NBER WORKING PAPER SERIES

NAR SETTLEMENT, HOUSE PRICES, AND CONSUMER WELFARE

Greg Buchak
Gregor Matvos
Tomasz Piskorski
Amit Seru

Working Paper 32855
http://www.nber.org/papers/w32855

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
August 2024

NAR Settlement, House Prices, and Consumer Welfare
Greg Buchak, Gregor Matvos, Tomasz Piskorski, and Amit Seru
NBER Working Paper No. 32855
August 2024
JEL No. G0,G2,G50,L0,R20

ABSTRACT

Motivated by the recent National Association of Realtors (NAR) settlement, this note examines the effects of reduced real estate agent commissions on home prices, housing turnover, and consumer welfare. Using a calibrated dynamic structural search model of the housing market, we explore how lowering agent commissions might influence market equilibrium. Our analysis highlights the importance of accounting for the dynamic nature of the housing market, consumer heterogeneity, and general equilibrium effects when assessing these outcomes. Contrary to the claims of some media commentators and consumer advocates, our findings suggest that reducing agent fees generally leads to higher house prices. This occurs because lower future transaction costs increase the value of housing as a durable asset. While reduced agent fees typically enhance consumer welfare by lowering the cost of homeownership, we find that most of these benefits are likely to accrue to current homeowners rather than prospective buyers. Furthermore, financially constrained households may see diminished benefits due to the expected rise in home prices. Our analysis also offers insights into the redistributive effects of technological innovations in the housing market aimed at reducing transaction costs.

Greg Buchak
Graduate School of Business
Stanford University
655 Knight Way
Stanford, CA 94305b
buchak@stanford.edu

Gregor Matvos
Kellogg School of Management
Northwestern University
2211 Campus Drive
Global Hub 4361
Evanston IL, 60208
and NBER
gregor.matvos@kellogg.northwestern.edu

Tomasz Piskorski
Columbia Business School
3022 Broadway
Uris Hall 810
New York, NY 10027
and NBER
tp2252@columbia.edu

Amit Seru
Stanford Graduate School of Business
Stanford University
655 Knight Way
and NBER
aseru@stanford.edu

I. Introduction

Real estate commissions have been a longstanding point of contention in the U.S. residential housing market. Despite significant technological advancements that have reduced the costs of home search and matching—such as online platforms like Zillow—real estate agents continue to charge substantial commission fees that have remained largely unchanged. In a typical housing transaction, commissions range from 5-6% of the sale price, with the fee usually split between the buyer's agent and the seller's agent, yet the entire cost falls on the home seller. Notably, real estate commissions in the U.S. are among the highest in the world, more than double the average in other developed economies.[1]

A series of recent court decisions, culminating in the National Association of Realtors (NAR) settlement, seeks to disrupt the existing equilibrium by implementing measures designed to reduce agent fees. Effective August 17, 2024, these rulings have the potential to significantly impact a wide range of stakeholders, including consumers, real estate agents, and the broader economy. They have also sparked extensive debate among media commentators, consumer advocates, and the real estate industry.

Although the full impact of these changes has yet to unfold, in this note we explore their potential consequences. Specifically, we examine the equilibrium effects on house prices and consumer welfare, assuming that these changes result in reduced agent fees. To do this, we calibrate a dynamic structural search model of the housing market to analyze the economic forces driving the relationship between agent commissions and housing market equilibrium. In our primary counterfactual analysis, we focus on the assumption that the settlement will lead to a reduction in agent fees, particularly on the buyer's side.

Our model, based on Buchak et al. (2022), operates in continuous time. Initially, a homeowner is matched with a house, receiving a flow benefit, which reflects the net consumption value after costs. At any given time, there is a probability that the homeowner becomes unmatched from the current house and begins the process of moving. Due to balance sheet constraints, owning two homes simultaneously is prohibitively expensive, requiring the homeowner to sell the current

[1] According to KBW Research, the average commission for real estate agents is about 5.4% of the home acquisition price, compared to an average of 2.7% outside the U.S.

house before purchasing a new one. Once a suitable new house is found and bought, the homeowner is matched with this new property. Transactions occur within a standard search market, where sellers list their homes and are randomly matched with buyers. In the baseline analysis, sellers pay a fixed percentage of the sale price to a real estate agent, who otherwise remains passive.

We analyze two primary counterfactual scenarios. In the first, we assume the current arrangement persists, where the seller pays both the buyer's and seller's agent fees. However, we assume that these fees will decrease due to heightened competition and transparency in the real estate agent market. In the second scenario, we explore a "decoupling" arrangement, where the buyer and seller each cover their respective agent fees. We then assess how these reductions in agent fees influence the housing market equilibrium.

In our main analysis, we assume that changes in real estate agents' fees do not alter the fundamental parameters of the house-selling process. As a result, our primary counterfactuals likely represent an upper bound on the potential benefits to consumers, assuming that reduced agents' fees do not negatively affect the underlying dynamics of house matching. However, it is possible that well-compensated agents could enhance the selling process, for example, by increasing the rate of buyer-seller matches. In an extended version of the model, we account for the possibility that variations in agents' fees may influence the quality of the search process.

Our analysis generates several findings. First, we show that, contrary to popular assertions by some media commentators and consumer advocates, a reduction in agent fees generally leads to an increase in house prices.[2] Consider the current market setting where the seller pays both the buyer's and seller's agent fees, which are now reduced due to greater competition and transparency in the real estate market. Reducing fees from the 6% baseline to 5% results in a 2.3% increase in home prices. At a 4% fee, home prices rise by 4.8%, and with a 3% fee, the increase is 7.3%.

We observe similar results when examining the reduction of the buyer's agent fees in the "decoupling" scenario, where buyers and sellers each cover their respective agent's fees. Holding the seller's agent fee constant at 3%, a reduction in the buyer's agent fee from the 3% benchmark

[2] See. for example, https://www.cnn.com/2024/03/16/business/real-estate-commission-settlement-slash-prices/index.html; https://www.businessinsider.com/nar-settlement-antitrust-lawsuits-agent-commissions-affect-home-prices-2024-3?op=1; https://www.vox.com/money/24106230/nar-realtors-settlement-real-estate-house-prices.

to 2% results in an approximate 0.6% increase in home prices. Further reducing the buyer's agent fee to 1% leads to a more significant home price increase of 3.8%. If the buyer's agent fee is entirely eliminated, reducing it to 0%, home prices rise by 7.3%.

The rationale behind these price effects is as follows: Housing is a durable asset, and lower agent fees reduce the future transaction costs associated with reselling a home, thereby increasing the value of homeownership. If a house were sold only once in its lifetime, a reduction in agent fees might lower home prices, as some of the savings would be passed on to the buyer through a lower purchase price. However, since homes typically change hands multiple times over their lifetime, reducing agent fees lowers the expected future costs of selling, thereby increasing the overall value of homeownership. This effect predominates, leading to higher home prices. Thus, lowering agent fees has a similar impact to reducing real estate taxes, as both reduce the cost of ownership and generally result in higher home values.

Second, we analyze how lowering real estate agent fees affects consumer welfare for both current homeowners and prospective buyers. As agent fees decrease, average consumer welfare progressively improves: by 1.3% at a 5% fee, 2.6% at 4%, 4% at 3%, and up to 8.8% at a 0% fee, compared to the baseline 6% fee. While all consumers benefit from reduced agent fees, which lower the expected lifetime costs of homeownership, the majority of these gains accrue to home sellers. Buyers experience relatively modest welfare increases: 0.2% at a 5% fee, 0.45% at 4%, 0.7% at 3%, and 1.6% at 0%. In contrast, sellers enjoy much larger gains: 1.8% at 5%, 3.7% at 4%, 5.7% at 3%, and 12.2% at 0%. We observe similar results when examining the impact of reduced agent fees in our "decoupling" fee scenario.

The divergence in welfare effects between buyers and sellers can be explained as follows. Consider the scenario where the seller continues to cover all fees. For a prospective homebuyer, moving from a higher-fee to a lower-fee environment offers benefits such as reduced future transaction costs and potential increases in the resale value of their home. However, these advantages are offset by the immediate drawback of higher home prices. In contrast, a current home seller immediately reaps the benefits of lower fees and higher sale prices. While these gains are somewhat diminished by the higher cost of acquiring their next home, they still benefit from lower future transaction costs and an anticipated higher resale value. The difference in the timing and magnitude of these benefits explains the significant disparity in welfare effects between home sellers and prospective buyers.

