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Big Capital, Precision Technologies, and Structural Power in the US Housing Market

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Abstract

Over the past decade, US social relations have undergone reorganization associated with the rise of algorithms and digital platforms. This research specifically responds to the dual surge of the real estate sector and the tech industry during the COVID-19 pandemic. The pandemic has seen a flood of capital chasing limited residential real estate investment opportunities, and increased reliance on digital communication and commerce. Considering the expanded role for iBuyers, a major new wave of investment backing institutional-scale landlords in single-family rentals, and the growth of business models that offer a path to homeownership through renting or provide non-professional investors exposure to the home rental market, I examine how the intersection of big tech and big capital reshapes market power. Situated at the intersection of real estate, finance, and digital platforms, this research demonstrates how finance capital and digital technologies are jointly expanding rentier relations in the US housing market, shaping housing futures that will deepen inequalities of wealth and affordability for generations.

Introduction

Over the past decade, social relations have been reorganized via the rise of digital platforms and algorithms.[1] The use of computer code to sort, organize, extract, and mine massive data sets is often accompanied by promises of transparency and equal treatment, but actually raises significant concerns about fairness and inequality, even as algorithmic power can be opaque and difficult to challenge and hold accountable.[2] The digitization of housing thus needs to be considered together with the ongoing role of property relations in the reproduction of inequality, an idea I'll return to at the end of this paper.

I approach the conjoined acceleration of tech and real estate during the pandemic with these insights in mind. In the COVID-19 pandemic, both the tech sector and the real estate market have surged, eliciting a flood of capital chasing limited residential real estate investment opportunities and increasing reliance on digital communication and commerce. This dual surge is manifested in three interrelated trends. First, an expanded role for iBuyers, which use algorithms to rapidly price and make offers on homes they then flip to other buyers for a markup. Second, a major new wave of investment backing institutional-scale landlords, which also use algorithms to rapidly price and make offers on homes; unlike iBuyers, these corporate landlords buy homes to hold, renting them out to tenants. Third, the proliferation of business models that offer a path to homeownership through renting or provide non-professional investors exposure to the home rental market.

In this paper, I explore the relationships among these trends, aiming to think through the market logics and power relations that give rise to such strategies. In essence, the question is—under what conditions do strategies like buying shares in a single-family rental property become seen as thinkable, viable, attractive, and necessary? I draw on a set of related influences to consider this question. The first is what we might understand as infrastructural theories of market power, which help us think about monopolization for the era of financialization and digitization. Thinkers including Lina Khan (now head of the Federal Trade Commission) and political economist Johannes Petry attend to how the capacity to control market infrastructure and information (for example, as Amazon does with its online marketplace) opens up new fields of business and enables dominant actors to shape

[1] Jenna Burrell and Marion Fourcade, "The Society of Algorithms," *Annual Review of Sociology* 47, no. 1 (2021): 213–37, https://doi.org/10.1146/annurev-soc-090820-020800.
[2] Ruha Benjamin, *Race After Technology: Abolitionist Tools for the New Jim Code* (Medford, MA: Polity, 2019); Burrell and Fourcade, "The Society of Algorithms"; Virginia Eubanks, *Automating Inequality* (New York, NY: St Martin's Press, 2018).

information asymmetries to their material advantage, constituting a form of structural market power.[3] The second influence is work on the political economy of data in the digital economy. This scholarship highlights the simultaneous expansion and enclosure of data. What Marion Fourcade and Kieran Healy refer to as "the information dragnet" (p. 12) yields a profound amount of personal data, which is subject to the logic of accumulation and mobilized to extract value.[4] In this way, rentier relations are foundational to what Kean Birch has termed "technoscientific capitalism".[5] The third influence is theories of the performativity of markets, which reject understanding markets as a rational, utilitarian phenomenon and emphasize economics as a technology of market construction.[6] This body of work highlights how markets are shaped and realized via practical and strategic configurations of market agents (e.g., portfolio managers, institutional investors), calculative devices (e.g., particular sources of data, investment platforms, acquisition algorithms), and material objects and spaces (e.g., homes, investment forums).

My central argument is that the intersection of big capital and big tech has changed the logic and the power relations of the housing market by creating a class of real estate market players who wield outsize power, a shift that began in the aftermath of the 2008 crisis and has been considerably strengthened in the pandemic. This concentration of market power is evident in how even the failure of one such outsize player, Zillow's iBuying business, is working to strengthen the hand of another, Pretium Partners. Properties Zillow overbought at inflated prices have become an opportunity for institutional-scale landlords like Pretium to deploy their new influx of capital and grow their portfolios. This example provides insight into how institutional investors leveraged structural changes in the US housing market after 2008 to reorganize the logic of the market, changes that have intensified during the pandemic. This

[3] Lina M. Khan, "Amazon's Antitrust Paradox," *Yale Law Journal* 126, no. 3 (2017): 710–805; Lina M. Khan, "The Separation of Platforms and Commerce," *Columbia Law Review* 119, no. 4 (2019): 973–1098; Johannes Petry, "From National Marketplaces to Global Providers of Financial Infrastructures: Exchanges, Infrastructures and Structural Power in Global Finance," *New Political Economy* 26, no. 4 (2021): 574–97, https://doi.org/10.1080/13563467.2020.1782368.

