share of middle-wealth households are ambiguous (Panel C). Homeownership weakly decreases for all levels of wealth (Panel D).

Richer households sort into high-price locations — The unit housing demand generates a simple non-homotheticity in housing consumption. Namely, high endowment households are less sensitive to high prices and sort into high-price locations.

$$\frac{\partial^2 \ln \lambda_{jh}^D(m)}{\partial m \, \partial p_{jh}} > 0 \tag{A.17}$$

Second, financial constraints limit entry of low-wealth households into the neighborhood who cannot afford homeownership.

$$\lambda_{jo}^D(m) = 0 \Leftrightarrow m < \theta^{LTV} \cdot p_{jo}$$

Homeownership is high for high-income/-wealth households — High-wealth households are over-represented in neighborhoods where homeownership is preferred:

$$\frac{\partial^2 \left(\lambda_{jo}^D(m)/\lambda_{jr}^D(m)\right)}{\partial m \, \partial p_{jo}} > 0 \;\; \textit{iff} \;\; B_{jo} > B_{jr}$$

High location-specific cost of rental supply leads to low rental supply and high rent — Rearranging equation (A.2)—the equilibrium rental supply—in terms of p_{jr} and plugging in the price expression to *relative* choice probabilities between (j, o) and (j, r)—equation (A.1)—yields equilibrium rent $p_{jr}*$. Much algebra later, we have:

$$\frac{\partial p_{jr}^*}{\partial c_j} > 0 \;\; \textit{given} \;\; p_{jr} < p_{jo} \tag{A.18}$$

Comparative statics — To denote the counterfactual equilibrium as changes relative to the initial equilibrium, I use the hat-notation, i.e., $\hat{X} \equiv \frac{X'}{X}$. From equation (A.1)—the equilibrium location-tenure choice of households—:

$$\hat{L}_{jh}(m) = L'(m) \cdot \frac{(B_{jh}(w'_j + m - p'_{jh}))^\nu}{\sum_{(k,s)\in\mathcal{I}'(m)}(B_{ks}(w'_k + m - p'_{ks}))^\nu} \Bigg/ L(m) \cdot \frac{(B_{jh}(w_j + m - p_{jh}))^\nu}{\sum_{(q,z)\in\mathcal{I}(m)}(B_{qz}(w_q + m - p_{qz}))^\nu} \tag{A.19}$$

$$\vdots$$

$$= \hat{L}(m) \cdot \underbrace{\frac{(w'_j + m - p'_{jh})^\nu}{(w_j + m - p_{jh})^\nu}}_{=\hat{u}_{jh}^\nu(m)} \cdot \underbrace{\frac{L(m)}{L_{jh}(m)}}_{=\frac{1}{\lambda_{jh}(m)}} \cdot \underbrace{\frac{(B_{jh}(w_j + m - p_{jh}))^\nu}{\sum_{(q,z)\in\mathcal{I}'(m)}(B_{qz}(w'_q + m - p'_{qz}))^\nu}}_{=\lambda_{jh}^{Counterfactual}(m)} \tag{A.20}$$

assuming that fundamental amenities B_{jh} stays constant, i.e., $\frac{B'_{jh}}{B_{jh}} = 1$. Similarly, using equation (A.2)—the equilibrium rental supply—:

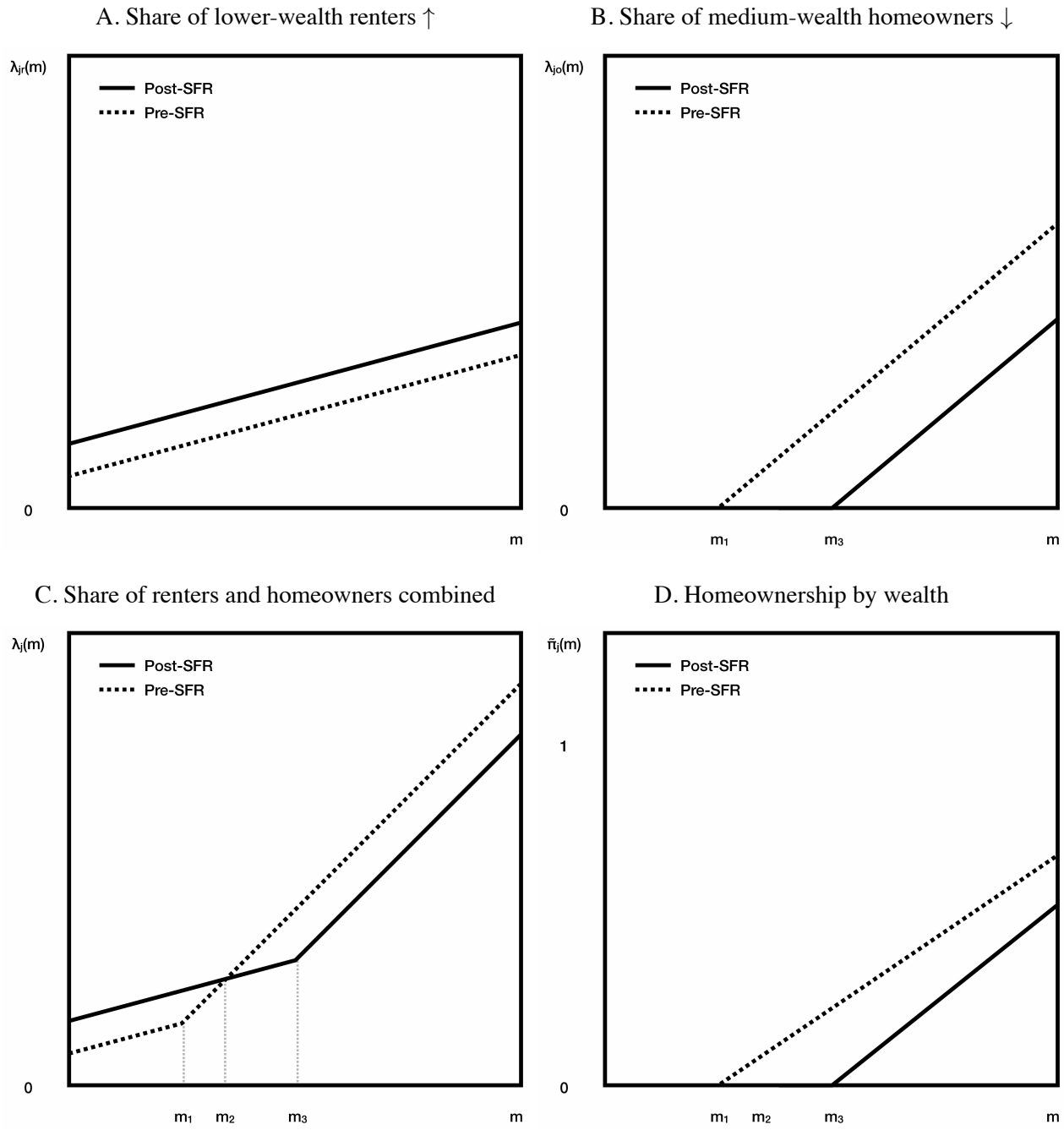
$$\hat{H}^S_{jr} = \frac{\left(\frac{p'_{jr}}{p'_{jo}c'_j}\right)^{\kappa}}{\bar{r}' + \left(\frac{p'_{jr}}{p'_{jo}c'_j}\right)^{\kappa}} \Bigg/ \frac{\left(\frac{p_{jr}}{p_{jo}c_j}\right)^{\kappa}}{\bar{r} + \left(\frac{p_{jr}}{p_{jo}c_j}\right)^{\kappa}} \tag{A.21}$$

$$\vdots$$

$$= \hat{p}^{\kappa}_{jr} \cdot \left(\frac{\hat{1}}{p_{jo}}\right)^{\kappa} \cdot \left(\frac{\hat{1}}{c_j}\right)^{\kappa} \cdot \underbrace{\frac{\bar{r} + \left(\frac{p_{jr}}{p_{jo}c_j}\right)^{\kappa}}{\left(\frac{p_{jr}}{p_{jo}c_j}\right)^{\kappa}}}_{=\frac{1}{\lambda_{jh}}} \cdot \underbrace{\frac{\left(\frac{p_{jr}}{p_{jo}c_j}\right)^{\kappa}}{\bar{r}' + \left(\frac{p'_{jr}}{p'_{jo}c'_j}\right)^{\kappa}}}_{=\lambda^{Counterfactual}_{jh}} \tag{A.22}$$

(A.23)

Figure A.2. Patterns of spatial sorting by household type



E. Quantification and estimation appendix

E.1. Constructing data for the quantitative model

The input for the quantitative model includes Census tract-level characteristics from the ACS and household wealth distribution from the SCF.

Normalizing and annualizing stock variables — I normalize home prices to annual levels that correspond to the user cost of owning a home.