Finally, our main analysis assumed that the level of real estate agents' fees did not influence the fundamental parameters of the house-selling process. As mentioned earlier, our primary counterfactuals can be viewed as a potential upper bound on the benefits to consumers, given that a reduction in agents' fees does not negatively impact the underlying dynamics of house matching. However, it's possible that well-compensated agents could enhance the selling process, for example, by increasing the rate of buyer-seller matches.

To explore this potential effect, we extended our model to account for the possibility that agents' compensation could influence the match rate between buyers and sellers. As anticipated, our findings suggest that as agents' skill and effort improve with higher fees, the welfare benefits of eliminating agents diminish. However, substantial consumer benefits from reduced fees persist, unless agents are exceptionally efficient in facilitating home sales or offer other unmodeled advantages to homeowners. For example, to make consumers better off with agents charging a 6% fee compared to a no-agent scenario, agents would need to facilitate matches at approximately five times the current rate. In practical terms, agents charging 6% would need to convert 10 showings into 50 showings to provide comparable consumer benefits.

Overall, our analysis suggests that a reduction in agent fees can lead to higher house prices and increased consumer welfare due to lower transaction costs, with most benefits accruing to existing homeowners. However, these advantages may diminish for financially constrained homebuyers, who, all else equal, could face greater difficulty qualifying for credit as home prices rise. Therefore, even if the NAR settlement results in a significant decrease in agent fees, it is unlikely to substantially improve housing affordability for prospective buyers.

Our analysis contributes to the broader literature on frictions and costs in matching households to houses. We build on an extensive body of work in quantitative search and matching models (Wheaton 1990; Genesove and Mayer 1997; Ngai and Tenreyro 2014; Landvoigt, Piazzesi, and Schneider 2015; Guren 2018; Piazzesi, Schneider, and Stroebel 2020; Guren and McQuade 2020; Rekkas, Wright, and Zhu 2020; Andersen et al. 2022; Agarwal et al. 2024). Within this literature, our study is closely related to research on the role of intermediaries and their role in housing market equilibrium, particularly focusing on real estate agents (Levitt and Syverson 2008; Hendel, Nevo, and Ortalo-Magné 2009; Barwick and Pathak 2015; Barwick, Pathak, and Wong 2017) and tech-enabled intermediaries like iBuyers (Buchak et al. 2022). More broadly, our work also intersects with the extensive literature on decentralized trading in asset markets (e.g., Duffie et al. 2005; Atkeson, Eisfeldt, and Weill 2015; Gavazza 2016; Weill 2020).

Our work is also related to a recent paper by Grochulski and Wang (2024), who examine the effects of real estate agent commissions on the housing market using a model of home search and buying. However, unlike ours, their model is not fully dynamic and does not account for multiple ownership spells. This limitation may explain why, in contrast to our findings, they generally conclude that lower commissions lead to lower home prices. As we demonstrate, accounting for multiple ownership spells and the associated future expected costs of homeownership is crucial for accurately assessing the overall impact of changes in agent fees on house prices and consumer welfare, leading to the positive effect of reduced fees on home prices.

Our paper is also broadly connected to recent quantitative studies of housing and mortgage markets (e.g., Corbae and Quintin 2015; Berger et al. 2017; Favilukis, Ludvigson, and Van Nieuwerburgh 2017; Beraja et al. 2019; Greenwald 2018; Ganong and Noel 2020; Kaplan, Mitman, and Violante 2020; Buchak et al. 2020; Gorback and Keys 2020; Benetton 2021; Calder-Wang 2021; Wong 2021; DeFusco et al. 2022), as well as to the literature examining the effects of various policy interventions in the housing market (e.g., Mayer et al. 2014; Agarwal et al. 2017; Di Maggio et al. 2017; Ganong and Noel 2020).

II. US Housing Market and the NAR Settlement

II.A Real Estate Agents and the US Housing Market

In the U.S. housing market, approximately 90% of transactions are facilitated by real estate agents. [3] A buyer's agent represents the interests of the individual looking to purchase a property, assisting with home searches that meet the buyer's criteria, providing market analysis, and negotiating offers. They guide buyers through the entire process, from the initial search to closing. Conversely, a seller's agent represents the property owner seeking to sell their home. Their role includes

[3] According to the NAR 2023 Profile of Homebuyers & Sellers, 89% of buyers purchased their home through a real estate agent or broker.

marketing the property, setting a listing price, managing offers from potential buyers, overseeing negotiations, and coordinating the sale process.

Real estate agent fees are typically structured as a commission, where agents earn a percentage of the property's sale price. Over the past several decades, this commission has traditionally been around 5-6% of the sale price, usually split between the buyer's agent and the seller's agent. For example, on a $300,000 property, a 6% commission would amount to $18,000, divided between both agents. In recent years, the total value of homes sold in the U.S. has typically ranged from approximately $1.5 to $2 trillion annually, with about 5-6 million transactions each year. This suggests that real estate agent commissions total around $100 billion annually.

In most U.S. real estate transactions, the seller is responsible for paying the real estate agent commissions. Although the seller pays the commission directly, this cost is typically factored into the overall sale price of the home. As a result, the commission impacts the seller's net proceeds, as it is deducted from the sale price before determining the final amount the seller receives.

Homes are typically listed on Multiple Listing Service (MLS) databases, which real estate professionals use to share information about properties for sale. The MLS provides agents and brokers with detailed property listings, including photos, descriptions, and pricing, helping them match buyers with suitable homes and streamline the property search process. It also fosters collaboration among real estate professionals, as agents often work together and share commissions on transactions listed in the MLS.

The rise of online real estate platforms like Zillow.com and Realtor.com over the past couple of decades has significantly reduced the costs associated with home searching and matching for buyers. Despite these technological advancements, real estate agent commissions have remained largely unchanged. As of 2023, the average commission rate in the U.S. is about 5.5%, according to data from the National Association of Realtors. Notably, U.S. real estate commissions are among the highest in the world, more than double the average rate in other developed economies.

II.B The National Real Estate Association Settlement

In the "pre-Zillow" era, the compensation structure discussed above likely reflected limited consumer information and less direct access to property data. However, in today's digital age, where consumers are more informed and capable of conducting independent research, this commission structure may appear outdated. Buyers and sellers can now handle many tasks themselves and make more informed decisions. Yet commissions remain essentially a fixed cost regardless of the level of service provided.

Motivated by these concerns, a series of recent court decisions have aimed to disrupt the existing equilibrium by increasing awareness and competition, particularly regarding buyer's agent fees, with the goal of reducing overall agent fees. These efforts culminated in the National Association of Realtors Settlement announced on March 15, 2024, which resolved litigation related to broker commissions brought on behalf of home sellers. [4] A key issue driving these actions is the practice of marketing buyer agent services as "free" to home buyers, since the seller typically covers the buyer's agent fee at closing. This arrangement can stifle competition in the buyer's agent market and obscure the true impact of these costs.

The essence of the NAR settlement is the potential for agent commissions to become more "decoupled." [5] The settlement mandates that the NAR eliminate the requirement for listing agents to offer compensation to buyer agents or other buyer representatives, although such compensation will still be allowed. Listing agents and sellers will be prohibited from including offers of compensation to buyer agents on the MLS, and MLSs must remove fields related to compensation information. Moreover, offering or accepting compensation to buyer brokers will no longer be a condition for MLS membership and participation.

Buyer's agents will now be required to enter into a written agreement with prospective homebuyers before showing any properties. The NAR settlement mandates that buyer's agents disclose their compensation in this agreement, with the disclosure being specific and not open-ended; vague language such as "whatever amount the seller is offering to the buyer" is not allowed. The agreement must clearly state that the agent will not receive compensation from any source exceeding the amount or rate specified in the agreement. Additionally, agents must inform clients that their compensation is fully negotiable and not determined by law. Finally, agents are prohibited from filtering or restricting listings based on the compensation offered.

[4] See https://www.nar.realtor/newsroom/nar-reaches-agreement-to-resolve-nationwide-claims-brought-by-home-sellers.
[5] See https://www.nar.realtor/the-facts/nar-settlement-faqs for details.