[4] Marion Fourcade and Kieran Healy, "Seeing like a Market," *Socio-Economic Review* 15, no. 1 (2017): 9–29, https://doi.org/10.1093/ser/mww033; Jathan Sadowski, "When Data Is Capital: Datafication, Accumulation, and Extraction." *Big Data & Society* 6, no. 1 (2019), https://doi.org/10.1177/2053951718820549.

[5] Kean Birch, "Technoscience Rent: Toward a Theory of Rentiership for Technoscientific Capitalism," *Science, Technology, & Human Values* 45, no. 1 (2019): 3–33, https://doi.org/10.1177/0162243919829567.

[6] Christian Berndt and Marc Boeckler, "Geographies of Circulation and Exchange: Constructions of Markets," *Progress in Human Geography* 33, no. 4 (2009): 535–51; Koray Çalışkan and Michel Callon, "Economization, Part 1: Shifting Attention from the Economy towards Processes of Economization," *Economy and Society* 38, no. 3 (2009): 369–98; Koray Çalışkan and Michel Callon, "Economization, Part 2: A Research Programme for the Study of Markets," *Economy and Society* 39, no. 1 (2010): 1–32; Marion Fourcade, "Theories of Markets and Theories of Society," *American Behavioral Scientist* 50, no. 8 (2007): 1015–34. https://doi.org/10.1177/0002764207299351.

research demonstrates how finance capital and digital technologies are jointly expanding rentier relations in the US housing market, shaping housing futures that will deepen inequalities of wealth and affordability for generations.

The remainder of this paper is structured as follows. First, I examine Zillow Offers, discussing its potential to operate as a platform monopoly with undue market power[7] and how looking at who benefits from its demise points us to the wider context of power relations in the housing market. This wider context is characterized by corporate landlords who can mobilize rentier relations, flows of yield-seeking financial capital, and advanced technologies to shape the logic of the housing market to shore up their own advantage, including through capitalizing on the demise of other large players such as Zillow Offers. I then situate corporate landlords in the political economic and technological processes that enabled them to consolidate such market power. This discussion provides the basis for understanding how the housing boom that coincided with the COVID-19 pandemic has entrenched the power of corporate landlords, and what this has meant for renters, would-be homebuyers, and communities. By way of conclusion, I consider the proliferation of click-to-invest and rent-to-own platforms backed by venture capital and private equity. I argue these business models have gained a foothold in the market precisely because of the power imbalance between corporate landlords and the rest of us, suggesting our housing futures will become more unequal as a result.

Who Benefits from the Demise of Zillow Offers?

In 2021, Zillow, the nation's biggest digital real estate company, seemed set on a path toward platform monopolization with a rapid expansion of Zillow Offers, its iBuying business. The iBuying model is predicated on buying and selling homes through a digital platform: buyers like Zillow use algorithms to price properties and acquire them directly from homeowners looking to make a quick, unencumbered sale; they then refurbish the properties and flip them to a new buyer.

Before it launched Zillow Offers, Zillow was already a behemoth of big data about real estate. Unlike other iBuyers like Offerpad and Opendoor, Zillow already had many other lines of business in addition to iBuying. For example, Zillow not only lists homes for sale and rent; it owns or has owned numerous other real estate listing platforms, including Trulia, Realestate.com, Hotpads, StreetEasy, Naked Apartments, and Out East. Over the years Zillow has also acquired many real estate technology companies that equip real estate and finance professionals with tools to simplify property listings,

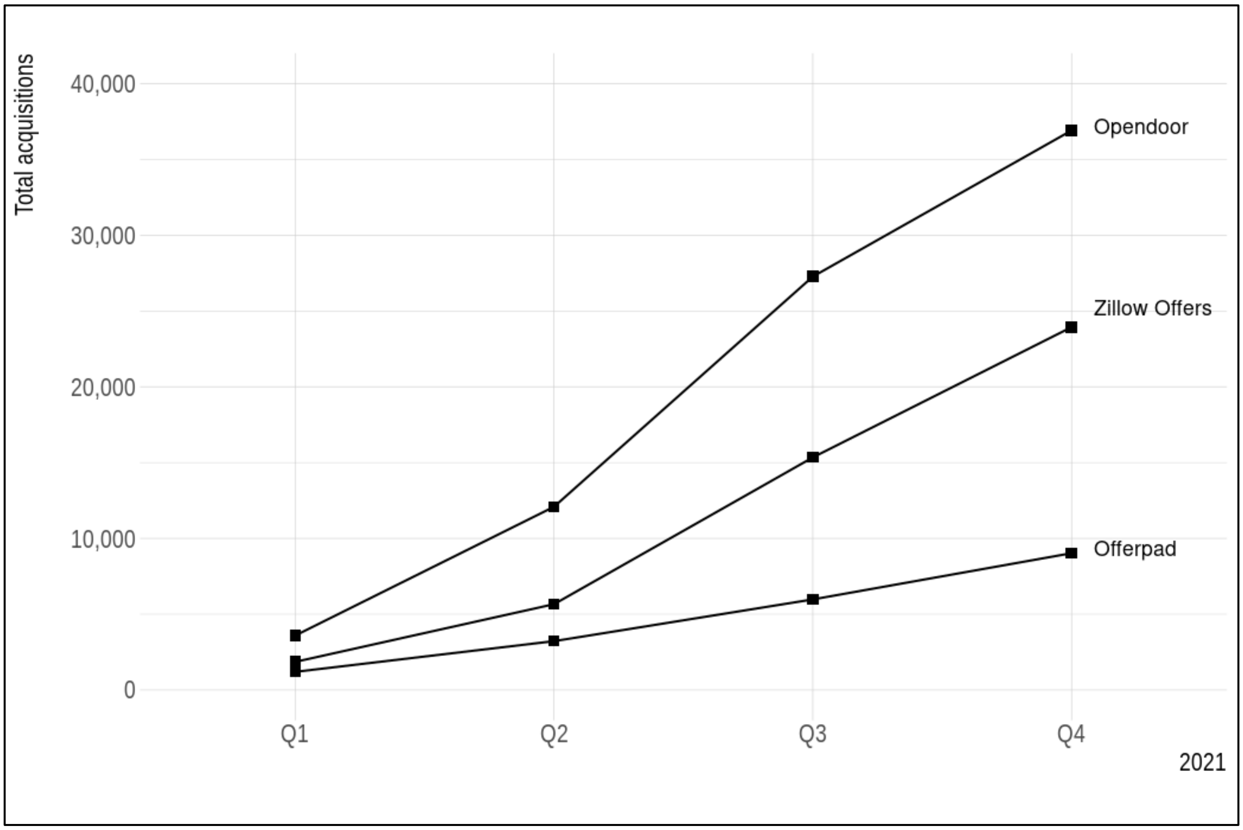
[7] Khan, "Amazon's Antitrust Paradox."

