Leasehold Reform Proposals in England and Wales: The unintended consequences of proposals to reduce the premium in short leasehold extensions

Abstract

The government is proposing to make it cheaper for leaseholders to renew their lease or purchase the freehold by reducing the premium that they must pay. We analyse the financial implications of proposals to change the extended lease length and eliminate the marriage value payment by considering the aggregate impact on the market and the distribution of windfall financial gains among different types of leaseholders. We outline the channels explicitly. Our methods comprise of hedonic apartment price models to validate price discounts and an option pricing model to derive the estimated impact on leasehold prices. We find that a premium reduction will be capitalised into short leasehold prices in the short run, implying that leaseholders do not have to extend their lease to realise a financial gain. The premium capitalisation and the greater financial incentive to extend short leases will increase leasehold values and have an aggregate effect on market prices in the short and long-run respectively. Investor rather than homeowner leaseholders stand to be the main beneficiaries from this set of reforms. But the impact on the market and its distributional consequences will vary depending on the region. We conclude that these reforms have unintended consequences for housing affordability and levelling up.

Key words: leasehold reform, capitalised premium, housing affordability, levelling up

JEL: R28, R30, R38,

Introduction

In England and Wales, there are currently four legal forms of owning a residential dwelling: freehold, leasehold, share of freehold, and commonhold. Most apartments are owned as a leasehold interest, with the owning of the freehold interest responsible for maintenance of the building. A leasehold is a legal contact conferring the owner of this legal interest (the lessee) exclusive rights to occupy or let the dwelling for the duration of the lease. Leaseholds are deteriorating assets as this right reverts to the holder of the freehold interest when the lease expires. The term Freehold Vacant Possession (FHVP) value is used to describe a dwelling which is owned purely as a freehold and not subject to any leasehold interests to distinguish it from the ownership of a freehold legal interest. The FHVP concept is important in understanding the determination of leasehold valuations and prices.

The leasehold value relative to its FHVP value, known as Relativity, declines as the lease expires because shorter leases sell at a higher price discount in the market. The Relativity curve depicts the extent of the price discounts over the length of a lease term. Currently, leaseholders have enfranchisement rights, either to extend their lease by an additional 90 years and extinguish any ground rent payable or to collectively

acquire the freehold[i]. In return, they must pay a premium as compensation to the freeholder.

The government is planning to introduce reforms to make it 'easier, faster, fairer, and cheaper' for leaseholders to extend their leases (Wilson and Barton 2021). This is in response to concerns that the current system is unfair to leaseholders, who often face high costs and lengthy delays when trying to extend their leases. However, there has been little consideration given to the potential impact of these reforms on the wider housing market, or on the distribution of financial gains among different types of leaseholders.

Our paper examines the potential impact of two proposed reforms that the government has publicly accepted to reduce the premium: abolishing the marriage value component of the premium and standardising the extension of existing leases to a maximum of 990 years at zero ground rent. We use hedonic apartment price models to validate the presence of price discounts and the freehold premium, and an option pricing model to assess how the reforms impact on short leasehold prices. We believe that using an option pricing approach to capture the impact of changes to the determinants of a premium on the price discount attached to the sale of leaseholds is a novel approach. It can be used to examine the effect on leasehold prices from any amendments to premium formula. We find that these reforms to the premium could have a significant effect on leasehold prices in the housing market, both nationally and regionally. We further consider the distribution of the windfall financial gains among different types of lessees. We identify several unintended outcomes which contradict current government policy on promoting housing affordability and levelling up. These findings suggest that the government should carefully consider the potential impact of these reforms before implementing them.

The next section reviews the literature, highlighting the pertinent issues. Section three outlines the methodology comprising of the study context, our aims and objectives, the theoretical model outlining the channels of the effects, our data and the estimation strategies employed. The fourth section reports our hedonic model results which is then followed by a discussion about the implications. Conclusions are then drawn.

Literature review

The Law Commission's Valuation Report (number 387, 2020) for the government proposed several ways to reduce the premium paid for leasehold extensions and enfranchisement. The report's analysis focused on the financial impact of these proposals on representative leaseholders and freeholders, concluding that it is impossible to reduce the premium without reducing compensation to the owning of the freehold interest. The report presented a series of options, some of which have been publicly accepted by the government (Hansard 2021). These proposals include giving leaseholders the right to extend their lease by a maximum term of 990 years at zero ground rent, abolishing the marriage value, capping the treatment of ground rents at 0.1% of the freehold value, and prescribing rates for premium calculations. However, the report did not consider the aggregate impact of these proposals on the market, either at the national or regional level, or the distribution of windfall gains among different types of leaseholders.