Overall, consumer advocates and market analysts anticipate that these changes will raise awareness of buyer's agent fees and enhance competition among real estate agents, ultimately leading to a decline in agent fees, particularly on the buyer's side. In line with this expectation, our counterfactual analysis will simulate the effects of a reduction in buyer's agent fees on housing market equilibrium.

III. Equilibrium Housing Trading Framework with Dealer Intermediation

To assess the impact of agent fees, we utilize an equilibrium search and matching model applied to housing search, as in Buchak et al. (2022). We calibrate the model to the U.S. housing market and then examine the role of real estate agents' fees and their effects on house prices, consumer welfare, and housing allocation.

III.A Model Setting

The model is in continuous time. A homeowner is initially matched with a house, from which she receives a flow benefit (consumption value minus costs). With some probability, she becomes unmatched from her current house and begins the moving process. Due to balance sheet constraints, owning two homes simultaneously is prohibitively costly, so she must sell her current house before purchasing a new one. Once she finds and buys a new house that meets her preferences, she becomes a matched homeowner again. Transactions among homeowners take place in a standard search market where sellers list their houses and are randomly matched with buyers. In the baseline analysis, the seller is required to pay a fixed percentage of the sale price to a real estate agent, who otherwise stays passive. In extensions of the model, we allow real estate agents to enhance the search process.

III.A.1. Market Structure

Homeowners: A homeowner can be in one of three states, transitioning between them over time. These states are denoted $\{h, s, b\}$. h denotes a matched homeowner who is content with their current residence. s denotes a selling homeowner who is dissatisfied with their current house and is in the process of selling it. The state b represents a buying homeowner who does not currently own a house. The total homeowner population is fixed at an exogenous mass $M = 1$, with $\{m_h, m_s, m_b\}$ representing the endogenous mass of homeowners in each state. Homeowners become unmatched at rate μ.

All agents discount the future at a rate ρ. Matched h-type homeowners own a house that produces a flow utility $\bar{u}_i = \bar{u} + \tilde{\epsilon}_i$. $\bar{u}$ captures the common utility component across homeowners, such as housing services and amenities net of holding costs, while $\tilde{\epsilon}_i$ accounts for idiosyncratic differences in utility flows from their current property, reflecting household-specific preferences for features like the build or location. This allows for the possibility that sellers may have some market power, as houses are horizontally differentiated. When homeowners become unmatched (both sellers and buyers), they receive a utility flow $\underline{u}$, normalized to zero. This represents the notion that, while unmatched homeowners still derive some utility from occupying the house, it is no longer a good match—potentially due to factors like an increased commute, an inferior school district, or a less-than-ideal rental residence.

Listings: Selling households can list their homes and randomly encounter potential buyers. Buyers and sellers meet at an endogenous aggregate rate $F(m_s, m_b) = \lambda m_s m_b$, where λ parametrizes the underlying market liquidity or the matching skill of the real estate agent. Let subscripts s and b denote the rate for an individual seller or buyer, respectively, to match; then, $F_s(m_s, m_b) \equiv F(m_s, m_b)/m_s$. Given a listing price p, a matched buyer accepts the offer with an endogenous probability $\pi(p)$.

III.A.2. Homeowner's Problem

Homeowners maximize their expected utility. Let $\{v_h, v_s, v_b\}$ represent the value functions of matched households, sellers, and buyers, respectively.

Matched homeowners do not take any actions. They receive a consumption flow from their current house, $\bar{u} + \tilde{\epsilon}_i$, and the continuation value of remaining in the house, which depends on the likelihood of becoming unmatched. The value function for a matched homeowner i is as follows:

$$\rho v_h^i = \bar{u} + \tilde{\epsilon}_i + \mu(v^s - v_h^i) \tag{M.1}$$

Recall that ρ is the subjective discount rate, μ is the unmatching rate, and v^s represents the value of being a seller. The value a matched homeowner derives from their house, v_h^i, can be expressed as the sum of a common component, v_h, which reflects how the average homeowner values their house, and the idiosyncratic home valuation, $\tilde{\epsilon}_i$. For the remainder of the paper, we focus on v_h and $\epsilon_i \sim \mathrm{E}(\epsilon_i)$, with $v_h^i = v_h + \frac{\tilde{\epsilon}_i}{\rho+\mu} \equiv v_h + \epsilon_i$. We interpret $\epsilon_i \equiv \frac{\tilde{\epsilon}_i}{\rho+\mu}$ as the capitalized idiosyncratic flow utility from the house, consistent with the earlier division of flow utility into a common component, $\bar{u}$, and idiosyncratic component, $\tilde{\epsilon}_i$. ϵ_i is distributed type-1 extreme value distribution.

Selling homeowners set the listing price to maximize their expected utility, balancing the trade-off between a higher price, conditional on sale, and a lower probability that a matched buyer will accept the offer. After selling at price p, the seller receives the price net of the broker's fee, $(1-\phi)p$, and the net change in utility from transitioning from a seller to a buyer, $v_b - v_s$. The value function for a seller can thus be expressed as:

$$\rho v_s = \underline{u} + F_s(m_s, m_b) \max_p \pi(p)((1-\phi)p + v_b - v_{sP}) \tag{M.2}$$

Buyers, having sold their previous homes, are now searching for a new one. Upon matching with a seller, they decide whether to purchase the house at the listed price. When a buyer encounters a seller and sees the house and its list price, their idiosyncratic valuation ϵ_i is realized, and they must choose whether to accept the offer or continue searching. The buyer will accept the offer if the utility from homeownership exceeds the utility of remaining a buyer by the amount of the sale price. The buyer's value function is given by:

$$\rho v_b = \underline{u} + F_b(m_s, m_b) E[\max\{v_h + \epsilon_i - p, v_b\} - v_b] \tag{M.3}$$

III.A.3. Population Dynamics

Having outlined the decision problems of individual market participants, we now turn to population dynamics. The population size of matched households decreases at the exogenous unmatching rate and increases at the endogenous rate of new matches:

$$\frac{dm_h}{dt} = -\mu m_h + F(m_s, m_b)\pi(p) \tag{M.4}$$

Seller populations increase with the unmatching less the fraction of unmatched selling to the intermediary, and decrease as listings sell and they become buyers:

The seller population increases due to unmatching, and decreases as listings are sold and sellers transition to buyers:

$$\frac{dm_s}{dt} = \mu m_h - F(m_s, m_b)\pi(p) \tag{M.5}$$

The buyer population remains stable because each sale simultaneously creates a new buyer (the household that sold) and removes an existing buyer (who becomes a matched homeowner). Finally, given a fixed housing stock, there is one potential buyer for every seller:

$$m_s = m_b \tag{M.6}$$

III.A.4. Equilibrium

We look for a stationary equilibrium. The equilibrium is a price p such that:

1) Households maximize utility when purchasing and listing (M.2, M.3)
2) State variables $\{m_h, m_s, m_b\}$ are constant (M.4–M.6)

III.B Model Calibration

III.B.1 Data

We calibrate the model following Buchak et al. (2022), using CoreLogic deed record data on housing transactions in several major U.S. housing markets. The sample is restricted to arm's-length, non-foreclosure transactions involving single-family homes or condominiums with transaction prices below \$10 million and land areas under 50,000 square feet. The data include detailed records for each transaction, tagged to a specific property, with information such as seller name, owner name, transaction date, sale amount, and mortgage amount. Transactions lacking a recorded sale date are excluded. By merging transaction records with tax assessment files, we gain insight into property-specific attributes, including census tract, land square footage, building square footage, number of stories, year of construction, and features like air conditioning, garage, heating, sewer, water, and electricity.

We also utilize listing data from the Multiple Listing Service (MLS) provided by ATTOM Data. Individuals, brokers, and companies selling their properties post listings on various platforms, and we observe the combined data at the individual listing level. The listing data include house-level details similar to those in the transaction data, as well as identifying information for the homeowner, listing agent, and buying agent. We aggregate the individual listings into a "listing spell," which represents the entire period during which a homeowner attempts to sell their house.

III.B.2 Externally Calibrated Parameters

Table 1 outlines our main parameters, with Panel B presenting the externally calibrated values. Following Guren (2018), we set the discount rate ρ to 0.05. According to U.S. Census estimates, individuals move approximately 9.1 times after turning 18, which translates to an annual moving rate of roughly 0.152 (9.1/60 years).[6] This rate corresponds to the unmatching rate μ in our model. We set the baseline combined broker fee at 6%, assuming it is paid by the seller.