showings, pricing, and transactions. As part of its foray into iBuying, Zillow launched Zillow Closing Services to facilitate “seamless transactions” for buyers of homes from Zillow Offers and acquired Mortgage Lenders of America (renamed to Zillow Home Loans) to streamline the mortgage experience for consumers. Zillow’s multifaceted presence in consumer and business-facing operations positions the platform as a crucial form of infrastructure for today’s increasingly digitized real estate market.

As Zillow Offers ramped up (see Figure 1), some real estate professionals began to raise questions[8] about how Zillow’s size could create unfair advantages for the company’s iBuying business. Once it began its iBuying business, Zillow occupied a dual role, both listing homes for sale as a marketplace operator and competing against other merchants through buying and selling homes as a merchant in its own marketplace. Because platform operators extract extensive amounts of data as users navigate the online marketplace, a platform exploiting this dual role[9] could potentially target the most-searched markets, neighborhoods, and price points for iBuying and otherwise leverage information asymmetries to the detriment of its competitors.

[8] Sean Gotcher’s TikTok went viral to the extent that Zillow issued a statement responding to the video: https://news.yahoo.com/zillow-tiktok-video-real-estate-housing-211403123.html.
[9] Khan, “Amazon’s Antitrust Paradox.”

Figure 1: iBuyer acquisitions by quarter, 2021 (Zillow Offers stopped operating in October 2021)



Source: Author's tabulation based on company 10-Q filings.

Instead, Zillow announced an abrupt shutdown of its iBuying scheme in late 2021. The company attributed the decision to an unexpected shortage of labor to carry out renovation work and delays on materials for the properties it had acquired. Industry observers have noted the firm's ambitions to catch up to other iBuyers[10] is also a likely factor in the failure of Zillow's iBuying algorithm to accurately price a supply-constrained, fast-moving real estate market.

The demise of Zillow's iBuying arm could be interpreted as a sign of the limits of the technology and the enduring role of local knowledge in housing markets. Besides overlooking the growth of Opendoor, Zillow's chief iBuying competitor (see Figure 1), this perspective misses the bigger picture of how Wall Street and Silicon Valley have transformed US housing markets since the 2008 financial crisis. The nexus of finance and technology has brought about two major changes: The millions of foreclosures

[10] Alex Geiger and Daniel Nicoll, "Zillow Insiders Are Blaming an Internal Initiative Called Project Ketchup for the Company's Home-Flipping Failures," *Business Insider*, 2021, https://www.businessinsider.com/zillow-insiders-blame-project-ketchup-for-firms-home-buying-failures-2021-11.

in the mortgage-led housing collapse created new opportunities for global investment firms to buy homes at scale, becoming corporate landlords controlling tens of thousands of single-family homes. And a wave of digital advances sped up and reduced friction in home-trading operations and property management for these new rental market players.

This transformation is brought into relief by Zillow unloading some of its inventory in bulk sales to corporate landlord Pretium Partners, which has agreed to buy over 3,000 homes from Zillow since the company announced it would exit iBuying.[11] Pretium already controls two single-family rental companies with more than 80,000 properties total. The firm's acquisition of some of Zilllow's inventory expands the Silicon-Valley-to-Wall-Street property pipeline that keeps homes off the open market, exacerbating the existing shortage of properties for sale and contributing to already-heated bidding wars.[12] Armed with big capital and precision technologies, corporate landlords possess a structural advantage that enables them to use Zillow's $500 million loss[13] to further build up their own portfolios— and profits for the global investor class.