E.2. Details about model inversion

Inverting out location-tenure-specific amenities

Proof. For simplicity, assume a discrete distribution of wealth $\Phi(m)$. Rewriting equation (A.1)—the equilibrium location-tenure choice of households—yields:

$$L_{jh} = \sum_{m} L(m) \cdot \frac{(B_{jh}(w_j + m - p_{jh}))^{\nu}}{\sum_{(k,s)\in\mathcal{I}(m)}(B_{ks}(w_k + m - p_{ks}))^{\nu}} \tag{A.1}$$

$$\vdots$$

$$B_{jh} = L_{jh}^{\frac{1}{\nu}} \cdot \left(\sum_{m} L(m) \cdot \frac{((w_j + m - p_{jh}))^{\nu}}{\sum_{(k,s)\in\mathcal{I}(m)}(B_{ks}(w_k + m - p_{ks}))^{\nu}} \right)^{-\frac{1}{\nu}} \tag{A.2}$$

□

Inverting out location-specific costs of rental supply

Proof. Rewriting equation (A.2)—the equilibrium rental supply—yields:

$$H_{jr}^{S} = \frac{r_j^{\kappa}}{\bar{r} + r_j^{\kappa}} \cdot \bar{H}_j \tag{A.3}$$

$$\vdots$$

$$c_j = \left(\frac{H_{jr}^{S} \bar{r}}{\bar{H}_j - H_{jr}^{S}} \right)^{-\frac{1}{\kappa}} \cdot \frac{p_{jr}}{p_{jo}} \tag{A.4}$$

□

Algorithm for model inversion

1. Given $\tilde{B}_{jh}$, compute the implied population $\tilde{L}_{jh}$ using equation (A.1)
2. Update $\tilde{B}'_{jh} = \psi \cdot \tilde{B}_{jh} + (1-\psi) \cdot \tilde{B}'_{jh} \cdot \frac{L_{jh}}{\tilde{L}_{jh}}$, where L_{jh} is data
3. If $\|\{L_{jh}\} - \{\tilde{L}_{jh}\}\| > \epsilon$, let $\tilde{B}_{jh} = \tilde{B}'_{jh}$ and repeat. Otherwise, let $B_{jh} = \tilde{B}_{jh}$.

where $\psi \in (0,1)$ and ϵ is small.

E.3. Details about model-consistent estimation

Derivation of the estimating equation for returns to scale parameter μ — For estimation, I exploit the variation in purchase premia of landlords of varying scales. To do so, I impose a condition that the returns on individual property equalize across landlords. Formally, consider two landlords l and l', where $H_j^{l'} > H_j^l$:

$$\begin{aligned}
\frac{r_j^l}{p_{jo}(H_j^l)} &= \frac{r_j^{l'}}{p_{jo}(H_j^{l'})} && \textit{where } r_j^l = \frac{p_{jr}}{\bar{c}_j \cdot (H_j^l)^{-\mu}} \\
\frac{p_{jo}(H_j^{l'})}{p_{jo}(H_j^l)} &= \left(\frac{H_j^{l'}}{H_j^l}\right)^{\mu} && \\
\ln p_{jo}(H_j^{l'}) - \ln p_{jo}(H_j^l) &= \mu \cdot (\ln H_j^{l'} - \ln H_j^l) && \textit{let } H_j^l = 1 \\
\ln p_{jo}(H_j^{l'}) &= \mu \cdot \ln H_j^{l'} &&
\end{aligned}$$

Then, μ is the purchase premia that a landlord of scale $H_j^{l'}$ pays over other buyers with atomistic scale.

