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Avenging the tenants: Regulating the middle man's rents

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Abstract

We explore the role of intermediaries in the rental market. Using novel UK data on fees letting agencies charged to both tenants and landlords, combined with a matched property-agency listings dataset, we study the effects of a policy that regulated the fees charged to tenants. We estimate pass-throughs of the tenant fee price cap to landlord fees and rental prices, explore demand responses, and entry and exit of both letting agents and landlords. Agents absorb 70% of the regulation and landlords the remaining 30%. Micro-BLP estimates imply a landlord-agency demand elasticity of -1.6 and a second-order elasticity of 9.7 suggesting a highly concave local demand response. Tenant demand is completely unresponsive to the tenant fee reduction. There is no market exit of landlords or agencies. Hence, the policy successfully reduced the cost of renting without any adverse effects. Our results are consistent with letting agents extracting rents from tenants due to tenants' inattention to fees.

Keywords: housing policy, rental market, two-sided market
JEL: R31; R38; L51; L85

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1 Introduction

Steadily rising housing costs in metropolitan areas across advanced economies have put housing affordability back on the top of the policy agenda. Traditionally, policymakers both in the US and Europe relied on rent control measures to curb increases in rental prices. However, these have been shown to reduce the supply of rental properties and have adverse efficiency consequences (Diamond et al., 2019; Mense et al., 2019, 2023). While these policies remain hotly debated, policy makers have added new tools to their toolbox: Policies that aim to reduce the cost of renting by regulating the fees letting agents¹ can charge to tenants. Such policies implicitly assume the presence of economic rents that can be reduced through price regulation. In a frictionless market, such a policy would instead result in a domino effect: the reduction in letting agents' revenue would be passed through into fees to landlords and then into rental prices, such that the cost of renting remained unchanged.

Since housing is a necessity good which makes up the largest expenditure of most households, understanding the market structure of the rental market has important consequences both for policy as well as economic modelling. To characterise the market structure and evaluate the effects of such policies this paper exploits a first of its kind policy intervention in conjunction with a newly-constructed data set on the UK rental market. We combine newly collected data on the full schedule of fees charged by agencies to both tenants and landlords with a matched property-agency listings data set that includes initial and final listing prices, property characteristics and time on the market. We document that even in thick markets with low market concentration on all sides there is a strong departure from the frictionless benchmark. Our pass-through and demand elasticity estimates indicate mark-ups in the landlord-agency market. They further imply that tenants are highly price sensitive to rental prices but not to tenant fees, consistent with inattention to fees. These findings suggest that emerging economic rents are primarily captured by the intermediaries. Hence, policy interventions regulating tenant fees are absorbed predominantly by the intermediary with some pass-through to landlords and no pass-through back to rental prices. As a result, price regulation achieves the desired goal of lowering rental costs, with no unintended consequences.

We document this using the introduction of the Tenant Fees Act (TFA) in the UK in 2019. The TFA capped tenant fees, fees charged by letting agents to tenants at the start and renewal of a tenancy, at £50. As fees could be as high as £1000, equivalent to one month of the median rental price in the UK, the policy represented a sizeable price cap and negative revenue shock to agencies. A similar policy is currently under consideration by the New York City Council (New York City Council, 2024), where the standard fee is 15% of the annual rent, and has recently been enacted in Spain and Argentina. Our results on market power of intermediaries not only speak to the NYC legislation but more generally to the ongoing anti-trust lawsuits in the US realtor market² and Joe Biden's legislative agenda to target non-transparent "junk" fees (Biden, 2024).

The stated goal of the policy was to improve affordability for 30% of the population who rent in the UK, a figure which has almost doubled since the start of the millennium and is similar to the United States' 36%. Issues surrounding price transparency were also raised by the government. Unlike rental prices, fees were not listed on online rental search platforms, the sole place prospective renters search for rental properties. Instead fees were only listed separately on agency's websites and often made up of many confusing

¹Letting agents are the market intermediaries between landlords and tenants, and are also referred to as rental brokers or leasing agents.

²for more details see e.g. <https://www.curbed.com/article/nar-settlement-broker-commission-new-york.html>

components which created barriers for tenants to know about them and their magnitude.³ Industry representatives, on the other hand, argued that the policy was likely going to have unintended consequences such as pass-through back to tenants and market exit of landlords and agents (Arla Propertymark, 2024).

We develop a conceptual framework of the connected markets, that allows for a wide array of outcomes including the risks highlighted by industry insiders. We show that the effects of the policy depend on the structure of both markets. In a frictionless world where both markets are perfectly competitive the policy-induced reduction in tenant fees is perfectly passed through into landlord fees and rents such that payments by and to all market participants are unaffected, and so are any other aggregate variables. The policy is hence perfectly ineffective. In the presence of renter's inattention to tenant fees coupled with imperfect competition on the landlord-agency side, the pass-through of the banned fees becomes imperfect and the policy has real economic effects. The magnitude of these effects depends on the first and second-order price elasticities of demand in both markets. Intuitively, when agencies face demand from landlords that is more locally concave, they absorb a greater proportion of the policy. Any incidence on letting agents and landlords could induce net market exit which may result in adverse general equilibrium effects. We can fully pin down the microstructure of the market and characterize the impact of the policy by documenting its effects on prices, quantities, and the extensive margin response in both markets.

Exploiting variation in exposure to the policy across letting agents and across local markets, we examine impacts on the key six variables of interests: prices, quantities, and net market exit in the landlord-agency and tenant-landlord markets. Our results suggest that agencies passed approximately 20-30% of the revenue shock on to landlords, and in response, some landlords switched agencies. The first-order elasticity of demand, estimated using a micro-BLP framework, in the landlord-agency market is -1.6 and the implied second-order elasticity is 9.7. This suggests a departure from the perfectly competitive benchmark and strong local concavity of demand. Despite agencies absorbing approximately three-quarters of the shock, we find no evidence of agency exit, suggesting the presence of supranormal profits. Overall, exposed landlords do not increase rental prices. However, landlords who don't switch agencies attempt to pass part of the cost shock back on to renters indicated by changes in the initial listing rental price. Differences in final listing prices are not statistically different from zero, suggesting that landlords are unable to do so and that renters are quite sensitive to listed rental prices. On the other hand, we find no changes to time on the market (i.e., the length of time to fill a vacant rental property, a measure of demand) in response to the change in tenant fee. These last two results combined suggest differences in the sensitivity to the two prices faced by tenants and evidence of inattention or successful shrouding. Using data on the universe of property sales, we further find no evidence of market exit for landlords for up to four years after the implementation of the policy.

The above results imply that the policy was effective in achieving its desired goal and saved tenants on average £400 per tenancy agreement, equivalent to a 3.7% reduction in annual rent. It successfully reduced the cost of renting by essentially regulating prices that tenants were inattentive to. Tenants' inattention in conjunction with imperfect competition in the letting agency-landlord relationship gave rise to economic rents that were eliminated by the policy without having any negative consequences.

Literature This paper relates to several strands of literature in real estate, urban economics, and industrial organization. First, we contribute to a large literature that evaluates the effects of different government interventions in the housing and rental market. Diamond et al. (2019) show that the introduction of rent control in the Bay Area led to a reduction in tenant mobility and in the supply of rental

³In fact, one of the potential research assistants was unable to calculate these fees correctly in their interview.

properties likely increasing rents in the long run. [Mense et al. \(2019, 2023\)](#) also find a reduction in tenant mobility and an increase in the rent for unregulated properties after the introduction of rental caps in Germany. Studying the rental cap in Catalonia [Jofre-Monseny et al. \(2023\)](#) and [Monras et al. \(2022\)](#) find a reduction in rental prices but conflicting evidence on the presence of supply responses. [Carozzi et al. \(2024\)](#) show that Help to Buy - a UK policy that subsidized first-time buyers - increased prices by more than the value of the subsidy and did not increase the supply of housing in supply-constrained locations. Overall, the literature has documented that the standard housing policy tools tend not to achieve their aims or are accompanied by substantial unintended consequences. We contribute to this literature on the efficacy of housing policy by contributing first evidence on the effects of a new type of policy – regulating the fees intermediaries can charge – that is gaining popularity among policymakers and document that, unlike any other policy ([Hilber and Schöni, 2022](#)), it reduces the cost of renting without any adverse effects.

Second, we contribute to the literature on two-sided markets, with a focus on the real estate market. Typically two-sided markets feature strong network effects and often result in dominant (or monopoly) intermediaries ([Rysman, 2009](#)), such as payment card providers, video games and online retail platforms. Our setting however studies a two-sided market where there are a large number of intermediaries, such that measures of concentration suggest strong competition between intermediaries. A key finding in this paper is that even in the presence of an unconcentrated market, all relationships in the market depart strongly from a perfect competition benchmark. This contributes to the existing literature documenting inefficiencies and uncompetitive features in the real estate sales market ([Gilbukh and Goldsmith-Pinkham, 2023](#); [Barwick and Wong, 2019](#); [Barwick and Pathak, 2015](#); [Hsieh and Moretti, 2003](#)), where we add first empirical evidence on the letting market based on a credible identification strategy.

Third, we contribute to the study of imperfect competition, the role of demand structure for price pass-through ([Mrázová and Neary, 2017](#); [Weyl and Fabinger, 2013](#)) and an emerging literature examining its relevance for the real estate market. Most closely related to our work are [Watson and Ziv \(2024\)](#), who focus on the pass-through of cost shocks in the landlord-tenant side of the market. We contribute a study of both sides of the market and are able to identify the first and second-order demand elasticities and relate this directly to implications of price regulation. It offers evidence on a particular source of imperfect competition, namely inattention and information frictions, and contributes to the literatures on the role of inattention and price obfuscation ([Ellison, 2016](#); [Ellison and Ellison, 2009](#)) in generating price-unresponsive demand.

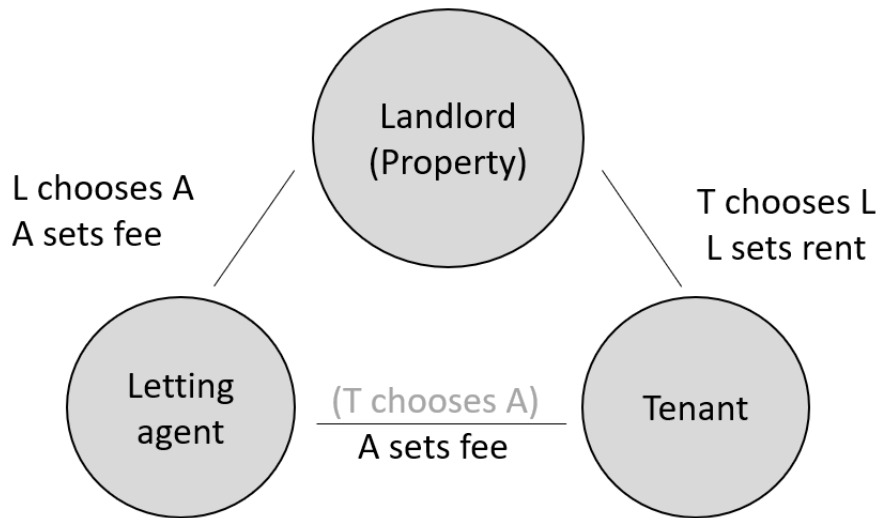
The remainder of this paper is structured as follows: Section 2.1 discusses the institutional setting of the market and the features of the Tenant Fees Act, that guide the conceptual framework we develop in section 2.2. We introduce the data and the empirical approach in section 3 and present the main results in 4. Section 5 discusses the policy implications of our results and concludes.