III.B.3 Parameters Calibrated to the Data: Identification

Three parameters remain to be calibrated: the matched flow utility, $\bar{u}$, the unmatched flow utility, $\underline{u}$, and the match rate, λ. We normalize $\underline{u}$ to 0. We then calibrate $\bar{u}$ and λ using the simulated method of moments by matching observed house prices and listing times. Intuitively, a higher $\bar{u}$ results in higher house prices, as buyers are willing to pay more to move into a matched home. A higher λ leads to shorter listing times, as sellers encounter more potential buyers. Our calibration yields $\bar{u} = 26.39$ and $\lambda = 137.54$, closely matching observed prices and time on market.

We note that our model is calibrated using data from around 2018. This equilibrium likely reflects the long-term dynamics of the housing market more accurately than current conditions, which are still affected by post-pandemic recovery, inventory levels below the long-term average, and recent fluctuations in interest and mortgage rates. While average home prices have risen significantly since 2018, our focus will be on the relative effects, which should be less influenced by changes in nominal quantities.

IV. Counterfactual Analysis

In this section, we use our calibrated model to perform a series of counterfactual analyses to assess the impact of changes in real estate agents' fees on house prices and consumer welfare. In our baseline counterfactuals, we assume that changes in agent fees do not directly affect λ, which represents the underlying market liquidity or the matching skill of real estate agents. Therefore, our counterfactuals may represent an upper bound on the potential benefits to consumers, as a reduction in agents' fees could also alter the parameters of the matching function. Nonetheless, even with this assumption, changes in agent fees are expected to have significant effects on

[6] https://www.census.gov/topics/population/migration/guidance/calculating-migration-expectancy.html

equilibrium outcomes, including the speed of matches, home prices, and the redistributive effects between prospective buyers and home sellers, which we explore further below.

We analyze two primary counterfactual scenarios. In the first, we assume the current arrangement persists, where the seller pays both the buyer's and seller's agent fees. However, we assume that these fees will decrease due to heightened competition and transparency in the real estate agent market. In the second scenario, we explore a "decoupling" arrangement, where the buyer and seller each cover their respective agent fees. We then assess how these reductions in agent fees influence the housing market equilibrium.

IV.A Seller Pays all Fees Setting with Lower Agent Fees

We begin by examining the existing market scenario where the seller continues to pay both the buyer's and seller's agent fees, now reduced due to increased competition and transparency in the real estate buyer's agent market. In our baseline scenario, we assume combined agent fees of 6%, which is close to the current market average of about 5.5%. We then explore the impact of reducing these fees in 1% increments, ranging from 6% to 0%. The 0% case represents an extreme scenario where agents are fully disintermediated by low-cost technological solutions. A more plausible post-settlement range for combined agent fees is between 3% and 4%, which aligns with fee levels observed in other developed countries. For instance, the 4% fee scenario could be interpreted as the seller's agent fees remaining at 3%, while the buyer's agent fees drop to 1% due to enhanced competition and transparency.

Figure 1, Panel (a), illustrates the relative change in equilibrium home prices as a percentage, with the x-axis representing the combined agent fees. The 6% fee level serves as our baseline scenario, where the change in house prices is set to 0% by construction.

We observe that a decrease in agent fees leads to a significant increase in home prices. Reducing the fees to 5% results in a 2.3% increase in home prices relative to the 6% fee benchmark. With a 4% fee, home prices rise by 4.8%. At a 3% fee, the increase reaches 7.3%. Finally, at the extreme 0% fee level, home prices increase by 15.7%.

This counterfactual illustrates that, contrary to popular assertions by some media commentators and consumer advocates, reducing agent fees will generally lead to higher house prices. The intuition behind this result is as follows: One might initially assume that a reduction in transaction costs would lower prices, with some of the savings passed on to the buyer. However, this static reasoning overlooks the dynamic nature of the housing market. A reduction in agent fees lowers future transaction costs, thereby increasing the value of housing as a durable asset. In our calibration, where the typical ownership duration is about 6.5 years, the expected future reduction in fees outweighs the immediate effects, leading to higher house prices. In other words, reducing agent fees has a similar effect to lowering real estate taxes, which generally results in higher home values due to reduced ownership costs.

Panel (b) illustrates how payments made by and to the transacting parties change in percentage terms relative to the 6% fee baseline as the combined agents' fees vary. The figure shows that as the fee decreases, the amount received by the seller, net of fees, increases. This effect is partly mechanical, as the seller pays a smaller fraction of the transaction price in fees. However, a significant portion of this effect is due to the equilibrium impact on house prices discussed earlier. Consequently, as fees decrease, the buyer's payment—reflected in the house price—also rises. Additionally, the amount received by real estate agents decreases. This decrease is not perfectly linear, as the reduction in the fee percentage is partially offset by the increase in house prices. For instance, when the broker fee is set at 3% of the transaction price, the amount paid to brokers is only 2.8% less relative to the baseline scenario, due to the rise in house prices.

Next, we examine the impact of lowering agent fees on consumer welfare related to current or expected homeownership. Figure 2, Panel A shows the average change in consumer welfare. As observed, there is a consistent increase in average consumer welfare as real estate agents' fees are reduced. Specifically, as fees decrease, consumer welfare rises progressively: to 1.3% at a 5% fee, 2.6% at a 4% fee, 4% at a 3% fee, and up to 8.8% at a 0% fee, all relative to the baseline 6% fee.

These average effects conceal important differences between buyers and sellers. When we examine the changes from the perspectives of both groups, we find that while both benefit from reduced agent fees, the impact is significantly greater for home sellers. For buyers, consumer welfare increases by 0.2% at a 5% fee, 0.45% at a 4% fee, 0.7% at a 3% fee, and reaches its peak at 1.6% with a 0% fee. In contrast, sellers experience much larger welfare gains: 1.8% at a 5% fee, 3.7% at a 4% fee, 5.7% at a 3% fee, and a maximum of 12.2% at a 0% fee.

This divergence is intuitive. Consider a prospective homebuyer: compared to the previous equilibrium with higher fees, they benefit from the expected increase in home resale value and lower future transaction costs when they eventually sell the home, but they immediately face higher home prices. On the other hand, a current home seller quickly gains from lower fees and higher sale prices. While these gains are partially offset by the higher cost of acquiring their next home, this is balanced by lower future transaction costs and higher resale prices. The difference in the timing of these benefits explains the significant disparity in consumer welfare effects between home sellers and prospective buyers.

Overall, this analysis suggests that in a setting where the seller pays all commissions, a reduction in fees will lead to higher home prices and enhance consumer welfare by lowering the cost of homeownership. However, the majority of these gains are likely to benefit current homeowners rather than prospective buyers. Moreover, in a more advanced version of our model that accounts for financing constraints, these advantages may diminish further for financially constrained buyers due to the expected rise in home prices.

IV.B "Decoupled" Fee Setting with Lower Buyer's Agent Fees

To assess the robustness of these results, we next consider an alternative counterfactual scenario where the NAR settlement and associated changes lead to the decoupling of fees, with both buyers and sellers paying their respective agents' fees. In this scenario, we assume the seller continues to pay the seller's agent fee of 3%, while we vary the buyer's agent fee, now paid directly by the buyer, from an initial 3% down to 0%.

Figure 3, Panel (a), illustrates the relative change in equilibrium home prices as a percentage, with the x-axis representing the buyer's agent fees relative to the combined 6% fee level traditionally paid by the seller. We observe that simply decoupling the fees (e.g., reducing the buyer's agent fee to 3%) results in a decrease in home prices by approximately 2.5%. This outcome is intuitive, as when the buyer pays their agent's fees instead of the seller, the buyer is effectively compensated for this additional expense through a lower home price.

However, a reduction in the buyer's agent fees once again leads to higher home prices. With a 2% buyer's agent fee, home prices increase by approximately 0.6%. As the fee decreases further to 1%, home prices rise more significantly by 3.8%. At a 0% fee, where the buyer's agent fee is entirely eliminated, home prices see the largest increase of 7.3%. This trend indicates that as the buyer's agent fee decreases, home prices tend to rise. The underlying intuition aligns with our previous counterfactual analysis: lower fees reduce future expected transaction costs, thereby enhancing the value of housing. Panel (b) illustrates how net payments to and from the various parties change with fees, showing a similar dynamic as in the previous counterfactual.