E.4. Additional model validation results

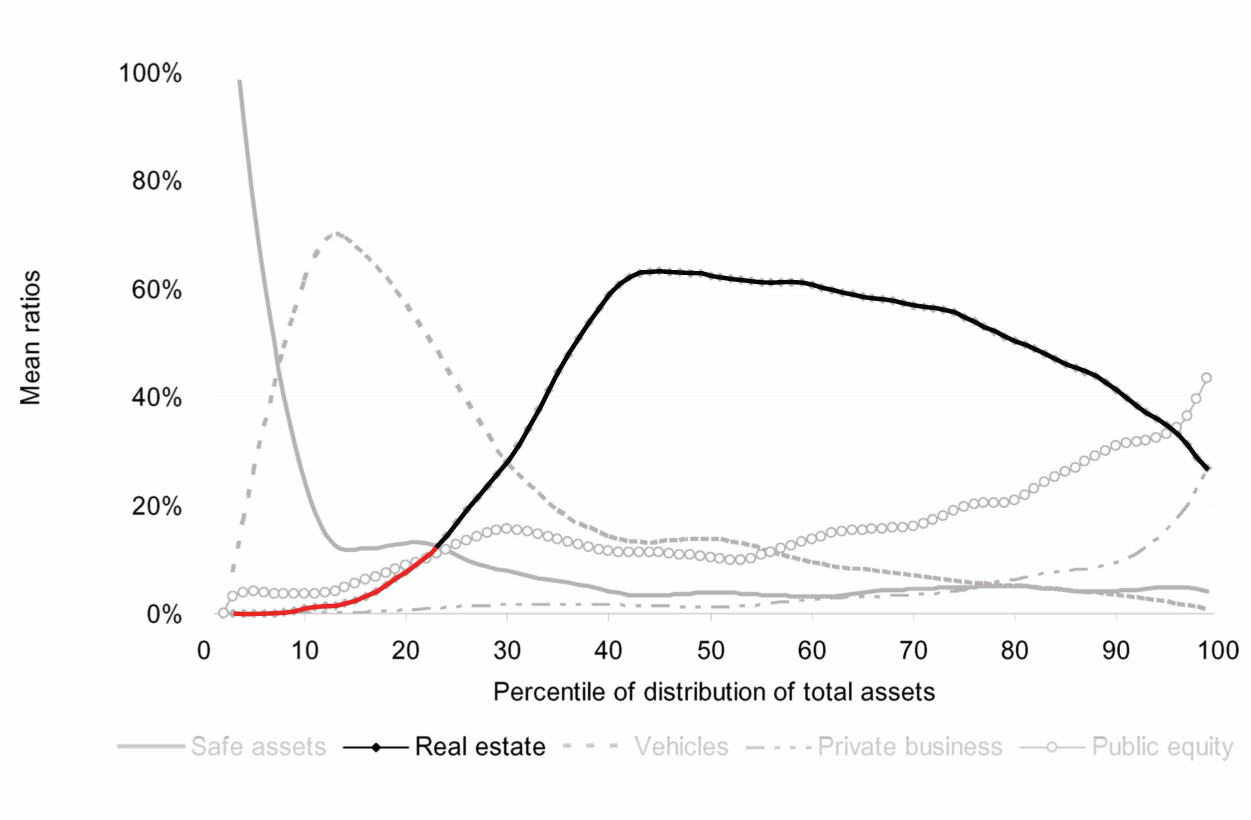
1. Homeownership across wealth matches the data (see Greaney 2023)
2. Housing expenditure across wealth seems to match data on expenditure share across income (see Finlay and Williams 2022)
3. Segregation (compare w/ my empirical section)
4. Treatment v.s. control ex-ante cost and amenities (compare w/ my empirical section)

E.5. Details about counterfactual exercises

Algorithm to solve for a counterfactual equilibrium — Heuristically, the process of solving for a counterfactual equilibrium $\{H_{jh}^{S,l'}\}, \{H_{jh}^{S,g'}\}, \{p_{jh}^{'}\}$ in response to a shock is the reverse of the model inversion process described previously. I outline the process below, considering a pared down version of the model where $\Delta B_{jh} = 0$ in response to corporate landlord entry. I denote the pre- and post-SFR periods with superscripts 0 and 1, respectively.

- Step 0. Collect data: $\{p_{jr}^0\}, \{p_{jo}^0\}, \{H_{jr}^0 = L_{jr}^0\}, \{\bar{H}_j\}, \{H_{jh}\}$.
- Step 1. Collect parameters: a vector of directly estimated parameters $\Theta = \{\nu, \kappa, \rho, \mu\}$.
- Step 2. Invert out unobservables $\{B_{jh}^0\}$ and $\{c_j^0\}$.
- Step 3. Simulate the entry of corporate SFR landlords.
    1. Simplified version: Lower c_j for an exogenous set of j's. I describe the subsequent steps using this process.
    2. Full version: "Turn on" returns to scale $\mu = 0 \Rightarrow \mu = \hat{\mu}$ and have landlords enter endogenously.
- Step 4. Compute counterfactual data $\{p_{jr}^1\}, \{p_{jo}^1\}$ that clear the markets at $\{H_{jr}^1\}, \{H_{jo}^1\}$.
    1. Compute $\{H_{jh}^{S,1}\}$ given c_j^1
    2. Compute $\{H_{jh}^{D,1}\}$ given c_j^1
    3. Adjust $\frac{p_{jr}^1}{p_{jo}^1}$ (ratios) until $\frac{H_{jr}^{S,1}}{H_{jo}^{S,1}} = \frac{H_{jr}^{D,1}}{H_{jo}^{D,1}}$
    4. Adjust $p_{jr}^1 + p_{jo}^1$ (levels) until $H_{jr}^{S,1} + H_{jo}^{S,1} = \bar{H}_j$
- If SMM: Step 5. Run DiD using data from the model to compute β_{rent}, β_{price}, and $\beta_{homeownership}$
- If SMM: Step 6. Evaluate the distance between model implied moments and empirical moments.
- If SMM: Step 7. Repeat steps one through seven until it converges.

Figure A.1. Housing wealth across the household wealth distribution



Notes. Source: Campbell (2006)