2 Institutional setting and conceptual framework

2.1 The UK rental market and the Tenant Fees Act

Since the year 2000 the proportion of renters in the UK has nearly doubled, from 16.8% to 29.7% in 2021, while the proportion of owner-occupiers has seen a similar drop. In total nearly 6 million households in the UK are now renters. Over the same period, the average house price increased from £84,620 to £268,000, representing a 217% increase, while median wages only increased by 70%. The percentage of

Figure 1: The Rental Market



Notes: *The above figure gives a visual representation of the typical two-sided rental market with three actors, Landlords, Letting agents and Tenants, and depicts their interconnectedness through prices and choices.*

income spent on rent is as high as almost 40% in London.

Housing policies in the UK have traditionally focused on helping individuals become home-owners. Right to Buy, introduced in the late 1970s and continues to this day in England⁴, gives tenants living in government owned housing the right to buy their property at a heavily discounted amount.⁵ Newer policies have focused on credit constraints for first-time buyers, such as the Help to Buy scheme which included government-backed mortgage guarantees and equity loans to cover the typical deposit requirement, and Stamp Duty relief for first-time buyers. The rental market on the other hand had been left largely unregulated until the 2019 introduction of the Tenant Fees Act (TFA), which we see as belonging to a new class of rental market policies, where others include Ley de Alquileres in Argentina.

The UK rental market, like many rental markets, has three main actors and is detailed in figure 1. Letting agents act as intermediaries between landlords and tenants and charge fees to both of them (figures 5 and 6 in the appendix provide examples of these landlord and tenant fees respectively that agents advertise on their websites), and this includes both traditional “high street” agencies, and newer “online only” agencies. Agents will then at a minimum list the property on various online platforms (e.g. Rightmove or Zoopla), and depending on the service purchased also show prospective tenants around the property and potentially manage maintenance issues to do with the property. Since only agencies can post adverts on these online platforms landlords are essentially forced to use an agency, which is likely to be in line with landlords’ preferences, since most landlords are passive landlords that use rental properties as investments (see figure 10 in the appendix). Landlords first choose an agency and set a rental price for their property (in some cases with guidance from the agency) which the tenant pays once the tenancy starts. Tenants choose a property based on its non-pecuniary attributes, the rental price and the fees. Tenants mostly use one of the large rental platforms to search for a property, which allows them to specify rents as well as non-pecuniary attributes in their search (see figures 7 and 8 in

⁴The policy was discontinued in Scotland and Wales in 2016 and 2019 respectively.

⁵Given the long run nature of the policy and the lack of investment in government housing this policy has little bite any more.

the appendix). In the search process they also learn which agency advertises each property (see figures 8 and 9 in the appendix), but learning about the tenant fee requires additional search on the websites of the agencies.

Traditional rental policies have focused on regulating the price that landlords charge tenants (i.e. rental caps). The TFA on the other hand regulated the price that letting agents could charge tenants. Specifically it capped it at £50 per tenancy (and tenancy renewal), while previously tenant fees had been as high as £1200, which is roughly the equivalent to one month of the average rental price in 2019. Typically these tenant fees could make up a wide array of fees such as referencing fees, contract fees, setup fees and inventory fees, and are detailed in detail in section 3.1. The policy draft was published in late 2017, consultation finished in Spring 2018, and it was enacted on 1 June 2019, which marks the begin of the post-treatment period in our empirical analysis.

The policies' main aims were to deliver a "fairer, more competitive, more affordable and more transparent market" (Perks, 2018). In particular, issues surrounding transparency of tenancy fees and their disproportionate amount, which aren't listed on online platforms where people typically search for properties, were highlighted. The Association of Residential Lettings Agents (ARLA), who represent 80% of the UK's Letting Agents, commissioned their own impact assessment which claimed that the fees reflected the true amount of work undertaken by letting agents, and thus those costs would need to be recovered (Capital Economics (2017)). Specifically, they predicted that most up-front fees would be passed back to renters in the form of higher rents.

This paper evaluates the efficacy of the policy against its original goals and concerns brought up by industry players. In doing so it can offer insights to other countries where such a policy could be considered, such as the United States or Italy, where tenant fees are on average 15% of annual property rent (Capital Economics, 2017). Additionally, by exploiting the policy we are able to reveal certain aspects of the underlying micro structure of the market, which offer insights into why the policy impacted the market the way it did.

The market of letting agencies is characterized by a high amount of competition. Figure 2 plots the Herfindahl-Hirschman Index (HHI) of the market for letting agents by postal area. With a median of 0.015 and only very few markets with an HHI above 0.1 most local markets would be considered very competitive by the US Antitrust Division. The market structure in the rental market is similarly competitive with more than 70% of landlords, representing more than 50% of tenancies, having four or fewer properties (see figure 3).

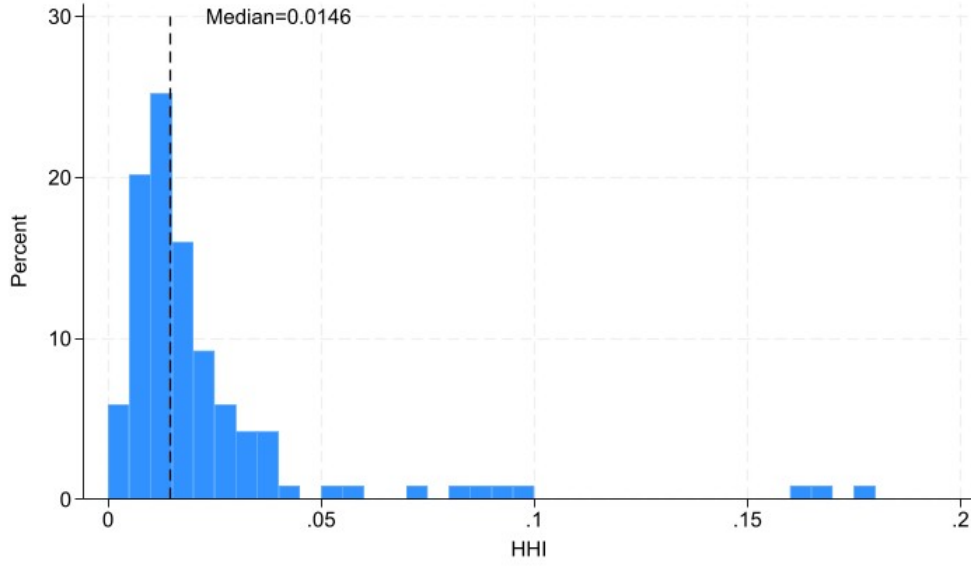
2.2 Conceptual framework

To understand the potential effects of the Tenant Fees Act we first set up a general theoretical framework of the market for letting agent services and the market for rental properties. We then derive sharp predictions for two special cases of the model that highlight how the effects of the reform vary between no effect and significant distributional and aggregate effects depending on the market micro structure.

2.2.1 General framework

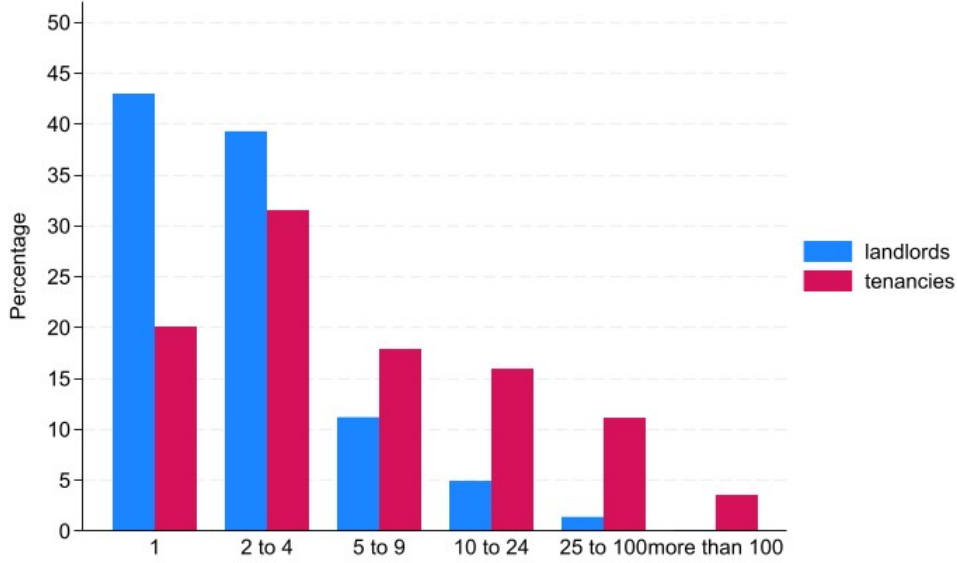
There are three types of agents: Landlords, letting agents and tenants (see figure 1 for a simple overview of the market structure). Landlord j sets a rent and chooses an agency to rent out their property in

Figure 2: Agency market structure



Notes: The figure presents a histogram of Herfindahl-Hirschman Indices for the Lettings Agents market calculated at the Postal Area level in the UK, based on the data described in section 3.1.

Figure 3: Landlord market structure



Notes: The figure presents bar charts reflecting the market structure for landlords in England. The blue bars represent the proportion of landlords that fall into a particular bin of how many properties they own. The red bars represent the equivalent statistic, but from the perspective of tenancies. Data source: English Housing Survey

order to maximize their utility⁶, which is given by:

$$\max_{p_j, a} U_{LL} = \max \left\{ (p_j - f_a^{LL} - c_j) \times Pr_{fill}(p_j, f_a^T) + \phi_a + \varepsilon_{ja}, b_j \right\} \quad (1)$$

⁶Landlords are modelled as utility maximisers, but could also be modelled as profit maximisers where the the idiosyncratic match quality is an idiosyncratic match cost.

where p_j is the rent charged by landlord j ,⁷ ϕ_a is the quality of agency a , f_a^{LL} is the fee the letting agency charges to the landlords. ε_{ja} is an idiosyncratic agency-landlord match quality, c_j is the variable cost of renting out the property and b_j is the outside option of landlord j .