Next, we examine the impact of lowering agent fees on consumer welfare related to current or expected homeownership. [7] Figure 4, Panel A, shows the average change in consumer welfare. At a 2% fee, average consumer welfare increases by approximately 1.4%. As the fee decreases to 1%, consumer welfare rises by 2.7%. When the fee is eliminated entirely, reducing it to 0%, consumer welfare increases by about 4%.

As seen in our previous counterfactual analysis, Figure 4, Panel B shows that these gains predominantly benefit current homeowners rather than prospective buyers. When the fee is reduced to 2%, the buyer's value increases by only 0.2%, while the seller's value rises by nearly 2%. At a 1% fee, the buyer's value increases to about 0.5%, while the seller's value grows to 3.8%. With a 0% fee, where the buyer's agent fee is eliminated, the buyer's value rises to 0.7%, and the seller's value reaches 5.7%.

Overall, both this analysis and our previous counterfactuals suggest that, regardless of whether buyers or sellers pay the buyer's agent fees, reducing these fees will generally lead to higher home prices and improved consumer welfare by lowering the cost of homeownership. However, the majority of these benefits are likely to accrue to current homeowners rather than prospective buyers. Furthermore, in a more detailed model that accounts for financing constraints, these advantages may diminish further for financially constrained buyers due to the expected increase in home prices.

IV.C What Value-Add in the Search Process Justifies Agents' Fees?

The preceding analysis assumed that the level of real estate agents' fees did not directly influence the house-selling process. As discussed earlier, our counterfactuals in Sections IV.A and IV.B can be considered a potential upper bound on the benefits to consumers, as they assume that a reduction

[7] It's important to note that shifting from a 6% seller-paid fee to a 3%-3% seller/buyer fee structure is not entirely neutral for consumer welfare. Under a 6% seller fee, for the seller to net $100, the house price must be $106.4, which is what the buyer pays. In contrast, with a 3% seller fee and a 3% buyer fee, for the seller to receive $100, the house price needs to be $103.1, with the buyer paying a total of $106.2. This geometric averaging results in the buyer paying slightly less overall, while the brokers receive $6.2 instead of $6.4.

in agents' fees does not adversely affect the underlying parameters of the matching function. It is plausible, however, that well-compensated agents could positively influence the selling process by increasing the rate at which buyer-seller matches are formed. In this section, we explore how significant this impact on the matching rate would need to be for homeowners to prefer hiring such agents over alternatives.

Specifically, we simulate a series of counterfactual equilibria where there is no agent fee, and the match rate λ is reduced by a multiplicative factor. This captures the scenario where, in the absence of an agent, homeowners avoid fees but experience a less efficient selling process. Additionally, we simulate a series of counterfactual equilibria where the combined agent fee is 3% and the match rate is similarly reduced, reflecting the idea that less well-compensated agents may exert less effort, or only lower-quality agents may remain in the market.

The results are presented in Figure 5, which features two curves: a blue curve comparing the baseline 6% broker compensation to a counterfactual with 0% broker compensation, and an orange curve comparing the baseline to a counterfactual with 3% broker compensation. The x-axis represents the difference in matching skill between the baseline and the counterfactual; for example, a value of 0.5x indicates that the counterfactual match rate is half that of the 6%-compensated agent's match rate. In other words, it reflects the idea that reducing (or eliminating) broker compensation decreases the match rate by a factor of two. The y-axis shows the change in consumer welfare when moving from the baseline 6% fee equilibrium to the counterfactual 0% or 3% agents' fee equilibria.

The figure shows that when the 6%-compensated agent has no additional skill over the alternatives (1.00x on the x-axis), consumer welfare is 9% higher with no agents' fees and 4% higher with a 3% fee. These differences align with the values shown in Figure 2. As the relative skill of the 6%-compensated agents increases, the consumer welfare benefit of eliminating the agents declines, as the advantage of reduced fees is offset by slower sales.

However, for 6%-compensated agents to increase consumer welfare relative to 3%-compensated agents, the 3%-compensated agent would need to form matches at roughly half the rate of the 6%-compensated agent (0.50x on the x-axis). For 6%-compensated agents to increase consumer welfare relative to a no-agent scenario, the non-brokered sale would need to generate matches at only one-fifth the rate of the 6%-compensated agent (0.20x on the x-axis). In practical terms, for consumers to be better off with agents charging 6%, those agents would need to turn 10 showings into 50 showings.

Overall, these counterfactuals suggest that as agents' skill and effort improve with higher fees, the welfare benefit of eliminating agents decreases. However, significant consumer benefits from reduced fees persist unless agents are exceptionally efficient in facilitating home sales or provide other unmodeled advantages to homeowners.

IV. Conclusion

Motivated by the recent NAR settlement, we examine the effects of reducing real estate agents' commissions on home prices, housing turnover, and consumer welfare. Using a dynamic structural search model of the housing market, we assess the potential impact of lower real estate agent commissions on market equilibrium. Our analysis underscores the importance of considering the dynamic nature of the housing market, consumer heterogeneity, and general equilibrium effects in understanding these outcomes. Contrary to the claims of some media commentators and consumer advocates, our findings suggest that reducing agent fees generally leads to higher home prices, as lower future transaction costs increase the value of housing as a durable asset. While lower agent fees typically enhance consumer welfare by reducing the cost of homeownership, our results indicate that most of these benefits are likely to accrue to current homeowners rather than prospective buyers.

These findings have several implications. First, even if the NAR settlement or subsequent technological innovations in the housing market lead to a significant decrease in agent fees, our analysis suggests that it is unlikely to substantially improve affordability for prospective buyers. The benefits of reduced real estate commissions may diminish further for financially constrained homebuyers, who may find it more difficult to qualify for credit due to increased home prices. In a future extension of our analysis, we will further explore the equilibrium impacts of reduced fees in relation to consumer financing constraints.

Second, our primary counterfactuals can be seen as an upper bound on the potential benefits to consumers, as they assume that reducing agents' fees does not negatively impact the fundamental parameters of house matching. However, well-compensated agents may improve the selling process by, among other things, increasing the rate of successful buyer-seller matches. Our findings suggest that as agents' skills and efforts decline with lower fees, the welfare benefit of eliminating agents diminishes, as expected. Nevertheless, our analysis indicates that substantial consumer benefits from reduced fees persist, unless agents are exceptionally efficient at facilitating home sales or provide other unmodeled advantages to homeowners. Future research could further investigate the relative productivity of real estate agents in relation to their compensation structure and the specific benefits they offer to consumers. A more comprehensive analysis could then incorporate the impact of these factors on house prices and consumer welfare.

Third, our analysis highlights the redistributive effects of technological innovations in the housing market aimed at reducing transaction costs. Previous research suggests that innovations such as online lending platforms (Buchak et al. 2018) and iBuyer technology (Buchak et al. 2022) primarily offer consumers convenience and faster transactions, rather than immediate cost savings. These studies also indicate that such fintech innovations often cater to more affluent and creditworthy borrowers. Our findings align with these insights. While reduced agent fees can lower the lifetime costs of homeownership by decreasing expected transaction costs—making homeownership more convenient and less expensive—these benefits primarily accrue to existing homeowners, who tend to be more affluent on average. They do not directly address affordability issues for prospective buyers through reduced home prices.

Finally, we note that the current wave of innovations, including the use of Artificial Intelligence, has the potential to further diminish the remaining benefits of real estate agents and significantly lower transaction costs. Future research could explore how these developments impact the industrial organization of the housing market and its equilibrium.

References

Agarwal, S., Amromin, G., Ben-David, I., Chomsisengphet, S., Piskorski, T., Seru, A., 2017. Policy Intervention in Debt Renegotiation: Evidence from Home Affordable Modification Program, *Journal of Political Economy* 125, 654-712

Agarwal, S., Grigsby, J., Hortaçsu, A., Matvos, G., Seru, A., Yao, V., 2024. Searching for Approval, *Econometrica*, vol. 92(4), pages 1195-1231.

Andersen, S., C. Badarinza, L. Liu, J. Marx, T. Ramadorai, 2022, Reference Dependence in the Housing Market, *American Economic Review* 112, 3398-3440.