Rise of the Automated Landlord

With access to billions in capital and troves of data from their in-house operations, corporate landlords like Pretium are positioned to benefit from the downfall of smaller actors—even one sitting on 18,000 homes, like Zillow. Pretium is part of the group of large-scale investors that exploited the 2008 crisis and the increased demand for rental housing that ensued as nearly 8 million households lost homes to foreclosures from 2007 to 2016.[14] Encouraged by a federal pilot program to gauge investor interest in

[11] Noah Buhayar, Patrick Clark, and Jordyn Holman, "Wall Street Is Using Tech Firms Like Zillow to Eat Up Starter Homes," *Bloomberg*, January 7, 2022. https://www.bloomberg.com/news/features/2022-01-07/buying-starter-homes-gets-harder-as-wall-street-uses-zillow-to-buy-thousands; Patrick Clark, "Mega Landlords Are Snapping Up Zillow Homes Before the Public Can See Them," *Bloomberg*, May 21, 2021, https://www.bloomberg.com/news/articles/2021-05-21/mega-landlords-are-snapping-up-zillow-homes-before-the-public-can-see-them; Patrick Clark, "Zillow Selling More Homes to Pretium as Flipping Effort Ends," *Bloomberg*, February 11, 2022, https://www.bloomberg.com/news/articles/2022-02-11/zillow-selling-more-homes-to-pretium-as-flipping-effort-ends.

[12] Clark, "Mega Landlords Are Snapping Up Zillow Homes."

[13] Will Parker, "Single-Family Rental Firms Eye Zillow's Housing Stock," *Wall Street Journal*, November 5, 2021, https://www.wsj.com/articles/single-family-rental-firms-eye-zillows-housing-stock-11636134368.

[14] CoreLogic, "United States Residential Foreclosure Crisis: Ten Years Later," 2018, https://www.corelogic.com/research/foreclosure-report/national-foreclosure-report-10-year.pdf.

converting foreclosed homes into rental properties in bulk, private equity and alternative investment firms like Pretium and Blackstone set out to become landlords in the single-family rental sector.[15]

To amass their portfolios, corporate landlords flocked to Sun Belt markets in southern California, the Southwest, and the Southeast. The Sun Belt region benefited from changing industrial patterns and the growth of the military and defense industries in the last decades of the 20th century, as well as fast-growing housing supply.[16] When the foreclosure crisis hit, housing prices declined most steeply and repossessed properties accumulated in the greatest volume in suburbanized Sun Belt markets.[17] But the preceding era of growth positioned these areas, with access to job hubs and decent schools, for recovery after 2008. For investors, the substantial devaluation of relatively new family homes in metropolitan areas recently subject to sustained economic growth was a once-in-a-generation opportunity. And when Freddie Mac, an institution charged with supporting homeownership, backed $1 billion of Invitation Homes's debt when the Blackstone-founded firm went public in 2017,[18] the move suggested the government also envisioned a larger structural shift away from the US homeownership society.

Single-family homes are a longstanding and meaningful part of the US rental housing sector.[19] But there was little corporate presence in the single-family rental (SFR) market before the 2008 crisis. Ownership was highly deconcentrated, and operators controlling hundreds or thousands of properties was unheard of. Today, beyond the 80,000+ rental homes privately held by Pretium, three leading publicly listed single-family rental operators (Invitation Homes, American Homes 4 Rent, Tricon Residential) collectively own more than 150,000 single family homes, primarily in the Sun Belt.[20]

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[15] Desiree Fields, "Constructing a New Asset Class: Property-Led Financial Accumulation after the Crisis," *Economic Geography* 94, no. 2 (2018): 118–40, https://doi.org/10.1080/00130095.2017.1397492.
[16] Edward Glaeser and Kristina Tobio, "The Rise of the Sunbelt," Harvard University: Taubman Center for State and Local Government, 2007; Ann Markusen, "The Military Remapping of the United States," *Built Environment* 11, no. 3 (1985): 171–80; Elizabeth Tandy Shermer, *Sunbelt Capitalism: Phoenix and the Transformation of American Politics* (Philadelphia: University of Pennsylvania Press, 2015).
[17] Immergluck, D., "The Accumulation of Lender-Owned Homes During the U.S. Mortgage Crisis: Examining Metropolitan REO Inventories," *Housing Policy Debate* 20, no. 4 (2010): 619–45.
[18] Ryan Dezember and Nick Timiraos, "Blackstone Wins Fannie's Backing for Rental Home Debt," *Wall Street Journal*, January 24, 2017, http://www.wsj.com/articles/blackstone-wins-fannies-backing-for-rental-home-debt-1485265237.
[19] In 2018 single-family homes accounted for about a third of all rental housing, or about 15 million units. Joint Center for Housing Studies, "America's Rental Housing 2020," 2020, Joint Center for Housing Studies of Harvard University.
[20] Desiree Fields and Manon Vergerio, "Corporate Landlords and Market Power: What Does the Single-Family Rental Boom Mean for Our Housing Future?," April 2022, https://escholarship.org/uc/item/07d6445s.

Advances in technology coming to prominence since 2008 have been the linchpin in this corporate consolidation of SFR. Without innovations like cloud and mobile computing, digital platform architectures and business models, and massive data sets and the algorithms that sort them, it would not have been possible for large investors to take advantage of the market dislocation caused by the 2008 crisis. New information technologies enabled firms like Invitation Homes (backed by Blackstone until 2019) to monitor markets at scale, rapidly evaluate and submit offers on homes that meet its investment criteria, and efficiently manage large, geographically dispersed portfolios of single-family rental homes.[21] Technical expertise has also been an important aspect of how corporate landlords have projected competence to capital markets and to investors in the novel SFR asset class.[22]