Letting agent a chooses the fees they charge to tenants (f_a^T) and landlords (f_a^{LL}) in order to maximize profits that are given by:

$$\max_{f_a^T, f_a^{LL}} \pi_a = \max \left\{ \sum_j ((f_a^{LL} + f_a^T) Pr_{fill}(p_j, f_a^T) - c_a) Pr_{job}(f_a^{LL}, Pr_{fill}(p_j, f_a^T)), b_a \right\} \quad (2)$$

where Pr_{fill} is the probability that the letting agency fills the property conditional on getting the contract from the landlord and Pr_{job} is the probability that the letting agency is chosen by the landlord to rent out the property. c_a is the cost of running an agency and b_a is the outside option of the agent such that they decide to exit the market if profits fall below that level.

Tenant i choose a property j in order to maximize utility which is given by:

$$\max_j U_{ija} = -p_j + \theta_j - g(f_{aj}^T) + \varepsilon_{ij} \quad (3)$$

where θ_j is the quality of property j and ε_{ij} is the idiosyncratic match quality between tenant i and property j . $g(f_{aj}^T)$ is a generic function of tenant fees. Since tenant fees are not advertised together with the properties and often purposefully hidden by agents, there are different ways to think about how they enter the utility of tenants, which we will explore more in detail below.

The Tenant Fees Act and its effects We model the policy as a restriction on the decision of the agents that can no longer freely set the tenant fee but are restricted to charging £50. The model provides guidance on which variable might adjust following the policy and we can trace out the overall effect of this policy by studying the following six margins of adjustments:

1. Changes in the landlord fees f_a^{LL} that letting agents set
2. Net exit of letting agents following the reform
3. Landlords changing the rental price (p_j) they set
4. Landlords changing the letting agent (a) they choose to rent out the property
5. Landlords deciding to exit the market
6. Tenants choosing different properties (j)

Without additional assumptions the model makes very limited predictions on the movement of these variables. We can derive more clear cut predictions from different sets of assumptions on the market micro structure: First we study a setting of perfect competition and information as a benchmark. Second, we allow for imperfect competition and imperfect information of tenants with respect to tenant fees. These models generate divergent predictions for the effects of the Tenant Fees Act, highlighting the role of market microstructure for the effects of market regulation.

⁷We assume that each landlord just has one property to rent such that landlords and properties are synonymous.

2.2.2 A baseline model of perfect capitalization

Consider the most simple model that is nested by the general framework above: There are no idiosyncratic match qualities (the variances of ε_{ja} and ε_{ij} are zero) and tenants are fully informed and attentive about tenant fees ($g(f_a^T) = f_a^T$). We further assume that $\phi_a = c_a$ and $\theta_j = c_j$ (i.e. any differences in quality are driven by differences in costs (e.g. an agency is better because it pays its workers more and a higher quality property has higher opportunity costs because it could be sold at a higher price), which is necessary for a well-behaved equilibrium in this model (e.g. if there was a high quality/low cost agency every landlord would choose it). Agents' optimization yields the following three order conditions:

$$p_j + f_a^T = \theta_j = c_j \quad f_a^L + f_a^T = c_a \quad p_j - f_a^L + c_a = c_j \quad (4)$$

Note that these are three unknowns (p_j, f_a^T, f_a^{LL}) and three equations, but the equations are linearly dependent such that we cannot pin down the level of all three prices. We can however pin down the overall payments received by each agent, but there is an infinite number of price combinations that yield those payments. Intuitively letting agents do not care whether they earn money through tenant or landlord fees and tenants do not care whether they pay via rent or via tenant fee, while landlords do not care whether they have high rents and high landlord fees or low rents and low landlord fees but just the difference between the two.

The reform in the model What does this imply for the effects of the policy as measured through the six outcomes discussed above? Given that total payments to each agent are independent of the level of tenant fees they are unaffected by the reform such that any changes in tenant fees due to the policy are fully passed through to landlord fees and rents. Since total payments to each agent do not change there is also no exit of landlords or letting agents and changes in demand from tenants for properties or landlords for letting agent services. In a nutshell, the reform does not affect the market allocation.

2.2.3 Model of Inattention and Imperfect Competition

We will now explore a set of assumptions that allow for imperfect pass-through and the policy to affect the market allocation. In order to do that we make two key assumptions. First, we assume that the idiosyncratic match quality distributions are non-degenerate ($\sigma_{\varepsilon_{ij}}, \sigma_{\varepsilon_{ja}} > 0$), which yields imperfect competition in both markets. We remain agnostic on the distribution of the σ s, as they can be partially inferred from the pass-through we estimate below. In particular, a concave distribution on the σ s will imply log-concave demand curves and thus imperfect pass through in a typical cost shock setting, while a convex distribution on the σ s will result in log-convex demand curves and therefore a pass through greater than one (see figure 11 in the appendix for a graphical illustration). In a perfectly competitive market, we would expect complete pass through. Second, we assume that tenants learn about prices and tenant fees at different points in time during their search process. This assumption is motivated by the structure of the tenants' search process described in section 2.1, that makes rents a salient attribute of each property while learning about tenant fees charged by agents requires going to the website of each agent, and finding and understanding the information about their fees (see figure 6 in the appendix) which will likely result in inattention to these fees. Essentially we assume that tenants are unwilling to incur this additional search cost for each property and only learn about the fees of the property they consider renting, when they start the process of signing the contract with the rental agency.

Tenants choose a property maximizing the following utility function:

$$U_{ij} = -p_j + \theta_j + \varepsilon_{ij} \quad (5)$$

Once they have chosen a property they learn about the agency fee at which point they decide to rent the property if the fee is below their threshold value.⁸ If the fee is above the threshold they decide to search again and choose the highest utility property out of the remaining properties. This assumption on the timing reflects the fact that fees are not advertised on internet rental platforms used by tenants searching for a property. Most agents advertise them on their website but they are often hard to find, and it is difficult to infer which fees are required, such that there are significant search costs associated with learning about these fees. Our assumption implies that tenants are unwilling to pay this search costs (c_S , except for the property they decide to rent). The expected utility of tenants is then given by:

$$V = P(f_{aj}^T < f_i^T) [u_{ij}^* - f_{aj}^T] + (1 - P(f_{aj} < f_i^T)) V_{-j} - c_S \quad (6)$$

where $u_{ij}^* = \max u_{ij}$.

The reform in the model To assess the effect of the reform under these assumptions we derive the comparative statics of our six variables of interest with respect to an exogenous change in the tenant fee.

The market for letting agent services From 2 we can derive the optimal landlord fee conditional on tenant fee:

$$f_a^{LL} = \frac{\varepsilon_1}{(\varepsilon_1 - 1)} (c'_a - f_a^T) \quad (7)$$

where $\varepsilon_1 = -\partial Q / \partial f_a^{LL} f_a^{LL} / Q$ is the price elasticity of demand for letting agent services. As a response to an exogenous change in tenant fees the optimal landlord fee changes as follows:

$$\rho_{LL} \equiv \frac{\partial f_a^{LL}}{\partial f_a^T} = \frac{1}{1 - \frac{1}{\varepsilon_1} [1 - \mu_1 \varepsilon'_1]} \quad (8)$$

where $\varepsilon'_1 = \partial \varepsilon_1 / \partial f_a^{LL} f_a^{LL} / \varepsilon_1$. If demand is log-concave such that $\mu \varepsilon'_1 > 1$ (Weyl and Fabinger, 2013), then there is imperfect pass-through ($\rho_{LL} < 1$).

Maximizing utility according to equation 1, the demand of landlord j for agency a is given by:

$$Pr_{ja}^{job}(f_a^{LL}) = Pr(u_{ja}^{LL} > u_{j-a}^{LL}) \quad (9)$$

which is affected by the reform as follows:

$$\varepsilon_2 \equiv \frac{\partial Q_a f_a^T}{\partial f_a^T Q_a} = \varepsilon_1 \rho_{LL} \frac{f_a^T}{f_a^{LL}} \quad (10)$$

which is different from zero as long as there is some pass-through of tenant fees into landlord fees ($\rho_{LL} > 0$) and landlords respond to prices ($\varepsilon_1 > 0$).

Given that both prices and quantities are changing following the reform, so are profits which leads to extensive margin adjustments of agents entering or exiting the market. The overall effect on profits for

⁸This threshold can be interpreted as the willingness to pay for agent services.

an agent is ambiguous and is determined by several forces: A direct reduction of profits from the reduced tenant fees and from the reduction in properties following an increase in landlord fees, while there is an increase in demand and profits from other agencies increasing prices and potentially exiting the market.

The rental market The utility-maximizing rental price set by landlords is given by:

$$p_j = \frac{\varepsilon_3}{\varepsilon_3 - 1} (c_j + f_{ja}^{LL}) \quad (11)$$

where $\varepsilon_3 = -\partial Pr_{f_{iu}}(p_j, f_a^T) / \partial p_j p_j / Pr_{f_{iu}}(p_j, f_a^T)$ is the price elasticity of demand of tenants. The effect of the reform on rental prices is hence given by:

$$\rho_T = \frac{\partial p_j}{\partial f_a^T} = \frac{\partial p_j}{\partial f_a^{LL}} \frac{\partial f_a^{LL}}{\partial f_a^T} = \frac{-1}{1 - \frac{1}{\varepsilon_3} [1 - \mu_2 \varepsilon_3']} \frac{-1}{1 - \frac{1}{\varepsilon_1} [1 - \mu_1 \varepsilon_1']} \quad (12)$$

where $\mu_2 = p_j / \varepsilon_3 > 0$ and $\varepsilon_3' = \partial \varepsilon_3 / \partial p_j$. The effect of the reform on rental prices hence depends on the price elasticities of both landlord fees and rental prices (ε_1 and ε_2).

Given that the probability that tenant i chooses property j is given by $Pr(f_{aj}^T > f_i^T) Pr(u_{ij} > u_{i-j})$, the change in the probability following a change in tenant fees is given by:

$$\frac{\partial Pr(i \text{ chooses } j)}{\partial f_{aj}^T} = \frac{\partial Pr(f_{aj}^T > f_i^T)}{\partial f_{aj}^T} Pr(u_{ij} > u_{i-j}) \quad (13)$$

Since the utility from a given property is independent of the tenant fee, a change in that fee only affects tenant choice through its effect on the probability that the fee is above the threshold of the agent. This allows for a non-zero effect if the fees prior to the reform were above the threshold for some tenants and for a zero effect if fees were below this threshold for all tenants. Given that landlord fees, rental prices and tenant property choices change following the reform, so does the utility (profits) of landlords which might induce some landlords to leave the market and lead to extensive margin adjustments. In this framework the reform affects the market allocation. The magnitude of these changes depends on a number of parameters, particularly the price elasticities of demand in both markets, which we estimate in the next section based on the variation of the reform.

3 Empirical framework

3.1 Data

To study the impact of the policy and the underlying structure of the market we combine data from three different sources. First, we utilise a dataset on rental listings for the period 2015-2020 which covers the near universe of rental properties for the UK. The dataset includes the exact address of the property, the letting agent which listed it, the initial date of listing, the date the tenancy was agreed upon, the initial listing price and any subsequent changes to the price, details about the property such as number of bedrooms, property type (e.g. detached house, apartment), whether it's a student property and whether it was furnished or not.