Atkeson, A., Eisfeldt A., and P.-O. Weill, 2015, Entry and Exit in OTC Derivatives Markets, *Econometrica* 83*, 2231-2292.*

Barwick, P. J., and P. A. Pathak, 2015, The Costs of Free Entry: An Empirical Study of Real Estate Agents in Greater Boston, *RAND Journal of Economics* 46, 103–145.

Barwick, P. J., P. A. Pathak, and M. Wong, 2017, Conflicts of Interest and Steering in Residential Brokerage, *American Economic Journal: Applied Economics* 9, 191–222.

Benetton, M., 2021, Leverage Regulation and Market Structure: A Structural Model of the UK Housing Market, *Journal of Finance* 76, 2997-3053.

Berger, D., Guerrieri, V., Lorenzoni, G., Vavra, J., 2017. House Prices and Consumer Spending. *Review of Economic Studies* 85, 1502–1542.

Buchak, G., G. Matvos. T. Piskorski, and A. Seru, 2018, Fintech, Regulatory Arbitrage and the Rise of Shadow Banks, *Journal of Financial Economics* 130, 453-483.

Buchak, G., G. Matvos. T. Piskorski, and A. Seru, 2022, Why is Intermediating Houses so Difficult? Evidence from iBuyers, NBER working paper.

Calder-Wang, S., 2021, The Distributional Impact of the Sharing Economy on the Housing Market, Working Paper.

Corbae D. and Quintin, E., Leverage and the Foreclosure Crisis, *Journal of Political Economy* 123, no. 1, 1-65

DeFusco, A. C. Nathanson, and E. Zwick, 2022, Speculative Dynamics of Prices and Volume, *Journal of Financial Economics* 146, 205-229.

Duffie, D., N. Garleanu, and L. H. Pedersen, 2005, Over-the-Counter Markets, *Econometrica* 73, 1815–1847.

Di Maggio, Marco, Amir Kermani, Benjamin J. Keys, Tomasz Piskorski, Rodney Ramcharan, Amit Seru, and Vincent Yao, 2017, Interest Pass-Through: Mortgage Rates, Household Consumption and Voluntary Deleveraging, *American Economic Review* 107, 3550–3588.

Duffie, D., N. Garleanu, and L. H. Pedersen, 2005, Over-the-Counter Markets, *Econometrica* 73, 1815–1847.

Ganong, P., Noel, P., 2020, Liquidity versus Wealth in Household Debt Obligations: Evidence from Housing Policy in the Great Recession, *American Economic Review* 110, 3100–3138.

Gavazza, A., 2016, An Empirical Equilibrium Model of a Decentralized Asset Market, *Econometrica* 85, 1755-1798.

Genesove, D., and C. Mayer, 1997, Equity and Time to Sale in the Real Estate Market, *American Economic Review* 87, 255–269.

Grochulski, B., and Z. Wang, 2024, Real Estate Commissions and Home Buying, working paper.

Guren, A., 2018, House Price Momentum and Strategic Complementarity, *Journal of Political Economy* 126, 1172-1218.

Guren, A., and T. J. McQuade, 2020, How Foreclosures Exacerbate Housing Downturns, *Review of Economic Studies* 87, 1331-1364.

Hendel, I., A. Nevo, and F. Ortalo-Magné, 2009, The Relative Performance of Real Estate Marketing Platforms: MLS versus FSBOMadison.com, *American Economic Review* 99, 1878–1898.

Landvoigt, T., M. Piazzesi, and M. Schneider, 2015, The Housing Market(s) of San Diego, *American Economic Review* 105, 1371-1407.

Levitt, S.D., and C. Syverson, 2008, Market Distortions when Agents are Better Informed: The Value of Information in Real Estate Transactions, *Review of Economics and Statistics* 80, 599-611.

Mayer, C., E. Morrison, T. Piskorski, and A. Gupta, 2014, Mortgage Modification and Strategic Behavior: Evidence from a Legal Settlement with Countrywide, *American Economic Review* 104, 2830–2857.

Ngai, L. R., and S. Tenreyro, 2014, Hot and Cold Seasons in the Housing Market, *American Economic Review* 104, 3991–4026.

Piazzesi, M., and M. Schneider 2009, Momentum Traders in the Housing Market: Survey Evidence and a Search Model, *American Economic Review* 99, 406–411.

Piazzesi, M, M. Schneider, and J. Stroebel, 2020, Segmented Housing Search, *American Economic Review* 110, 720-59.

Rekkas, M, R. Wright, and Y Zhu, 2020, How Well Does Search Theory Explain Housing Prices?, working paper.

Weill, P-O., 2020, The Search Theory of OTC Markets, *Annual Review of Economics* 12, 747-773.

Wheaton, W. C., 1990, Vacancy, Search, and Prices in a Housing Market Matching Model, *Journal of Political Economy* 98, 1270–1292.

Table 1: Equilibrium Housing Trading Model with iBuyers: Calibration and Fit

This table provides details of the model calibration. Panel A shows targeted moments in the data and calibrated model. Panel B shows parameters calibrated externally or as normalizations, together with their values and sources. Panel C shows parameters calibrated through the method of moments, where parameters are chosen to match the model-predicted moments to the empirical moments in the data as shown in Panel A.

Panel A: Moments Targeted in Calibration and Fit

Moment	Data (2018)	Model
List price ($k)	235.00	235.00
HH time on market (days)	91.00	91.00

Panel B: Parameters Calibrated Externally / Normalizations

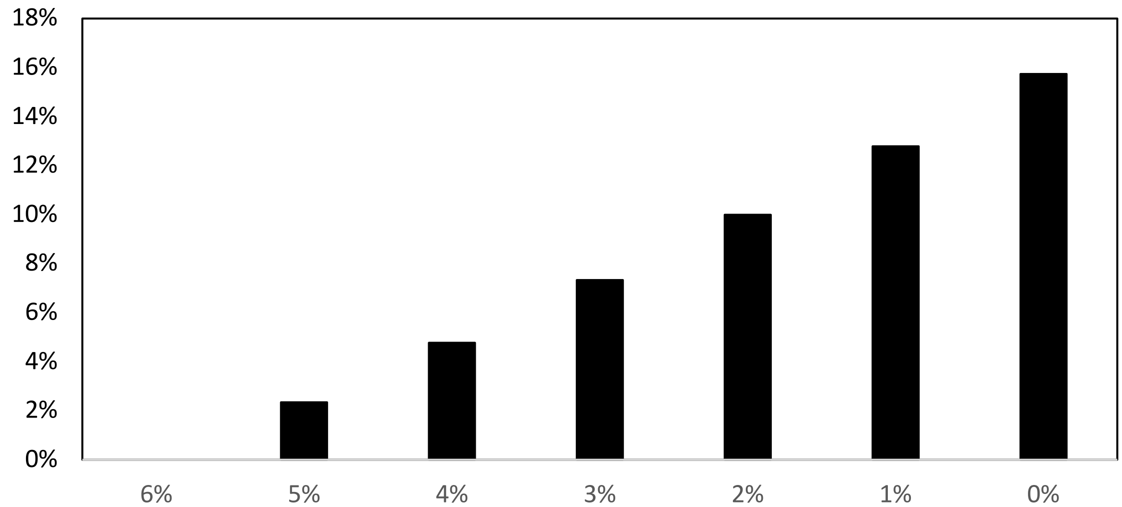
Parameter	Description	Value	Source
ρ	Discount rate	0.050	Guren (2018)
μ	Unmatching rate	0.152	Census
$\bar{u}$	Unmatched flow utility	0	Normalization
ϕ	Broker fee	6%	Industry standard