Corporate landlords have built powerful in-house data platforms fueled by algorithms that rapidly evaluate and submit offers on homes.[23] In fact, the most significant difference between corporate landlords and iBuyers is likely not in their acquisition algorithms, but their value propositions, which are distinguished by holding versus flipping. Corporate landlords can make an all-cash offer within hours of a property being listed. For example, Tricon American Homes developed Triad, an underwriting software that automates acquisition. The application screens a million homes a year and underwrites a property in under five minutes. Similarly, Invitation Homes has used its AcquisitionIQ software to underwrite over a million homes and build up a portfolio of 80,000+ properties in the last decade.[24] These pre-acquisition efficiency gains reverberate through the rest of the investment life-cycle.[25]

However, corporate landlords utilize tech and data science across all aspects of their SFR operation, from property acquisition to the optimization of rent pricing to combing through applicant profiles via tenant screening software to resident engagement. Digital innovations like cloud and mobile computing have particularly facilitated more efficient rehabilitation, leasing, management, and turnover of rental properties. Home inspectors working for corporate landlords can plug data into proprietary software applications on their smartphones or tablets as they conduct property walk-throughs,

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[21] Desiree Fields, "Automated Landlord: Digital Technologies and Post-Crisis Financial Accumulation," *Environment and Planning A: Economy and Space* 54, no. 1 (2022): 160–81, https://doi.org/10.1177/0308518X19846514.
[22] Maedhbh Nic Lochlainn, "Digital/Material Housing Financialisation and Activism in Post-Crash Dublin," *Housing Studies* (2021): 1–18, https://doi.org/10.1080/02673037.2021.2004092; see also Fields, "Constructing a New Asset Class" and "Automated Landlord."
[23] James Mills, Raven Molloy, and Rebecca Zarutskie, "Large-Scale Buy-to-Rent Investors in the Single-Family Housing Market: The Emergence of a New Asset Class," *Real Estate Economics* (January 2017): 1–32, https://doi.org/10.1111/1540-6229.12189.
[24] Fields and Vergerio, "Corporate Landlords and Market Power."
[25] Brett Christophers, "How and Why U.S. Single-Family Housing Became an Investor Asset Class," *Journal of Urban History* (July 2021), https://doi.org/10.1177/00961442211029601.

generating accurate estimates of rehab costs that can be factored into algorithmically generated purchase bids.[26] Prospective tenants search and apply for available rental properties on public-facing websites. On the Invitation Homes website, a Google Maps API plots homes on a map, provides photos and lists of amenities and nearby schools, and offers the ability to conduct a virtual 3-D home tour or schedule a self-viewing of the home.

While available before 2020, keyless entry systems have taken off significantly since the COVID-19 pandemic: prospective tenants can use a lockbox code sent to their smartphone to view properties themselves, saving them an in-person interaction with a leasing agent and saving the landlord the associated labor costs.[27] Between self-viewing before move-in to paying rent and submitting maintenance requests online after move-in, digital technologies streamline tenant relations to the extent of removing most points of face-to-face or verbal interactions between tenant and landlord.[28] Eviction services are another area of the growth in automated landlord technologies during the pandemic.[29] Corporate landlords rely on software tools to automate eviction filings: given the formalization of the landlord-tenant relationship that comes with larger portfolios and data-driven management, corporate landlords are more likely to use serial filings as a means of enforcing rent collections.[30]

With their vertically integrated corporate structures and bespoke in-house platforms, institutional-scale landlords have access to a continuous flow of data about tenants and operating costs with which to seek out efficiencies and market opportunities. Some corporate landlords have even described themselves as data and logistics companies because of their ability to leverage the data at their disposal to ease operational frictions, whether running analyses of how to best control maintenance costs or optimizing the time it takes to turn a property when a tenant moves out.[31] Unparalleled access to precision technologies, data, and digital analytics underpins the institutionalization of SFR—and the market power of corporate landlords.

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[26] Fields, "Automated Landlord"; Mills et al., "Large-Scale Buy-to-Rent Investors."
[27] Fields, "Automated Landlord."
[28] Nic Lochlainn, "Digital/Material Housing Financialisation and Activism."
[29] Erin McElroy, Wonyoung So, and Nicole Weber, "Keeping an Eye on Landlord Tech," *Shelterforce*, March 25, 2021, https://shelterforce.org/2021/03/25/keeping-an-eye-on-landlord-tech/.
[30] Elora Lee Raymond, Richard Duckworth, Benjamin Miller, Michael Lucas, and Shiraj Pokharel, "From Foreclosure to Eviction: Housing Insecurity in Corporate-Owned Single-Family Rentals," *Cityscape* 20, no. 3 (2018): 159–88.
[31] Fields, "Automated Landlord."

The SFR Pandemic Boom: Toward Further Corporate Consolidation

The COVID-19 pandemic has demonstrated how corporate landlords hold an advantage not only in the context of a market dislocation like 2008, but also under conditions of a market boom. Today's major brands established their portfolios in a period of rapid growth from 2012-2014. They leveraged both networked digital technologies and the cheap debt made possible by post-2008 quantitative easing (and then even cheaper debt afforded by their securitization of rental income) to acquire foreclosed homes in Sun Belt metropolitan areas hit hard by the crisis.[32] From 2015-2019, large players like Invitation Homes, American Homes 4 Rent, and Tricon American Homes got bigger mainly by acquiring or merging with smaller players.[33] As the industry grew and consolidated, it was also refining its data systems, acquisition algorithms, and geographic and operational strategies; when the pandemic sparked a surge of demand from investors rather than a housing downturn, corporate landlords were poised to act.