Second, we utilise a unique dataset that contains manually scraped data on tenant fees and landlord fees from agents' websites. For the pre-treatment period tenant fee data and landlord fee data were collected in December 2018 and landlord fee data was collected in February 2020 for the post-treatment period.⁹

⁹The Tenant Fees Act came into force on 1 June 2019, which is the beginning of the post-treatment period.

Since letting agents are required by law (see the Consumer Rights Act 2015) to display details of all fees and charges, this data is accessible online for all agencies. Data had to be manually scraped rather than automated as the fee data was unstructured, generally not presented in a similar manner across agencies, and often agencies placed their tenant fees in more obscure parts of their websites, such that they were often hard to find. Figure 6 in section B presents an example set of tenant fees from a letting agency’s website. As can be seen, renting a property incurs a variety of fees. For the interest of tractability and comparison across agencies in our analysis we aggregate all necessary fees to rent out a property let by the agency for two people into one single tenant fee. Necessary fees across different agencies include fees such as tenant set up fees, contract setup fees, administration fees, referencing fees, additional applicant fees, check-in fees, check-out fees, inventory check fees, deposit fees and right-to-rent check fees. In the example set of fees that would come to £666 in total across 4 different fees. We saw preliminary evidence of shrouding when attempting to hire an assistant to input the fees from the scraped PDFs into an excel spreadsheet and calculate the total cost to a couple for renting. We interviewed 6 different candidates for the job and gave them an example set of PDFs to work through in an allocated time. Two candidates made a large number of mistakes, one candidate was exceedingly slow, and one dropped out during the exercise stating they were unable to understand which fees should or shouldn’t be included. Given the high costs of manually collecting fees from websites, we only collected data for a randomly chosen subsample of agencies active on the rental search platform. In total we collected 2500 tenant fees, which in turn represented approximately 34.3% of the universe of rental properties.

While tenant fees were generally advertised in currency (£s), landlord fees were sometimes in percent of the underlying rent, and often combined components in pounds with components in percent of the rent. We convert all landlord fees into pounds based on the rental prices of the properties of an agency in the pre-treatment period. Figure 5 in section B presents a set of example fees for landlords. As is typical in the market this agency offers two products, one which involves only finding the tenant, and another which is “fully managed” where this includes collecting rent from the tenants, being the first point of call for the tenants if there are any issues with the property, undertaking inspections and arrange repairs with approved contractors.

Third, we use data from HM Land Registry which contains data on every single housing sale in the UK. It contains the precise address of the property which was sold, the date of sale, and the associated price.

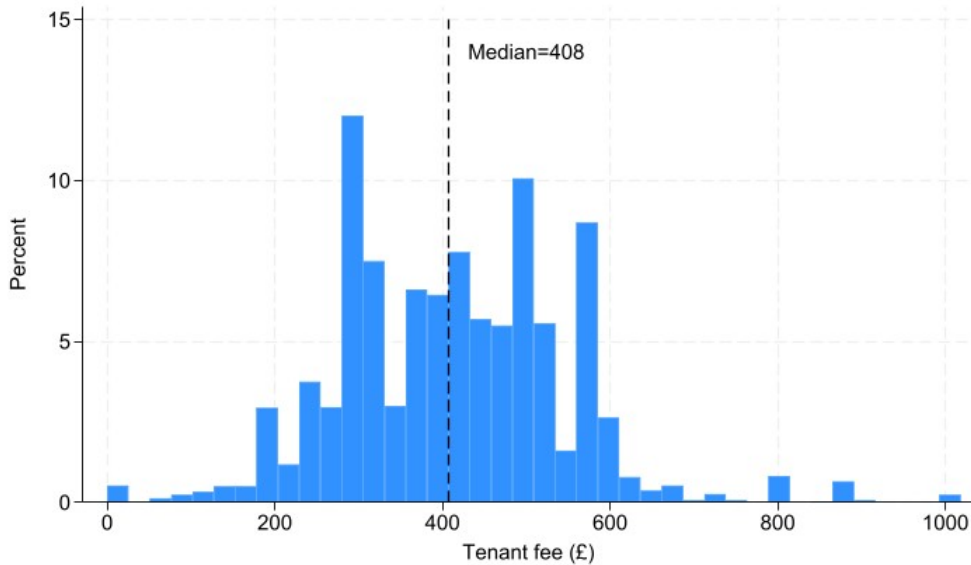
These three datasets combined offer an incredibly powerful tool for analysing the impacts of the policy as well as the underlying structure of the market. The tenant fees give a value of initial exposure to the regulation at the agency level, and combined with landlord fees allows us to analyse the pass-through of regulating tenant fees onto landlord fees. The fee data combined with the listings data allow us to analyse the pass through to rental prices, for both the initial listing price, as well as the last listing price. This means we can see both the initial attempt at passing through to rental prices, as well as the final listing price. Furthermore, using time on the market from the listings data we are able to examine tenant demand responses to changes in cost of renting, while using the property-agency match information from the listings data we are able to examine landlord demand for agency services in response to the change in landlord fees. The listings data also gives information on agency entry and exit, while the HM Land Registry data gives information on sales, which allows us to learn about landlord exit.

3.2 Regression specifications

3.2.1 Identification

The empirical framework exploits differential exposure to the TFA due to differences in tenant fees charged across letting agents prior to the introduction of the price cap. This exposure measure bears resemblance to those used in the minimum wage literature where researchers typically use a “bite” measure calculated by the proportion of workers within a firm or area that are exposed, or the existing wage gap in the firm to get workers to the upcoming level (e.g. see [Dustmann et al. \(2022\)](#); [Cengiz et al. \(2019\)](#); [Datta et al. \(2019\)](#)). This identification strategy relies on a parallel trends assumption between firms more and less exposed to the TFA, such that firms less exposed to the TFA act as a reasonable counterfactual as those more exposed. Figure 4 presents the distribution of landlord fees prior to the introduction of the reform and shows considerable variation in pre-reform fees. For landlord fees we only have data for two periods (pre and post), which precludes testing for parallel trends, though for other outcomes it is testable. Given menu costs and the low inflation environment at the time, we suspect that fees are updated irregularly, which give credence to the above assumption. When collecting the fee data we found evidence suggesting this, for example menus of fees in PDF form with a date from 3 years prior to scraping.

Figure 4: Tenant Fee Distribution Pre Reform



Notes: The figure presents a histogram of Tenant fees, for a 2 person rental contract, prior to the introduction of the Tenant Fees Act. The sample is based on the 2500 scraped fees described in section 3.1.

As discussed in section 2.2 the aggregate and distributional effects of the policy are ex-ante quantitatively and qualitatively ambiguous and depend on the structure of the market for letting agent services and rental properties.

To evaluate the policy we estimate three key objects for each market: The price pass-through, the demand and the net exit as a consequence of the policy. We will now discuss each of these six specification in turn.

3.2.2 The market for letting agent services

Pass-through into landlord fees We estimate the pass-through of the ban of tenant fees from the tenant fees act into landlord fees based on a standard two-way fixed effects diff-in-diff specification:

$$LF_{at} = \gamma_a + \gamma_t + \beta_1 TF_{at} + \varepsilon_{at} \quad (14)$$

where LF_{at} and TF_{at} are the landlord and the tenant fee of agency a at time t , and γ_a and γ_t are agency and time fixed effect. Given the available data t is either the period before the reform or the period after, TF_{at} is constructed to represent the exposure, and thus is equal to pre-reform fee in the post period, and set to £50 in the pre-period. Under the assumptions discussed in section 3.2.1, $\hat{\beta}_1$ estimates the causal pass-through of the reform into landlord fees.

Landlord demand elasticity for letting agent services To complement the results on the price pass-through, we estimate the demand elasticity of landlords with respect to letting agent services.

We use an estimation approach akin to that in Bayer et al. (2007), based on a McFadden (1973) style random utility model. The approach bears some resemblance to a BLP (Berry et al., 1995) type estimator, albeit using matched landlord-agency micro data, with fully observable choice sets, and a “natural experiment” instrument. The indirect utility for a landlord j , staying in the market and choosing agency a is

$$V_{ja} = \delta_a + \lambda_{ja} + \varepsilon_{ja} \quad (15)$$

where

$$\delta_a = \beta_{0x} X_a - \beta_{0p} f_a^{LL} + \xi_a \quad (16)$$

where X_a are observable agency characteristics and ξ_a is an agency level shock which can be considered related to unobserved quality and

$$\lambda_{ja} = \left(\sum_{k=1}^K \beta_{kx} Z_{kj} X_a \right) - \left(\sum_{k=1}^K \beta_{kp} Z_{kj} f_a^{LL} \right) \quad (17)$$

where Z_j are landlord level characteristics. We assume ε_{ja} in equation 15 follows an extreme value type 1 distribution¹⁰ which gives rise to a logit choice problem of the form:

$$P_{ja} = \frac{\exp(\delta_a + \lambda_{ja})}{\sum_m \exp(\delta_m + \lambda_{jm})} \quad (18)$$

This estimator allows heterogeneous preferences across landlord types for agency characteristics as well as landlords fees (i.e. prices). The first step in the estimation process is to estimate equation (18) for the pre- and post-reform periods separately which in turn gives rise to estimates of mean indirect utility $\hat{\delta}_{at}$ where $t \in \{pre, post\}$. The second step then involves an IV estimation of the form

$$\hat{\delta}_{at} = \beta_2 LF_{at} + \gamma_a + \gamma_{et} + \varepsilon_{at} \quad (19)$$

where f_a^{LL} is instrumented with TF_{at} . The agency-level own price elasticities are then calculated according to

¹⁰This imposes a log-concave demand structure, consistent with the first set of results in the next section suggesting imperfect pass through.

$$\eta_{aa} = \frac{\sum_j P_{ja} \beta_2 f_a^{LL} (1 - P_{ja})}{\sum_j P_{ja}} \quad (20)$$

Letting agent exit To fully characterize the effect of the policy on the market for letting agent services we lastly look at whether the reform induced agents to exit the market, as the reform potentially reduced their profits. In order to do that we run the following specification:

$$\mathbb{1}_t[\# \text{ Listings} > 0]_{at} = \beta_3 TF_{at} + \gamma_{et} + \varepsilon_{at} \quad (21)$$

where $\mathbb{1}_t[\# \text{ Listings} > 0]_{at}$ is a dummy equal to one if agency a has any listings in month t . TF_{at} is the value of tenant fees in the pre-period minus £50 which the maximum value post reform, so it is a measure of treatment intensity of the policy. γ_a and γ_{et} are agency and postal area \times time fixed effects. So a negative value of β_3 would indicate that firms with higher exposure to the reform are more likely to exit (less likely to keep participating in the market). For robustness, we also exploit the variation between England (treated) and Scotland¹¹ and perform an event study of the form

$$Participation_{at} = \sum_{j \neq -1} \beta_{4,j} [\mathbb{1}_t[t = j] \times England_a] + \gamma_a + \gamma_t + \varepsilon_{at} \quad (22)$$

3.2.3 The market for rental properties

Next, we turn to the market for rental properties where landlords set the rent and tenants decide which property to rent.