Panel C: Parameters Calibrated by Method of Moments

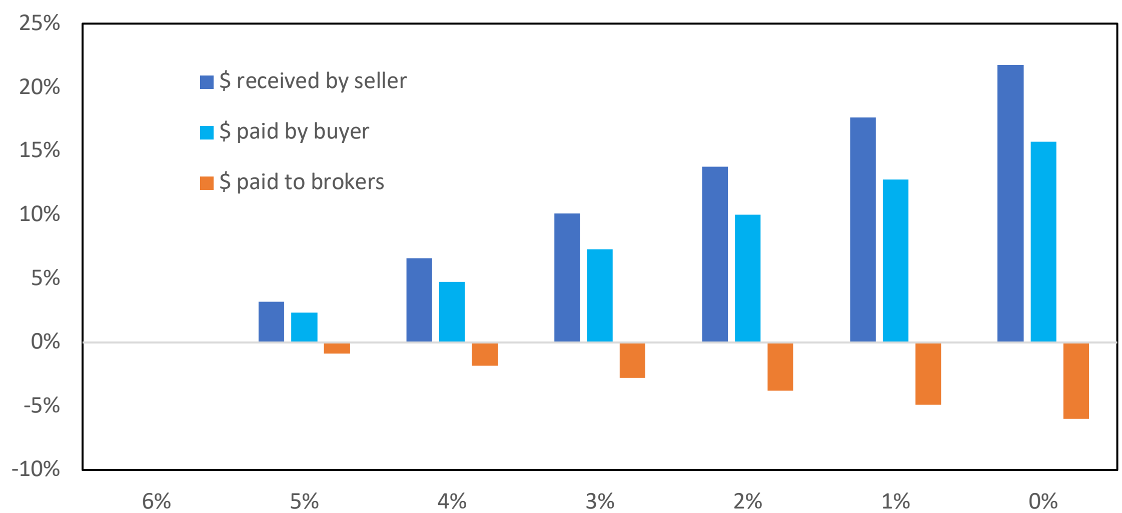
Parameter	Description	Value
$\bar{u}$	Unmatched patient utility flow ($k/dt)	26.39
λ	Matching technology (rate/dt)	137.54

Figure 1: Change in House Prices across Agents' Fees (Seller Pays All Fees Setting)

Panel (a) illustrates the relative change in equilibrium home prices in percentage terms compared to the 6% fee baseline, with the x-axis representing the combined agents' fees. The 6% fee level serves as our baseline scenario, from which we examine fee reductions in 1% increments, ranging from 6% (the baseline) to 0%. In all scenarios, the seller continues to pay both the buyer's and seller's agent fees, which are reduced to the levels shown on the x-axis due to increased competition and transparency in the real estate buyer's agent market. The 0% case represents an extreme scenario where agents are fully disintermediated by low-cost technological solutions. A more plausible range for post-settlement combined agent fees is between 3% and 4%, aligning with fee levels observed in other developed countries. For instance, the 4% fee scenario could be interpreted as the seller's agent fees remaining at 3%, while the buyer's agent fees decline to 1% due to enhanced competition and transparency. Panel (b) shows the percentage change in payments by and to the transacting parties relative to the 6% fee baseline, where *\$ received by seller* denotes the change in net payments the seller receives after brokerage fees, *\$ paid by buyer* denotes the total change in payment the buyer makes, and *\$ paid to brokers* denotes the total change in payment going to brokers.



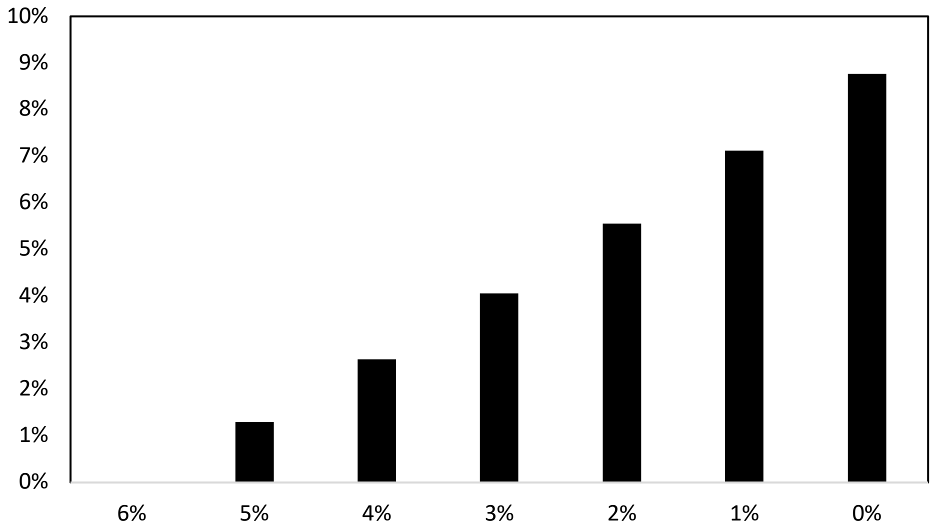
(a) House price changes



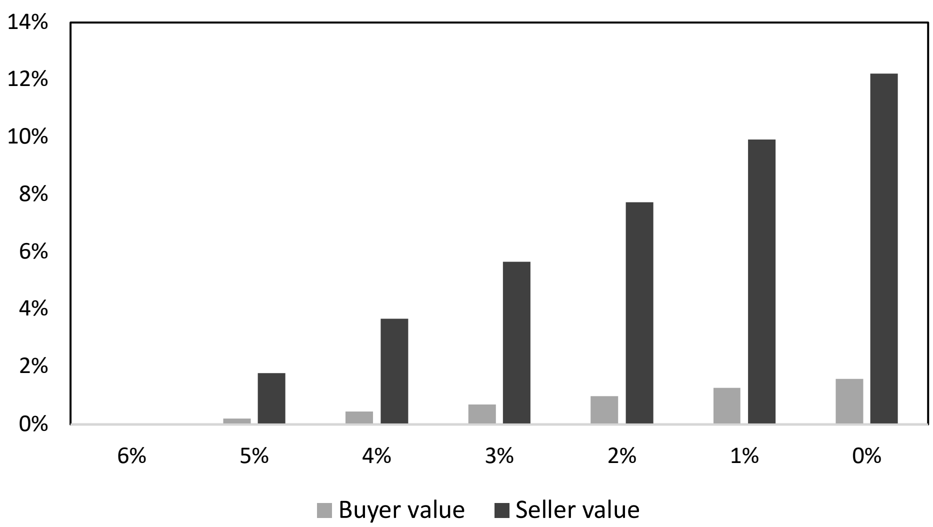
(b) Payments by/to transacting parties

Figure 2: Change in Consumer Welfare across Agents' Fees
(Seller Pays All Fees Setting)

This figure illustrates the relative change in consumer welfare in percentage terms compared to the 6% fee baseline, with the x-axis representing the combined agent fees. We examine the existing market scenario where the seller continues to pay both the buyer's and seller's agent fees, now reduced due to increased competition and transparency in the real estate buyer's agent market. Panel (a) displays the average change in consumer welfare, while Panel (b) shows the changes in consumer welfare separately for buyers and sellers.