With an ongoing global search for investment yield and investors seeking a safe haven in housing, the SFR asset class has boomed in the pandemic.[34] Between March 2020 and January 2022, more than 60 deals representing over $50 billion of investor and capital transactions were announced.[35] The transactions variously support the acquisition and/or construction of single-family rental homes, or the expansion of digital platforms that offer SFR investment opportunities. The pandemic boom in SFR has attracted substantial interest from state retirement systems for teachers and public employees, drawn new players like homebuilders and commercial real estate investors, and financed build-for-rent as a new growth strategy amid rising prices for the constrained supply of existing homes.[36] Existing large players hold an early mover advantage and are poised to benefit from investors' interest in SFR: on earnings calls last year, Invitation Homes, American Homes 4 Rent, and Tricon American Homes all characterized 2021 as a banner year for fundraising, with more and more capital seeking exposure to the SFR asset class.[37]

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[32] Fields, "Automated Landlord"; Christophers, "How and Why U.S. Single-Family Housing Became an Investor Asset Class."
[33] Fields and Vergerio, "Corporate Landlords and Market Power."
[34] John Burns and Rick Palacios, "Investor Mania 2.0: How Data, Technology, and Yield-Chasing Are Revolutionizing Housing While Raising Risk Levels," John Burns Real Estate Consulting, 2021, http://realestateconsulting.com/files/JBREC-Industry-Cycles-White-Paper.pdf.
[35] John Burns Real Estate Consulting, "Single-Family rental and Build for Rent Investor and Capital Transactions timeline, https://www.realestateconsulting.com/wp-content/uploads/2022/01/SFR-Timeline-2021-vertical.png.
[36] Danielle Nguyen, "The Light: Over $30 Billion in Capital Is Chasing 35-Year High in Single-Family Rent Growth," *John Burns Real Estate Consulting* (blog), October 15, 2021, https://www.realestateconsulting.com/the-light-35-year-high-in-single-family-rent-growth/.
[37] Fields and Vergerio, "Corporate Landlords and Market Power."

Private equity and alternative investment firms also remain central to the market. Blackstone, the investment giant that started Invitation Homes and exited SFR in 2019, has re-entered the market in a big way. In 2020 it took a $240 million minority stake in rental company Tricon American Homes, and in 2021 the firm acquired rent-to-own company Home Partners of America for $6 billion. Pretium Partners, the private equity parent company of SFR operator Progress Residential (with more than 70,000 homes), has steadily expanded its market footprint. Just in the past two years, Pretium has added 14,000 units when it and asset manager Ares acquired REIT Front Yard Residential for $2.5 billion and took it private, acquired 1000 properties from GTIS Partners for $300 million, accepted a $125 million investment from Tennessee Consolidated Retirement System, entered a $700 million joint venture with Canadian pension fund PSP and two additional joint ventures with developers to invest $1.6 billion total in BFR communities.[38]

To summarize, cash poured into the SFR market throughout the pandemic, fueling a new wave of acquisitions and development led by existing corporate players. This round of growth is playing out in a market landscape that has changed significantly from the conditions that first facilitated the corporate consolidation of SFR. Actors that were able to leverage yield-hungry capital to capitalize on discounted prices and mobilize technological advances to construct a new asset class predicated on rental housing after 2008 are operating in a context of scarce supply and booming asset prices, uncertainty about other real estate asset classes (such as commercial real estate), and a market they have rapidly consolidated.

Early movers such as Invitation Homes, American Homes 4 Rent, and Tricon American Homes occupy a position of power in this market landscape because they began to assemble portfolios in a market downturn, have already achieved economies of scale and its accompanying efficiencies, possess a deep bench of data on which to base their acquisition and operational strategies, and have a track record of accessing the finance capital with which to execute their strategies. Coming from the world of finance rather than real estate, these powerful players have reorganized the logic by which the SFR market historically operates in ways that seem likely to further hone their advantage by deepening the structural shift toward an expansion of renting and further corporate consolidation of SFR ownership.

What does the corporate consolidation of SFR mean for everyone else? Industry players are quick to note their relatively small share of the SFR market (roughly 2-3% currently).[39] Of course, the institutional transformation of SFR is playing out in a handful of geographic markets across the Sun Belt

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[38] Fields and Vergerio, “Corporate Landlords and Market Power.”

[39] National Rental Home Council, “Resources & Research: Snapshot of SFR Market,” National Rental Home Council, 2022, https://www.rentalhomecouncil.org/resources-research/.

(and the Midwest to a lesser extent); within those markets corporate landlords purchase in segregated, mainly Black and non-white Hispanic communities,[40] targeting a particular slice of the housing stock that essentially corresponds to what might otherwise be starter homes. Furthermore, recent estimates suggest if SFR follows the trajectory of the multifamily housing and self-storage markets, both now dominated by institutional players, the market share of institutional players could reach 40% by 2030.[41] The greater the market share under their control, the fewer options tenants and homeowners will have outside of their spheres of influence, and the more corporate landlords will control market pricing, influence local policymaking, and evade taxes and regulations. And as a series of recent hearings, listening sessions, and inquiries by the Senate Committee on Banking, Housing, and Urban Affairs has documented,[42] corporate landlords enjoy this power to the detriment of both tenants who face dramatic rent increases, mounting fees, and aggressive eviction filings, and the potential homebuyers crowded out by their "equity-mining."[43]

Conclusion: Clicking for Crumbs

One way to think about the combination of technology, finance capital, and rentiership that underpins the structural power of corporate landlords is to consider what kinds of investment models become thinkable and perceived as necessary and viable for other market actors. The structural power of

[40] Elora Raymond, Yilun Zha, Ethan Knight, and Leah Cabrera, "Large Corporate Buyers of Residential Rental Housing during the COVID19 Pandemic in Three Southeastern Metropolitan Areas," Planning + Property Lab: Georgia Tech, 2022, https://cpn-us-w2.wpmucdn.com/sites.gatech.edu/dist/d/2497/files/2022/01/ERaymond-2022-CorporateLandlords_PandemicPurchases.pdf.