Pass-through into rents First, we estimate the pass-through of the reform-induced reduction in tenant fees into rents, using a similar design as before:

$$rent_{palt} = \beta_5 TF_{at} + \gamma_p + \gamma_{lt} + \gamma_a + \varepsilon_{palt} \quad (23)$$

where $rent_{palt}$ is the rent asked by the landlord for property p advertised by agent a in location (postal district) l in month t . TF_a is the same measure of exposure to the Tenant Fees Act used previously. γ_p , γ_{lt} and γ_a are respectively property, location-month and agency fixed effects. The main coefficient of interest β_5 identifies the pound-per-pound pass-through of a reform-induced change in tenant fees into rental prices. There is a valid question regarding inference for the property level regressions of this form. Traditionally researchers have clustered standard errors at the level of variation (here the agency-period). However, recent evidence has suggested that when using proportionally large samples of the population this is likely to result in conservative estimates of standard errors (Abadie et al., 2023). In our setting we are utilising the quasi universe (recent estimates suggest around 95%) of the British rental market. While there is no obvious alternative (solutions suggested in Abadie et al. (2023) are unsuitable for our setting) we opt for transparency and present both the standard errors clustered at the level of variation, as well as the heteroskedastic robust (unclustered) standard errors.

Tenant demand for rental properties We then turn to the demand of tenants with respect to tenant fees, which we estimated as follows:

$$\text{Time on market}_{\ell palt} = \beta_6 \log(\text{Cost of renting}_{\ell palt}) + \gamma_p + \gamma_{lt} + \gamma_a + \varepsilon_{\ell palt} \quad (24)$$

¹¹Scotland banned tenant fees already in 2012, so forms a suitable control group for our time period.

where Time on market $_{palt}$ is the months advert ℓ of property p is advertised by agency a in location l in month t (which is based on the date the advert is uploaded) before it is rented out. Our key variable of interest the Cost of renting $_{\ell palt}$ is defined as the tenant fee of the advertising agency and twelve months of rent as indicated on advert ℓ . To identify the demand of tenants with respect to tenant fees we instrument the cost of renting with TF_{at} . The interpretation of $\hat{\beta}_6$ will depend on the value of $\hat{\beta}_2$. In the presence of an imperfect pass through to rents ($0 < \beta_2 < 1$), β_6 picks up a combination of the responsiveness to both the rental price and the tenant fees. If $\beta_2 = 1$, then all tenant fees are passed through to rents, and the total cost of renting will be unchanged, such that the first stage in the IV would fail the relevance condition. In this case we could identify differential sensitivity of tenants to rental prices and fees by testing whether changes in tenant fees affect the time on the market, even without affecting rental prices (i.e. whether there is a significant effect in the reduced form regression associated with equation 24). If $\beta_2 = 0$, which would suggest it's optimal for landlords to perfectly absorb any cost changes indicative of high sensitivity of tenants to rental prices, then β_6 picks up the semi-elastic response of time on the market to a change in just the fee component of the total cost. Given the model in section 2.2 allows differential attention to the two cost components of renting, these interactions between pass-throughs to landlords and the responsiveness of tenants to rental prices and fees are crucial for our understanding of the market and the effects of the policy.

Landlord exit Lastly, we estimate the effect of the reform on the exit of landlords from the rental market, as the reform might have induced a reduction in the return to rental properties. To do that we look at different indicators of landlord entry and exit at the market level and regress them on the market-level exposure to the Tenant Fees Act, based on the following specification:

$$y_{et} = \beta_7 \left[\mathbb{1}_t[Post_t = 1] \times \sum_a \frac{N_{ae}}{N_e} TF_a \right]_{et} + \gamma_e + \gamma_{rt} + \varepsilon_{\ell palt} \quad (25)$$

where y_{et} are different measures of market entry and exit in postal area e at month t . In particular, we look at the average rent and average sales prices of residential properties. We measure the market-level exposure to the reform as the weighted average pre-reform tenant fee of the active agencies where the weights are the market shares of the agencies. We further control for postal area fixed effects (γ_e) as well as region \times month fixed effect (γ_{rt}). The idea behind this estimation is that in the presence of landlord net exit, we would expect average rental prices to increase (as rental supply drops) and for transaction sales prices to go down (as sales supply increases).

4 Results

We now turn to the results documenting the adjustment in the market for letting agent services and the rental market to the reform along the three dimensions: price pass-through, demand sensitivity and market entry and exit.

4.1 The market for letting agents

We find that the forced reduction of tenant fees is passed through imperfectly into landlord fees (see table 1). Columns (1) and (2) present results from equation 14 and indicate that for the managing a property service the pass-through is just below 20p on the pound while for the service to find a tenant it is 30p, respectively.

Table 1: Pass through to Landlords and landlord demand for letting agent services

	(1)	(2)	(3)
	First Stage - Passthrough Managed fees	First Stage - Passthrough Find fees	Reduced Form - Demand $\hat{\delta}_a$
TF_{at}	0.185*** (0.0278)	0.282*** (0.0514)	0.00017** (0.000797)
Agent FEs	Yes	Yes	Yes
Period FEs	Yes	Yes	Yes
Observations	4104	4104	4104
Implied Median Elasticity ($\bar{\eta}_{aa}$)	-2.1	-0.8	

Note: The table presents estimates for $\hat{\beta}_1$ from equation (14) in columns (1) and (2) and the estimate of $\hat{\beta}_2$ from the reduced form version of equation (19) in column (3). Standard errors are reported in parentheses and clustered at agency \times period level. The bottom row calculates the median implied elasticity of demand dividing column (3) with the respective first-stage estimate as calculated based on equation 20. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

These low pass-through rates are already indicative that agents face some degree of competitive pressure in the market for letting agent services. These findings are corroborated by our estimates of the landlord demand elasticity. Column (3) in table 1 presents the reduced form version of equation 19, and the bottom row presents the implied median elasticity of demand ($\bar{\eta}_{aa}$) as calculated by equation (20) where $\hat{\beta}_2$ is calculated by dividing the coefficient in column (3) with the associated first stage coefficient. The results indicate that landlords are relatively sensitive to prices but the market departs strongly from a perfect competition setting. Survey evidence suggests that approximately 60% of landlords use a Fully Managed service while the remaining 40% use a Find only service. Therefore taking a weighted average this implies a pass-through of approximately 22% and an elasticity of -1.6. For reference, if we assumed a constant elasticity (which is inconsistent with the finding of a log concave demand curve) the estimate would imply a markup of 2.7.

Lastly, we provide evidence on the exit of letting agents (table 2 based on equation 21), note that the dependent variable is market participation (i.e. inverse exit). There is no statistically significant effect of exposure to the reform on market exit and the estimated coefficient is also small in economic terms suggesting that an average exposure to the reform is associated with a 0.62 percentage point increase in participation. Figure 12 in the appendix presents the event study exploiting variation to exposure across England and Scotland and demonstrates parallel pre-trends and a relative precise null result.

Table 2: Market Participation

	(1)
TF_{at}	-0.00000143 (0.0000429)
Sample	Full
Postarea x Year-Month FEs	Yes
Obs.	99892

Note: The table presents estimates for $\hat{\beta}_3$ from equation (21). Standard errors are reported in parentheses and clustered at agency \times period. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

4.2 The rental market

First, we study the pass-through of the changes in tenant fees into rental prices (equation 23, table 3). As we have data on both the initial ask price, all changes in ask price over time, and the final ask price we exploit this feature of the data. Column (1) displays the average pass-through into the initial

advertised ask price that is statistically indistinguishable from 0 but estimated somewhat imprecisely. Column (2) displays the effect on the final ask price where the coefficient becomes economically smaller and turns negative. We then restrict the sample to those properties that do not change the advertising agents, since landlords that change agent might face a lower or no increase in costs that they need to pass on. For the initial ask price we now find a larger estimate that is statistically significant at the 5% level (column 3) when using robust standard errors. When looking at the final ask price the estimate again becomes smaller and not statistically different from zero (column 4). These results suggest that landlords attempt to pass some costs through to tenants in the form of higher rental prices, but struggle to do so and thus have to drop prices. An inability to increase rental prices is indicative of a highly rental price competitive market. This effect is more pronounced for those landlords that don't switch. Column (2) however represents the final average pass through to rental prices, suggesting renters keep all the monetary benefits from the policy. Table 7 in the appendix presents placebo tests using different treatment dates and dropping the post period sample, demonstrating null effects for all variations using the price last as the dependent variable. The exercise suggests confidence in parallel trends assumption underpinning the identification strategy.

Table 3: Pass-through into rents

	Rental price			
	(1)	(2)	(3)	(4)
	Initial ask	Last ask	Initial ask	Last ask
TF_{at}	0.00854	-0.0227	0.111	0.0696
clustered	(0.0837)	(0.0775)	(0.0759)	(0.0738)
robust	(0.0620)	(0.0587)	(0.0561)**	(0.0543)
Property FEs	Yes	Yes	Yes	Yes
District x Year-Month FEs	Yes	Yes	Yes	Yes
Agency FEs	Yes	Yes	Yes	Yes
Sample	All	All	No agency change	
Observations	1297888	1297888	968152	968152

Note: The table presents estimates for $\hat{\beta}_5$ from equation (23) with the dependent variable $rent_{pait}$ as the initial advertised ask price and the final ask price. In columns (1) and (2), the regressions are performed on the entire sample. In columns (3) and (4), the sample is restricted to properties that do not change advertising agents. Two sets of standard errors are reported in parentheses, heteroskedastic-robust and clustered at agency \times period. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Next, we estimate the effect of the change in the total cost of renting due to the reform on the demand of tenants as measured by the time a property is on the market, using the reform-induced change in the tenant fee as an instrument for the *total* cost of renting (equation 24, table 4). Given the lack of pass through of tenant fees into rental prices as documented in table 3, these estimates are informative about the elasticity of tenants with respect to tenant fees.¹² We find that a 10% increase in the total cost of renting (induced by changing tenant fees) increases the listing time by 6 days, hence documenting a very low demand sensitivity of tenants with respect to cost changes induced by tenant fees. The fact that landlords are unable to pass through the cost of higher landlord fees to tenants in the form of higher rental prices, while tenants are price insensitive to changes in total cost of renting as a result of changes in tenant fees suggests that tenants are differentially sensitive to rents and fees. Table 8 in the appendix presents placebo estimates varying the treatment date while dropping the post period, where we find null results for all specifications, supporting the parallel trend assumption.

¹²If there was incomplete pass through of tenant fees to rental prices, the cost of renting would have changed as a result of changes to both rental prices and tenant fees, implying we wouldn't be pinning down the elasticity to only one of the prices, but a mixture of the two.