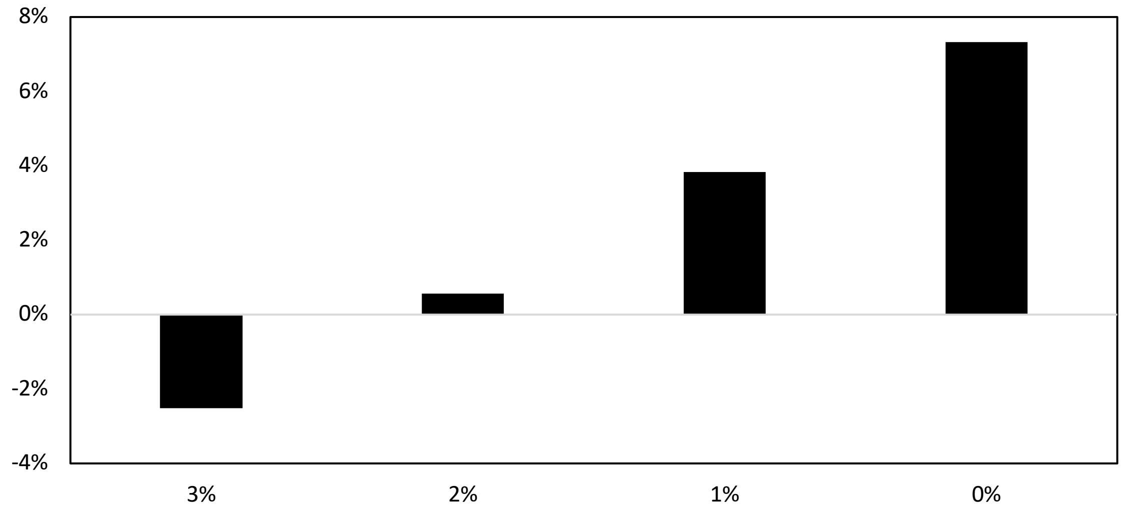
(a) Change in average consumer welfare



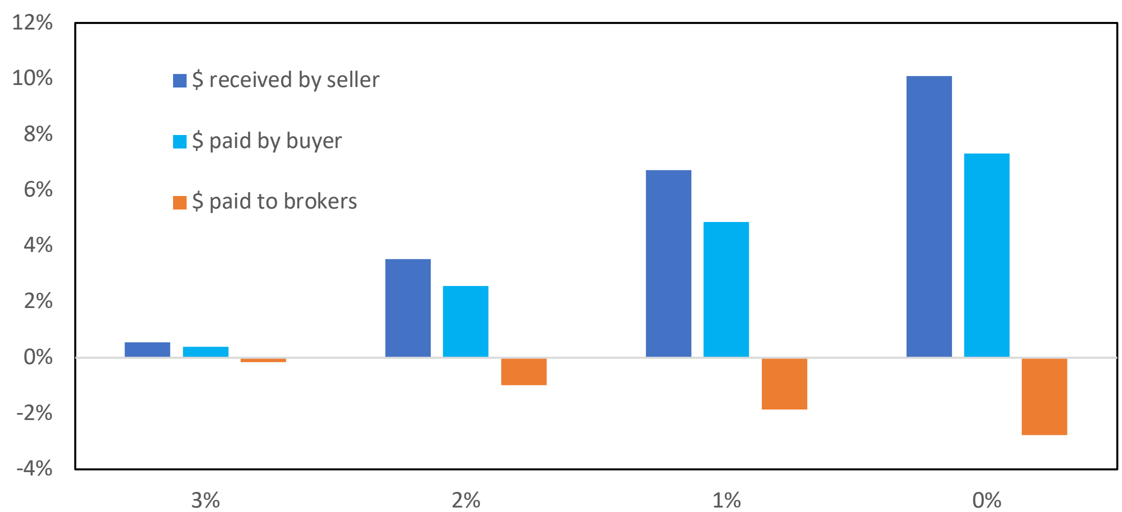
(b) Change in consumer welfare for home buyers and sellers

**Figure 3: Change in House Prices across Buyer Agent's Fees
("Decoupled" Setting with Buyers and Sellers Paying their Own Agents Fees)**

Panel (a) illustrates the relative change in equilibrium home prices in percentage terms compared to the 6% fee baseline, with the x-axis representing the buyer's agent fees relative to a baseline scenario where the seller covers both the buyer's agent fee of 3% and the seller's agent fee of 3%. In our counterfactual analysis, we assume the buyer now pays the buyer's agent fee (depicted on the x-axis), while the seller continues to pay the seller's agent fee, which remains fixed at 3%. Panel (b) shows the corresponding percentage change in payments by and to the transacting parties as a function of the buyer's agent fees relative to the baseline, where *\$ received by seller* denotes the change in net payments the seller receives after brokerage fees, *\$ paid by buyer* denotes the total change in payment the buyer makes, and *\$ paid to brokers* denotes the total change in payment going to brokers.



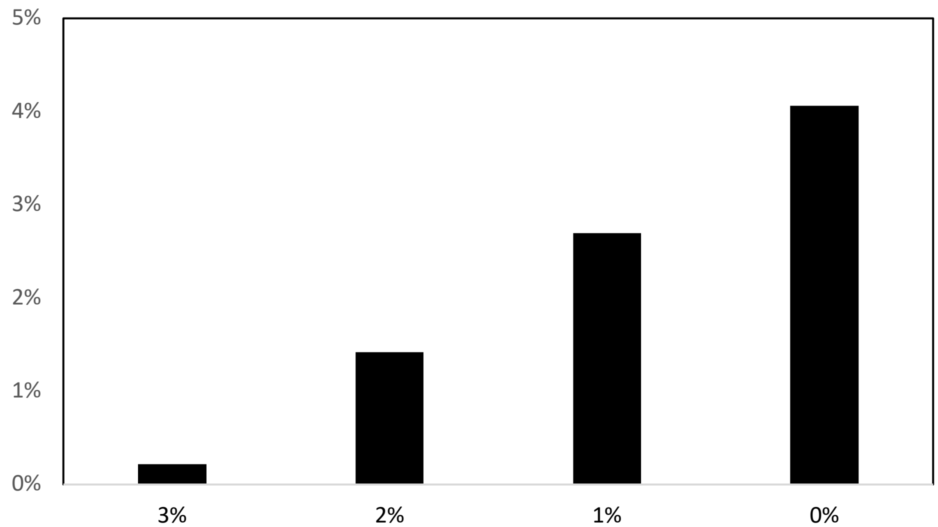
(a) House price changes



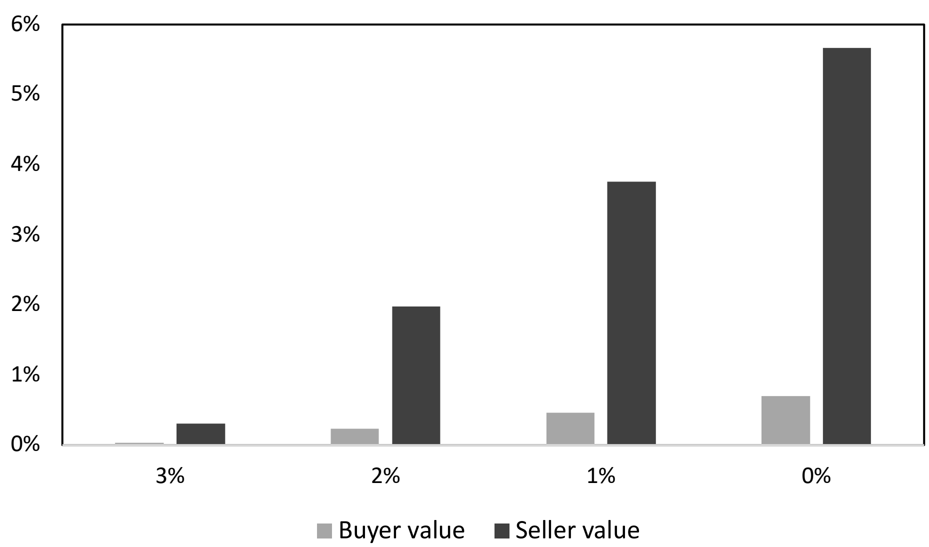
(b) Payments by/to transacting parties

Figure 4: Change in Consumer Welfare across Buyer Agent's Fees
("Decoupled" Setting with Buyers and Sellers Paying their Own Agents Fees)

This figure illustrates the change in consumer welfare as a percentage, with the x-axis representing the buyer's agent fees relative to a baseline scenario where the seller covers both the buyer's agent fee of 3% and the seller's agent fee of 3%. In our counterfactual analysis, we assume the buyer now pays the buyer's agent fee (depicted on the x-axis), while the seller continues to pay the seller's agent fee, which remains fixed at 3%. Panel (a) presents the average change in consumer welfare, while Panel (b) breaks down the welfare changes for buyers and sellers.



(a) Change in average consumer welfare



(b) Change in consumer welfare for home buyers and sellers

Figure 5: Real Estate Agent Skill/Effort and Agent Fees

This figure shows the results of counterfactual simulations comparing the baseline scenario (with agents' fees at 6%) to economies where there is no agent fee (blue line) or a 3% combined agents' fee (orange line) across different levels of simulated agent skill. The counterfactuals vary the match rate λ. The x-axis represents the difference in skill between the counterfactual and the baseline, while the y-axis shows the difference in estimated consumer welfare between the counterfactual simulation and the baseline. For example, the blue line at 1.00x and 9% indicates that when agents compensated at 6% achieve the same match rate as a sale with no broker, consumer welfare is 9% higher in the no-agent fee scenario. The blue line at 0.40x and 4% means that when a no-broker sale results in matches at 0.40x the rate of a 6%-compensated broker sale, consumer welfare is 4% higher in the no-agent scenario. The orange line crossing the y-axis at approximately 0.50x indicates that consumer welfare is equalized between the 6% agent compensation baseline and a 3% agent compensation counterfactual when the 3%-compensated agents effect matches at half the rate of 6%-compensated agents. The blue line crossing the y-axis at approximately 0.20x suggests that consumer welfare is equalized between the 6% agent compensation baseline and a no-agent fee counterfactual if the no-agent sale effects matches at one-fifth the rate of 6%-compensated agents.