[41] Kyle Campbell, "When Will Single-Family Rentals Reach Institutional Scale?" *Private Equity Real Estate News*, February 22, 2022, https://www.perenews.com/when-will-single-family-rentals-reach-institutional-scale/.

[42] In June 2021, Sherrod Brown, Chair of the Senate Committee on Banking, Housing, and Urban Affairs sent a letter to Pretium Partners asking for more information about the companies eviction practices https://www.warren.senate.gov/newsroom/press-releases/warren-calls-out-private-equity-backed-firms-for-increasing-rents-driving-up-housing-costs-and-raking-in-profits-amid-housing-shortage; in October 2021 the Committee held a hearing on "How Private Equity Landlords are Changing the Housing Market" https://www.banking.senate.gov/hearings/how-private-equity-landlords-are-changing-the-housing-market; in January 2022, Senator Elizabeth Warren sent letters to Progress Residential (owned by Pretium Partners), Invitation Homes, and American Homes 4 Rent requesting more information about their business practices relating to acquisitions and rent increases https://www.warren.senate.gov/newsroom/press-releases/warren-calls-out-private-equity-backed-firms-for-increasing-rents-driving-up-housing-costs-and-raking-in-profits-amid-housing-shortage; in February 2022 a second hearing, "How Institutional Landlords are Changing the Housing Market" took place https://www.banking.senate.gov/hearings/how-institutional-landlords-are-changing-the-housing-market along with a briefing and listening session to hear directly from tenants living in properties owned by institutional investors https://www.banking.senate.gov/hearings/02/04/2022/member-and-staff-briefing.

[43] Peter Whoriskey, Spencer Goodman, and Margot Gibbs, "Global Investors Profited from U.S. Rental Homes, Foreclosure Crisis," *The Washington Post*, 2021, https://www.washingtonpost.com/business/interactive/2021/investors-rental-foreclosure/.

corporate landlords is prompting the reconfiguration of accumulation processes by other market actors. We can observe this in the expansion of click-to-invest platforms backed by venture capital and private equity. The opportunities offered by click-to-invest platforms range from fractional shares of individual SFR homes to ownership of specific occupied properties to entire SFR portfolios, as well as earning passive income from shares of common stock in small portfolios. Included in this category are platforms like Roofstock, Arrived Homes, Fundrise, and Entera.ai, all purporting to harness data science, artificial intelligence, and proprietary data to empower retail investors. As Fundrise states, "we blend our investment expertise with smart technology to provide our investors with the buying power and investment opportunities traditionally reserved for billion-dollar institutions."[44] Click-to-invest platforms also emphasize ease of use, comparing the experience of real estate investment to online shopping.

A pair of stories published on May 17, 2022 offers insight into how click-to-invest platforms are situated in the market landscape shaped by institutional-scale actors. *The Wall Street Journal* published a profile of A.J. Steigman, Atlanta's top-performing real estate agent.[45] Based in Florida, Steigman is a former child chess champion and investment banker who describes himself as "analytical and quantitative." In 2018, he won "funding and a prominent business-school competition to use pattern-recognition software to identify mispriced homes."[46] Today, he relies on "a $20,000 laptop and proprietary software system" to serve a "client base [that] consists entirely of institutional investors."[47] Just in 2021 alone, Steigman bought or leased 300+ homes in just the Atlanta metro area at a total value of more than $86 million, likely earning about $2 million from those deals.[48] One of his clients is LaSalle Investment Management, which last year undertook a $560 million acquisition of a 47% stake in a SFR portfolio of more than 4,000 homes[49] owned and managed by affiliates of Amherst Residential (once dubbed "the AI Landlord".[50] Atlanta is a crucial locus of institutional SFR ownership; the four largest corporate players control close to 25,000 rental homes in the metro area.[51]

[44] Fundrise, "Investments," Fundrise, 2022, https://fundrise.com/investments.
[45] Bryan Cereijo, "Atlanta's No. 1 Broker Bought Homes for Big Investors From 600 Miles Away," *Wall Street Journal*, May 17, 2022, https://www.wsj.com/articles/atlantas-no-1-broker-bought-homes-for-big-investors-from-600-miles-away-11652779803?mod=hp_lead_pos9.
[46] Ryan Dezember, "Home Buying Goes Algorithmic," *The Wall Street Journal*, September 17, 2018, https://www.wsj.com/articles/how-to-buy-a-house-the-wall-street-way-1537102800.
[47] Cereijo, "Atlanta's No. 1 Broker Bought Homes for Big Investors."
[48] Cereijo, "Atlanta's No. 1 Broker Bought Homes for Big Investors."
[49] Gail Kalinoski, "JLL Income Property Trust Invests in $1.2B SFR Portfolio," *Multifamily Real Estate News* (blog), August 12, 2021, https://www.multihousingnews.com/jll-income-property-trust-invests-in-1-2b-sfr-portfolio/.
[50] Shawn Tully, "Meet the A.I. Landlord That's Building a Single-Family-Home Empire," *Fortune*, 2019, https://fortune.com/longform/single-family-home-ai-algorithms/.
[51] Fields and Vergerio, "Corporate Landlords and Market Power."