Table 4: Tenant demand sensitivity for property prices

	Listing time in months	
	(1)	(2)
Cost of renting $_{\ell_{palt}}$	0.00173 (0.00128)	
$\log(\text{Cost of renting}_{\ell_{palt}})$		1.965 (1.448)
Property FEs	Yes	Yes
District x Year-Month FEs	Yes	Yes
Agency FEs	Yes	Yes
Observations	1297888	1297888
First stage F stat.	174.0	319.5

Note: The table presents estimates for $\hat{\beta}_6$ from equation (24). The variable Cost of renting $_{\ell_{palt}}$ is instrumented with the treatment intensity interacted with TF_{at} . The table reports the first stage F statistics. Standard errors are reported in parentheses and clustered at agency \times period. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Lastly, we look at whether market-level exposure to the reform affects the net exit of landlords (equation 25, table 5). Column (1) looks at the impact on average rental price and column (2) on the average price of sales in an area. In the presence of market exit by landlords we would expect average rent to increase and sales prices to go down. We find the opposite in both cases, and all have small effect sizes and are statistically insignificant. The specifications in column (2) is able to use longer panels, as they rely on the HMLR transaction data which is updated frequently, capturing more longer run effects up to 3 years after the reform.

Table 5: EQ adjustments landlords

	(1)	(2)
	Log avg rent	Log avg price
TF area X Post	-0.0000517 (0.0000665)	0.0000487 (0.0000113)
Area FEs	Yes	Yes
Region x Year-Month FEs	Yes	Yes
Observations	7295	9730
Sample Period	2015-2020	2015-2023.5

Note: The table presents estimates for $\hat{\beta}_7$ from equation (25) with the dependent variable y_{et} as the log average rent and average price in area e at time t . The table reports the sample period for each regression. Standard errors are reported in parentheses and clustered at area \times period. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

4.3 Implications for the conceptual framework

The results in sections 4.1 and 4.2 map directly to the theoretical framework and its key parameters laid out in section 2.2. The pass-through (ρ_{LL}) to landlord fees of 22% and elasticity of landlord service demand (ε_1) of -1.6 can be combined through equation 8 to back out the second order elasticity of landlord demand for letting agent services. The resulting second-order elasticity of 9.7 implies strong local concavity in the landlord-agency demand curve. The lack of exit of letting agents after they absorb around 78% of the negative revenue shock suggests the existence of supernormal profits prior to the reform.

The fact that landlords do not pass through anything into rental prices ($\rho_T = 0$) suggests there must be strong local concavity in demand for rental properties. Formally $\frac{1}{\varepsilon_2} [1 - \mu_2 \varepsilon'_2]$ needs to be close to $-\infty$ so either $\varepsilon_2 = 0$ or $\mu_2 \varepsilon'_2 = \infty$. $\varepsilon_2 = 0$ is not feasible because otherwise $\mu = \infty$, which in turn implies $\varepsilon'_2 = \infty$ and therefore tenants are locally very responsive to f_a^T . Conversely however, we find

Table 6: The effects of the Tenancy Fee Act on quality ratings of agencies

	(1)	(2)
	Reviews by Tenants	Reviews by Landlord
TF_{at}	0.00338*** (0.000635) (0.000695)	-0.000378 (0.00117) (0.00115)
Postarea x Period FEs	Yes	Yes
Agency FEs	Yes	Yes
Obs	2980	1341
Mean	3.173	4.067

Note: The table presents estimates for $\hat{\beta}_s$ from equation (26) with the dependent variable y_{aet} as the tenant or landlord reviews for the agency a in area e at time t . Standard errors are reported in parentheses and clustered at agency \times period. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

no sensitivity in demand for rental properties with respect to changes in the tenant fee implying that tenant fees (f_a^T) must have been below the tenants willingness to pay (f_i^T). These two facts combined imply that tenants are very locally responsive to rental price changes, but very insensitive to tenant fees. These results suggest that tenants are inattentive to tenant fees. Furthermore, as we find no market exit for landlords, this suggests there must exist some supernormal profits or large exit costs, as we know they are absorbing approximately 22% of the reform revenue shock.

4.4 Additional empirical results

We have shown empirically that letting agents partly absorbed and partly passed through the reduction in tenant fees into landlord fees. Another margin of adjustment that would have important welfare implications but does not feature in our model are adjustments in the service quality of agencies. A reduction in income from the reform could lead agents to reduce the quality they are offering. To explore this mechanism in the data we use scrapped data from the leading online review platform of letting agencies (<https://www.allagents.co.uk/>) and evaluate the effect of the Tenancy Fee Act on quality using our standard specification:

$$y_{aet} = \beta_s TF_{at} + \gamma_{et} + \gamma_a + \varepsilon_{aet} \quad (26)$$

where y_{aet} is the average review score (from 1 to 5 stars) of agency a located in postal area e in period t . We calculate the quality score of an agency by aggregating reviews to yearly intervals.¹³ The results are displayed in table 6. Column (1) reports the results for reviews by tenants, while column (2) reports results for landlord reviews. We see that agents more exposed to the reform experience a significant increase in the quality of their reviews by tenants and no change in landlord reviews. Both these results are at odds with the hypothesis in the decline of service quality which would predict a negative correlation between the exposure to the reform and reviews. The insignificant results for landlords suggest that there was no change in service quality while the positive effect on tenant reviews is likely driven by less tenants complaining about fees. The corresponding event study estimates are presented in figure 13 in the appendix and demonstrate parallel-trends in the pre period.

5 Conclusion and policy implications

With housing costs rising in metropolitan areas across advanced economies, housing affordability has returned to the top of the policy agenda. Since traditional policy tools such as rent controls have adverse

¹³To coincide with the timing of the reform we aggregate the intervals June - May.

general equilibrium effects reducing housing supply, policy makers have turned to novel instruments including price regulation in the market for letting agents. The efficacy of such policies hinges crucially on the market micro structure. We highlight this dependence for the case of price regulation in a thick two-sided market by developing a theoretical framework, in which we derive different policy implications depending on the presence of fee inattention driven by information frictions and idiosyncratic preferences.

We then use exogenous variation from the Tenant Fees Act, enacted by the UK government in 2019 to estimate the key parameters pinning down the market structure in the UK rental market and the market for letting agents that determine the effects of the policy. Our estimates provide strong evidence for the presence of inattention by tenants to letting agents fees, and locally concave demand functions. We find a pass-through of 20 to 30p on the pound of the forced reduction of tenant fees into landlord fees. The associated demand response of landlords suggests a demand elasticity of -1.6 and a second-order elasticity of 9.7, indicating a locally concave demand curve. Landlords are unable to pass through the increase in landlord fees to tenants highlighting their high local sensitivity to rent. Conversely, tenants are insensitive to tenant fees suggesting the presence of inattention to this particular price. We don't find any effects on net entry/exit in the market for letting agents or landlords such that the policy does not seem to have any adverse effect on the supply of rental properties. These findings are in line with the presence of supernormal profits of both agencies and landlords that the policy reduces while tenants benefit from a lower cost of renting from the policy. These effects of the policy crucially rely on the presence of information frictions between tenants and letting agents that give rise to economic rents that the policy regulates away. Overall, we highlight the importance of studying the market microstructure when evaluating economic policies.

References

- Abadie, Alberto, Susan Athey, Guido W Imbens, and Jeffrey M Wooldridge (2023), “When should you adjust standard errors for clustering?” *The Quarterly Journal of Economics*, 138, 1–35.
- Arla Propertymark (2024), “Draft tenant fees bill response.” <https://www.propertymark.co.uk/static/a1220f17-5294-45bd-a3aedc4822a3d471/Draft-Tenant-Fees-Bill-response.pdf>. Accessed: 2024-06-15.
- Barwick, Panle Jia and Parag A Pathak (2015), “The costs of free entry: an empirical study of real estate agents in greater boston.” *The RAND Journal of Economics*, 46, 103–145.
- Barwick, Panle Jia and Maisy Wong (2019), “Competition in the real estate brokerage industry: A critical review.” *The Brookings Institution Publication*.
- Bayer, Patrick, Fernando Ferreira, and Robert McMillan (2007), “A unified framework for measuring preferences for schools and neighborhoods.” *Journal of political economy*, 115, 588–638.
- Berry, Steven, James Levinsohn, and Ariel Pakes (1995), “Automobile prices in market equilibrium.” *Econometrica*, 63, 841–890, URL <http://www.jstor.org/stable/2171802>.
- Biden, Joseph R. (2024), “2024 state of the union address.” Speech. Delivered at the United States Capitol, Washington, D.C.
- Capital Economics (2017), “Letting the market down? assessing the economic impacts of the proposed ban on letting agents fees.” Technical report, A report for ARLA.
- Carozzi, Felipe, Christian AL Hilber, and Xiaolun Yu (2024), “On the economic impacts of mortgage credit expansion policies: evidence from help to buy.” *Journal of Urban Economics*, 139, 103611.
- Cengiz, Doruk, Arindrajit Dube, Attila Lindner, and Ben Zipperer (2019), “The effect of minimum wages on low-wage jobs.” *The Quarterly Journal of Economics*, 134, 1405–1454.
- Datta, Nikhil, Giulia Giupponi, and Stephen Machin (2019), “Zero-hours contracts and labour market policy.” *Economic Policy*, 34, 369–427.
- Diamond, Rebecca, Tim McQuade, and Franklin Qian (2019), “The effects of rent control expansion on tenants, landlords, and inequality: Evidence from san francisco.” *American Economic Review*, 109, 3365–3394.
- Dustmann, Christian, Attila Lindner, Uta Schönberg, Matthias Umkehrer, and Philipp Vom Berge (2022), “Reallocation effects of the minimum wage.” *The Quarterly Journal of Economics*, 137, 267–328.
- Ellison, Glenn and Sara Fisher Ellison (2009), “Search, obfuscation, and price elasticities on the internet.” *Econometrica*, 77, 427–452.
- Ellison, Sara Fisher (2016), “Price search and obfuscation: an overview of the theory and empirics.” *Handbook on the Economics of Retailing and Distribution*, 287–305.
- Gilbukh, Sophia and Paul Goldsmith-Pinkham (2023), “Heterogeneous real estate agents and the housing cycle.” Technical report, National Bureau of Economic Research.
- Hilber, Christian and Olivier Schöni (2022), *Housing policy and affordable housing*. Centre for Economic Performance, London School of Economics and Political . . .

- Hsieh, Chang-Tai and Enrico Moretti (2003), “Can free entry be inefficient? fixed commissions and social waste in the real estate industry.” *Journal of Political Economy*, 111, 1076–1122.
- Jofre-Monseny, Jordi, Rodrigo Martínez-Mazza, and Mariona Segú (2023), “Effectiveness and supply effects of high-coverage rent control policies.” *Regional Science and Urban Economics*, 101, 103916.
- McFadden, Daniel (1973), “Conditional logit analysis of qualitative choice behavior.”
- Mense, Andreas, Claus Michelsen, and Konstantin A Kholodilin (2019), “The effects of second-generation rent control on land values.” In *AEA Papers and Proceedings*, volume 109, 385–388, American Economic Association 2014 Broadway, Suite 305, Nashville, TN 37203.
- Mense, Andreas, Claus Michelsen, and Konstantin A Kholodilin (2023), “Rent control, market segmentation, and misallocation: Causal evidence from a large-scale policy intervention.” *Journal of Urban Economics*, 134, 103513.
- Monras, Joan, José García Montalvo, et al. (2022), “The effect of second generation rent controls: New evidence from catalonia.”
- Mrázová, Monika and J Peter Neary (2017), “Not so demanding: Demand structure and firm behavior.” *American Economic Review*, 107, 3835–3874.
- New York City Council (2024), “The fees charged in a residential rental real estate transaction.” <https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=6557858&GUID=2E6273DC-FF0F-40B2-AAB5-B9B3D9BD09DB&Options=&Search=>. The New York City Council - file #: INT 0360-2024.
- Perks, Becky (2018), “Tenant fees bill impact assessment.” Technical report, Ministry of Housing, Communities and Local Government.
- Rysman, Marc (2009), “The economics of two-sided markets.” *Journal of economic perspectives*, 23, 125–143.
- Watson, C Luke and Oren Ziv (2024), “A test for pricing power in urban housing markets.”
- Weyl, E Glen and Michal Fabinger (2013), “Pass-through as an economic tool: Principles of incidence under imperfect competition.” *Journal of Political Economy*, 121, 528–583.

Appendix

A Additional Tables

Table 7: Pass-through into rents placebo

	Rental price			
	Initial ask (1)	Last ask (2)	Initial ask (3)	Last ask (4)
TF_{at}	-0.0582	0.00424	-0.0774	-0.0464
clustered	(0.145)	(0.154)	(0.107)	(0.109)
robust	(0.0490)	(0.0500)	(0.0581)	(0.0851)
Property FEs	Yes	Yes	Yes	Yes
District x Year-month FEs	Yes	Yes	Yes	Yes
Agency FEs	Yes	Yes	Yes	Yes
Post date	June 2017	Dec 2017	June 2018	Dec 2018
Obs	981572	981572	981572	981572

Note: The table presents estimates for $\hat{\beta}_5$ from equation (23) with the dependent variable $rent_{palt}$ as the final ask price, but using various placebo treatment dates. The sample includes the pre-treatment period of observations. Two sets of standard errors are reported in parentheses, heteroskedastic-robust and clustered at agency \times period. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8: Tenant demand sensitivity for property prices placebo

	Listing time in months			
	(1)	(2)	(3)	(4)
TF_{at}	-0.000115	-0.0000427	-0.0000280	-0.0000713
	(0.0000790)	(0.0000819)	(0.0000886)	(0.0000930)
Property FEs	Yes	Yes	Yes	Yes
District x Year-Month FEs	Yes	Yes	Yes	Yes
Agency FEs	Yes	Yes	Yes	Yes
Post date	June 2017	Dec 2017	June 2018	Dec 2018
Obs	981646	981646	981646	981646

Note: The table presents the reduced from equivalent estimates for $\hat{\beta}_6$ from equation (24), but using various placebo treatment dates. The sample includes the pre-treatment period of observations. Standard errors are reported in parentheses and clustered at agency \times period. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

B Additional Figures

Figure 5: Example Landlord Fees

Landlords Fees

Tenant Find (Introduction Only)	90% of the first months full rent (inc VAT) - subject to property valuation
Fully Managed	12% (inc VAT) - subject to property valuation
Setup Fee for Fully Managed (Landlords Share) <ul style="list-style-type: none"> • Agree the market rent and find a tenant in accordance with the landlord guidelines • Advise on refurbishment • Provide guidance on compliance with statutory provisions and letting consents • Carry out accompanied viewings (as appropriate) • Market the property and advertise on relevant portals • Erect board outside property in accordance with Town and Country Planning Act 1990 	60% of the first months full rent (inc VAT)
Inventory Fee (landlords share) <ul style="list-style-type: none"> • Dependent on the number of bedrooms and/or the size of the property and outbuildings 	£120 (inc VAT) for a 1 Bedroom Property and £30 (inc VAT) for each additional bedroom

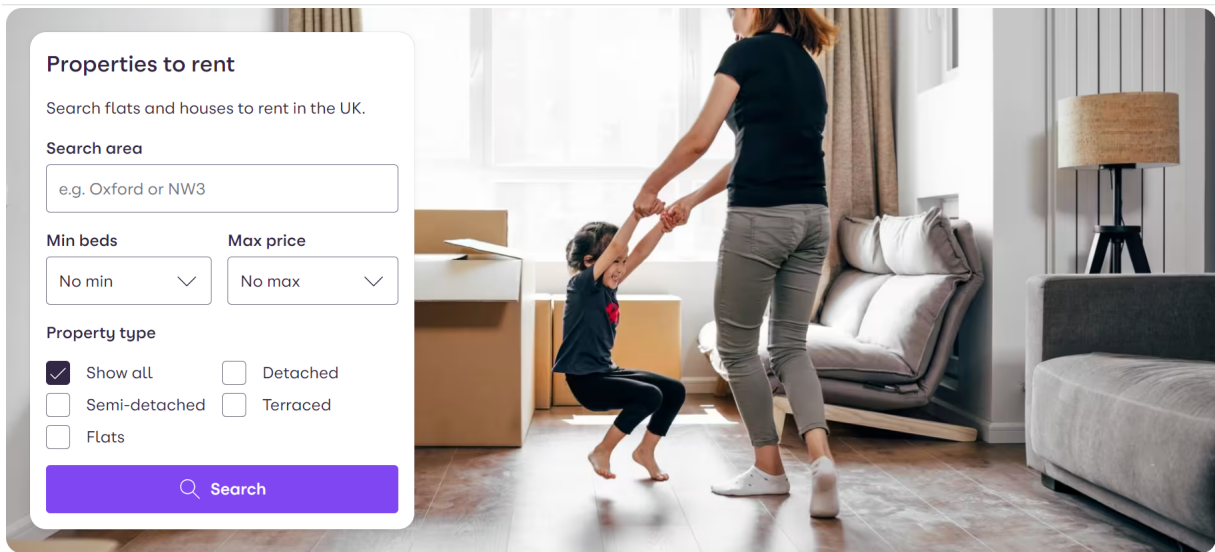
Notes: *The figure presents an example of a landlord fee schedule.*

Figure 6: Example Tenant Fees

Initial Fees		
£315.00 + VAT (£378.00 inc VAT)	Referencing fee, set up fee and contribution to the tenancy agreement for 1 adult applicant	
£100.00 + VAT (£120.00 inc VAT)	For each additional adult applicant	
£105.00 + VAT (£126.00 inc VAT)	Check out fee	
£415.00 + VAT (£498.00 inc VAT)	Referencing fee, set up fee and contribution to the tenancy agreement for a company tenant	
£100.00 + VAT (£120.00 inc VAT)	For each guarantor, if applicable	
£25.00 + VAT (£30.00 inc VAT)	For changing any terms that have already been agreed (e.g. changing tenancy start date)	
£35.00 + VAT (£42.00 inc VAT)	For undertaking Right to Rent review checks where a time limit has been established	
Please note all the charges above are non-refundable		
Additional fees that may be payable during the tenancy term		
General Fees - payable to Leaders		
£35.00 + VAT (£42.00 inc VAT)	For any aborted pre-arranged visit to the property.	
£35.00 + VAT (£42.00 inc VAT)	For supplying any written reference to any party.	
£25.00 + VAT (£30.00 inc VAT)	Per additional account to allocate any refund of deposit to multiple accounts.	
£25.00 + VAT (£30.00 inc VAT)	For any refund of a tenancy deposit by cheque; no charge is payable when the refund is made via BACS.	
£25.00 + VAT (£30.00 inc VAT)	For a replacement copy of the Inventory and Schedule of Condition.	
£60.00 + VAT (£72.00 inc VAT)	For each or any Endorsement to the Tenancy Agreement.	
£25.00 + VAT (£30.00 inc VAT)	For any refund of overpaid rent as a result of any failure by the tenant to cancel the standing order mandate.	
£50.00 + VAT (£60.00 inc VAT)	For the first instruction to a contractor and supervision of works noted as tenant responsibility following tenancy check out	
£25.00 + VAT (£30.00 inc VAT)	For each subsequent instruction to any contractor	
£75.00 + VAT (£90.00 inc VAT)	For producing, subject to landlord consent, a new Tenancy Agreement where the tenant wishes to rescind a notice to surrender and remain in the property.	
£175.00 + VAT (£210.00 inc VAT)	For any unlawful termination of the Tenancy Agreement.	
Default Fees - payable in connection with any tenant default during the term of the tenancy		
£35.00 + VAT (£42.00 inc VAT)	For any letter	
£35.00 + VAT (£42.00 inc VAT)	For any payment reminder letter in respect of the No Deposit Option	
£80.00 + VAT (£96.00 inc VAT)	For the service of any notice	
£45.00 + VAT (£54.00 inc VAT)	For any visit to the property made by the staff of the landlord's agent	
£55.00 + VAT (£66.00 inc VAT)	Per month for each month a tracing agent is instructed to locate any tenant who has vacated the property without providing a forwarding address. In addition, the tenant will be responsible to the agent for the fees charged by the tracing agent.	