On the same day Steigman was profiled in the WSJ, *TechCrunch* announced that Arrived Homes had raised $25M of series A funding, with backers including the personal investment company of Jeff Bezos and Zillow's co-founder and former CEO.[52] Arrived offers fractional real estate investment: it sells individual shares in single-family homes, with very low minimum investments (starting at $100).The company frames itself in terms of democratizing investment by creating access for first-time rental property owners, and in relation to institutional investors: "Our view is that we are leveraging a lot of the work that institutional investors in single-family homes have done to recreate that same experience—but for retail investors" (CEO Ryan Frazier, quoted in *TechCrunch*).[53] Arrived has so far funded 102 homes, deploying over $40 million across 17 cities. No one investor can have more than a 9.8% stake in any given property, so ownership is spread over about 5k investors. By way of comparison with the scale of broker A.J. Steigman's business, Arrived holds 10 properties in Atlanta, acquiring them at a cost of perhaps $3.9 million total; on average, 226 investors own shares in each property in the Atlanta metro.

This pair of stories drives home the extent to which the nexus of tech and finance has transformed the logic and the operation of the housing market since 2008. What stands out is how the weight of institutional players in the housing market has made thinkable a range of market strategies that draw retail investors into "democratizing" platforms like Arrived, and how intensely uneven a field is that pits individual homeowners against click-to-invest platforms like Arrived, brokers like Steigman, and landlords like Amherst (backed by investors like La Salle).

It is not surprising that along with the growth of click-to-invest platforms, we are witnessing a resurgence of rent-to-own (also known as lease-purchase) schemes. As more would-be homeowners are shut out of the hot housing market, rent-to-own business models backed by Silicon Valley and Wall Street purport to offer a path to homeownership. Companies like Divvy Homes (with backing from homebuilder Lennar's venture arm), Landis Technologies (with funding from the investment companies of celebrities Will Smith and Jay-Z), and Home Partners of America (purchased by single-family rental pioneer Blackstone) offer a path to homeownership, buying homes that participants can rent with an option to buy in one to five years; typically, a portion of rent goes toward a down payment and tenants pay a markup on the initial purchase price. The increasingly tight housing supply and rapid home price appreciation seen during the pandemic enhance the appeal of rent-to-own schemes, but most tenants

[52] Mary Ann Azevedo, "Arrived Lets You Buy into Single-Family Rentals," *TechCrunch*, 2022, https://social.techcrunch.com/2022/05/17/backed-by-forerunner-and-bezos-back-arrived-a-startup-that-lets-you-buy-into-single-family-rentals-for-as-little-as-100/.
[53] Azevedo, "Arrived Lets You Buy into Single-Family Rentals."

do not go on to purchase the homes they lease from private investors.[54] Lease purchase agreements can also present complications with cloudy and/or defective property title, balloon payments, and overpriced homes.[55] As with click-to-invest platforms and corporate landlords, the underlying model depends on acquiring and renting out single family homes. Thus, rather than a democratization of housing, the growth of rent-to-own companies may be a sign of further consolidation of corporate control over our housing.

In the aftermath of the 2008 crisis, single-family homes have been reframed as a site of ”novel” investment strategies, a process that has evolved and intensified over the course of the COVID-19 pandemic. While ownership of single-family homes remains a key source of wealth, a host of new players beyond owner-occupiers are grabbing value and altering the power relations of the housing market. The combination of technology, finance capital, and rentier relations mobilized by corporate landlords has changed the logic of the market for single-family homes such that market opportunities are now gauged in relation to these institutional players. The weight corporate landlords have in the housing market helps us understand the growth of venture capital and private equity-backed business models that draw participants into the rental market as either investors or as eventual homeowners. While nominally "democratizing" real estate investment, such platforms accelerate the process of commodification that creates a discursive opening for them in the first place, ultimately contributing to the very conditions they purport to ameliorate. Moreover, acquisitions by corporate landlords, click-to-invest platforms and rent-to-own platforms are particularly focused on racially segregated areas where most residents are Black and/or nonwhite Hispanic. Such "inclusion" in a restructured real estate market stands to deepen racialized inequalities in wealth and housing stability in order to fuel capital accumulation by distant, often atomized landlords. Considered alongside the record-breaking $6 trillion of home equity generated during the pandemic,[56] the shifting power relations of the housing market engineered by the intersection of big tech and big capital are likely to shape patterns of access and affordability that will endure for generations.

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[54] Carol Galante, Carolina Reid, and Rocio Sanchez-Moyano, "Expanding Access to Homeownership through Lease-Purchase," Terner Center for Housing Innovation, 2017, https://www.pacificresearch.org/wp-content/uploads/2019/06/Expanding-Access-to-Homeownership-through-Lease-Purchase.pdf.

[55] Christine Jang-Trettien, "House of Cards: Informal Housing Markets and Precarious Pathways to Homeownership in Baltimore," *Social Problems* (2021): https://doi.org/10.1093/socpro/spab004.

[56] Emily Badger and Quoctrung Bui, "The Extraordinary Wealth Created by the Pandemic Housing Market," *The New York Times*, May 1, 2022.

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