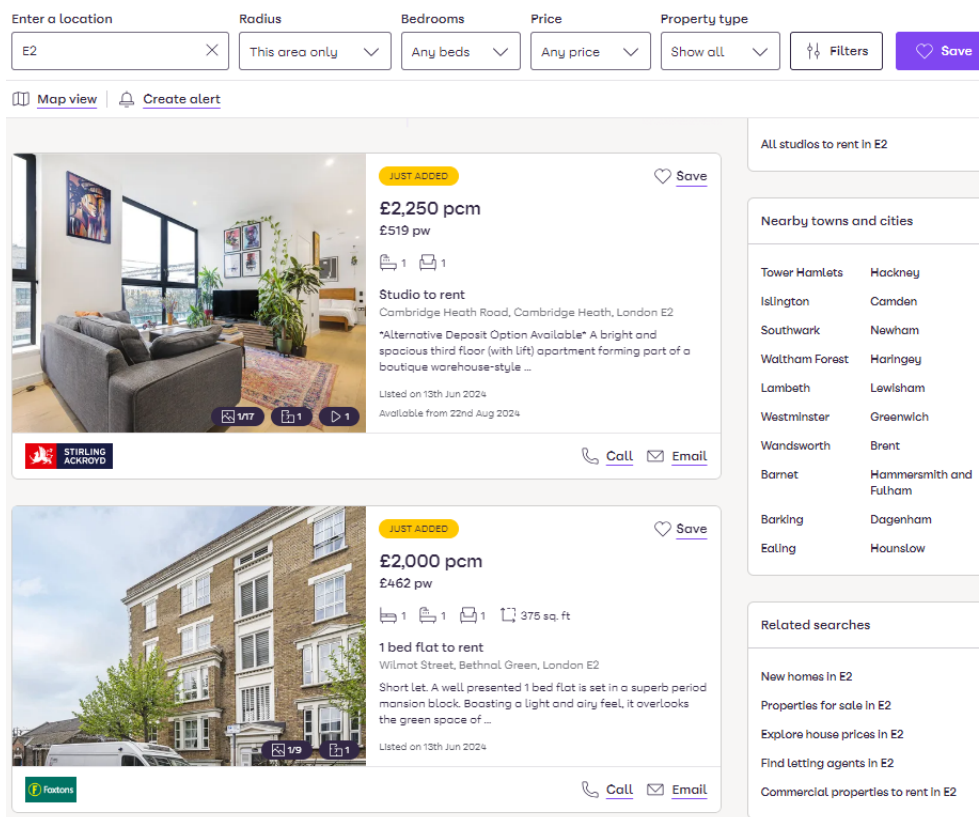
Notes: *The figure presents an example of a tenant fee schedule.*

Figure 7: Property search interface for tenants



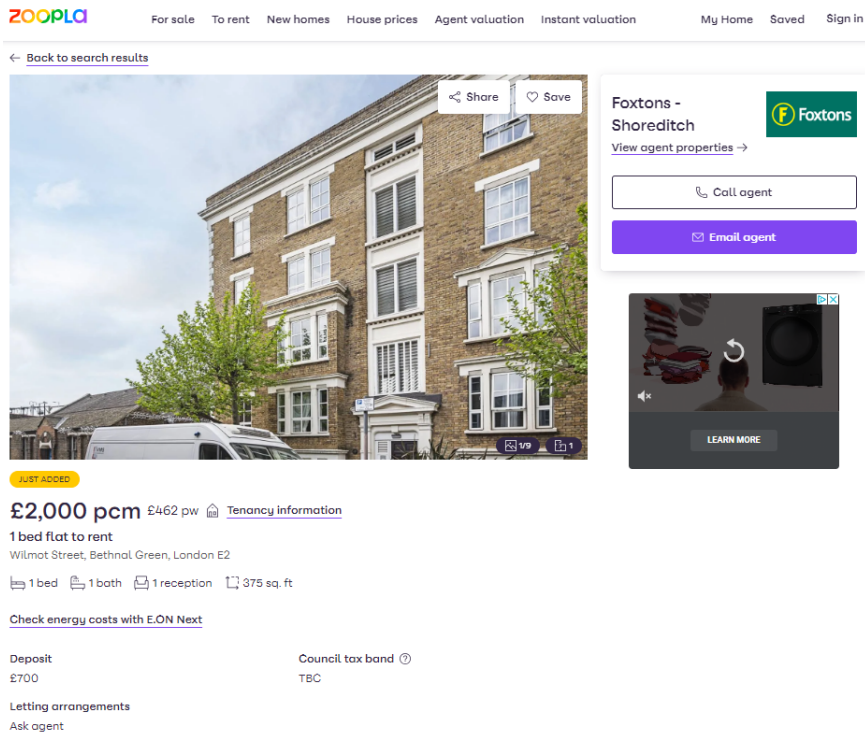
Notes: The figure presents an example of the search process for a rental property.

Figure 8: Property search results overview page



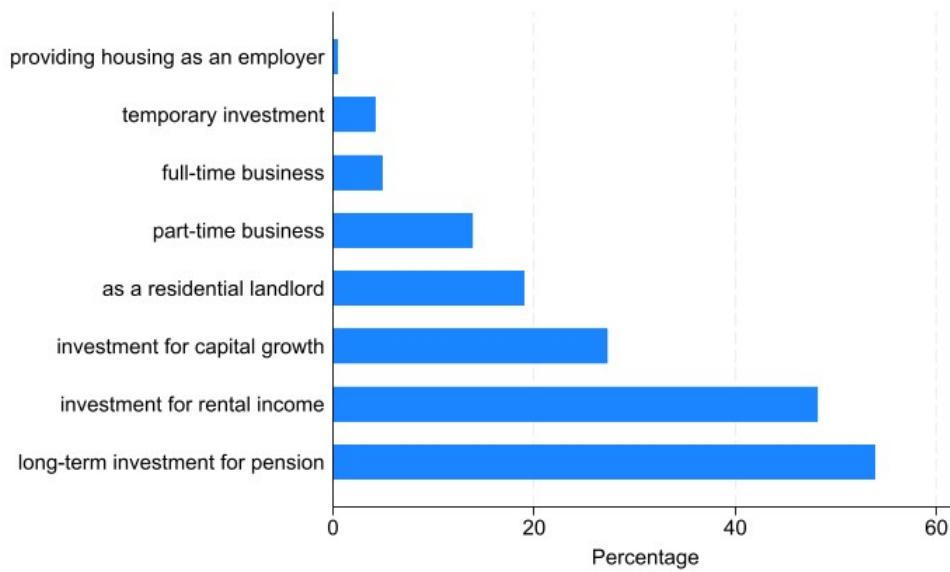
Notes: The figure presents an example of the search process for a rental property.

Figure 9: Individual property page



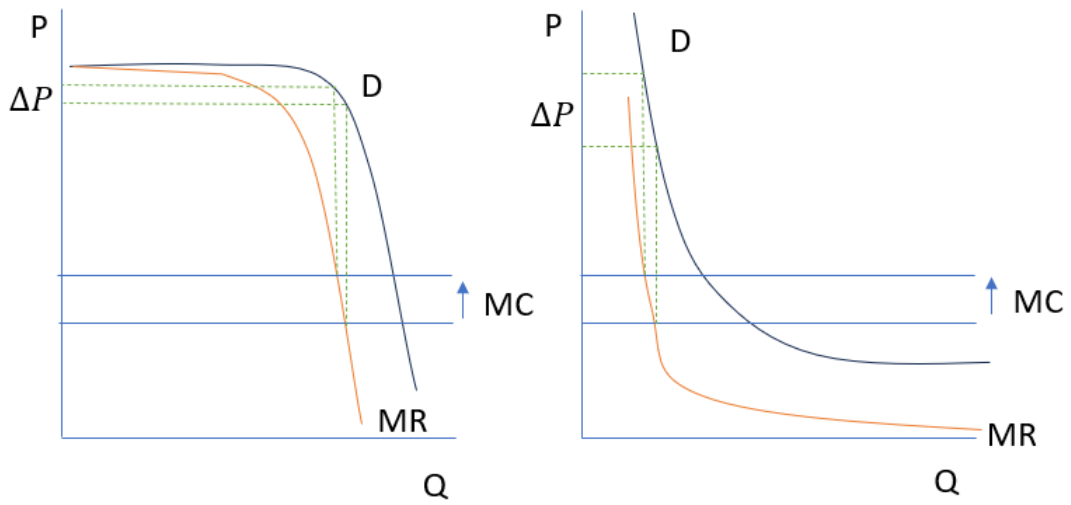
Notes: The figure presents an example of the search process for a rental property.

Figure 10: Landlord motives for renting out a property



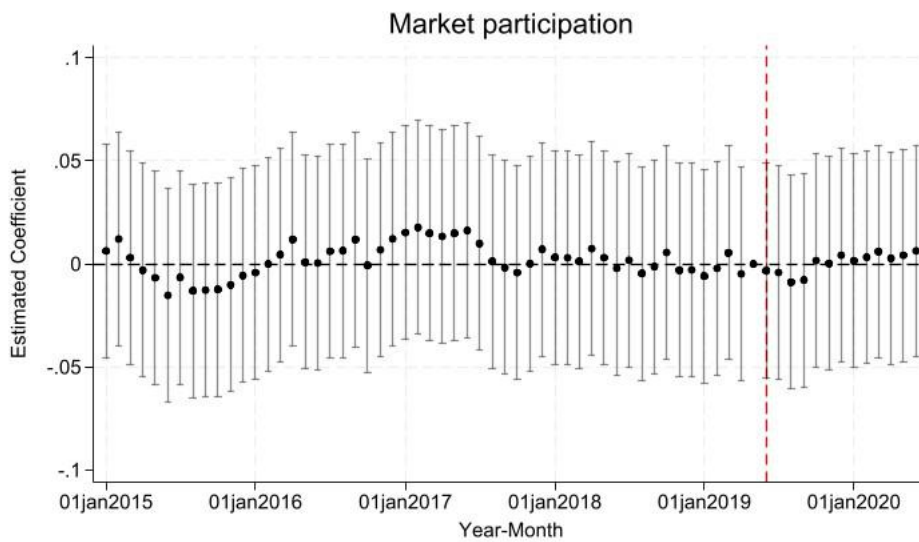
Notes: The figure presents a bar chart on motives for being a landlord. Source: English Housing Survey.

Figure 11: Passthroughs and Demand Structure



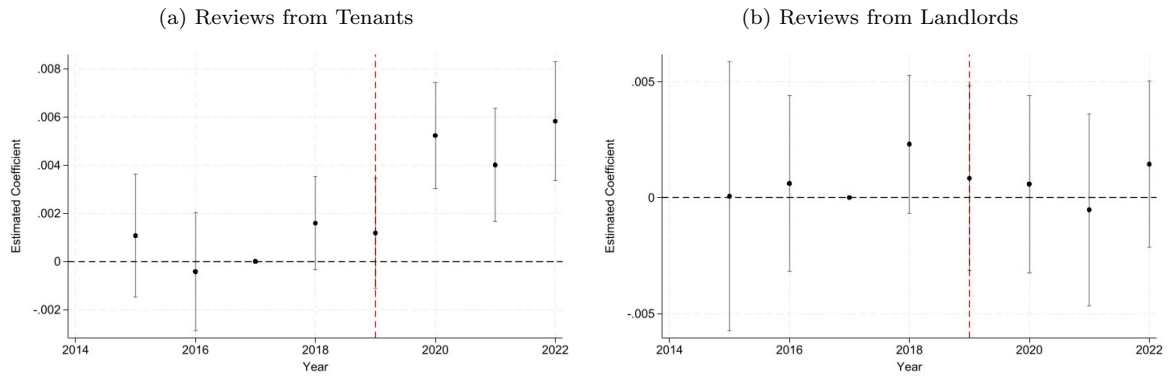
Notes: The figure presents graphs on the impact of the passthrough as a function of the concavity or convexity of the associated demand functions.

Figure 12: Market Participation Event Study



Notes: The figure presents estimates of $\hat{\beta}_{4,j}$ from equation 22, where the bars represent 95% confidence intervals.

Figure 13: Agency quality of reviews event study



Notes: The figure presents event study estimates of $\hat{\beta}_{s,j}$ from an equivalent event study specification to equation 26, where the bars represent 95% confidence intervals.

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