Leaseholds are sold at a discount to their FHVP value. In the academic literature, empirical studies have attempted to estimate the price discount of leaseholds to either reveal the net rate used by households to discount cash-flows over long time periods (Giglio et al. 2015) or to address the conundrum of the requirement to have the unenfranchised leasehold value of a dwelling when calculating the marriage value component of the premium (Grover 2014). These two strands are related. Giglio et al. (2015), Bracke et al. (2018) and Lai and Micheva (2021) estimated the price discount to extract the net discount rate. Since they used data after the 1993 Act granting enfranchisement, Andrew et al. (2022) pointed out that their price discounts reflect the enfranchised Relativity (enfranchised leasehold values). These studies reported small and large price discounts for long and short leases respectively.

Different methods have been used to estimate the price discount attached to leaseholds. Giglio et al. (2015) and Lai and Micheva (2021) employed lease buckets to capture the effect of different lease length maturities on prices in their hedonic models. Bracke et al. (2018) and Savills (2016) adopted a two-step estimation approach. Both studies employed dummy variables to capture the unexpired lease effect on dwelling prices but applied different techniques in the second step to obtain the price discounts. Savills (2016) imposed theoretical restrictions to justify fitting an

exponential function while Bracke et al. (2018) applied a second-degree local polynomial with an adjusted bandwidth to their lease dummy estimates. Andrew et al. (2022) adopted the same procedure as Bracke et al. (2018) but additionally estimated hedonic models containing a linear spline, a smoothed linear spline, and a right-tailed restricted cubic spline to capture the price discounts attached to enfranchised leasehold values and avoid the problem caused by sparse observations at certain lease lengths.

The more recent studies used larger datasets to estimate the price discounts attached to leaseholds with different lease lengths (the Relativity curves). Lai and Milcheva (2021) applied regional Repeat Sales models with lease buckets and lease dummies on Land Registry data to capture the enfranchised leasehold values and extract the implied net discount rates. Bracke et al. (2018), Savills (2016) and Andrew et al. (2022) explicitly attempted to derive the price discounts of the unenfranchised leasehold values from Lonres data on Prime Central London (PCL). They applied hedonic models in estimation and reported significantly large price discounts for short leases.

Bracke et al. (2018) used pre-enfranchisement data to estimate the price discounts for unenfranchised leasehold values. Savills (2016) used four reference points from the Upper Tribunal data to derive the unenfranchised leasehold values from enfranchised leasehold values. Andrew et al. (2022) adopted an alternative approach and derived the unenfranchised leasehold values from the enfranchised leasehold values by applying an option pricing simulation model. Apart from Lai and Milcheva (2021), there are no regional studies on this topic.

Methodology

Study Context

Under the existing leasehold system, the leaseholder has the right to extend a lease at any length T by serving a section 42 notice. The freeholder receives compensation from the leaseholder in the form of a premium based on the relevant considerations at the date the notice is served. The premium comprises of three components: (i) compensation for the freeholder's forgone ground rent; (ii) compensation for the delay in reversion to the freeholder; and (iii) half the marriage value[ii]:

$$Premium^{T} = \frac{\left[1-(1+\tau)^{-T}\right]}{\tau}\kappa + \left[\frac{1}{(1+\lambda)^{T}}\mathrm{FHVP} - \frac{1}{(1+\lambda)^{T+90}}FHVP\right]$$
$$+\frac{1}{2}\left[\left(VE^{T+90} + \frac{1}{(1+\lambda)^{T+90}}FHVP\right) - \left(V^{T} + \frac{1}{(1+\lambda)^{T}}FHVP + \frac{\left[1-(1+\tau)^{-T}\right]}{\tau}\kappa\right)\right] \quad (1)$$

where:

κ =per period ground rent (non-escalating)

τ =capitalisation rate for ground rent

λ = deferment (discount) rate

T = number of years remaining

VE^{T+90} = the extended enfranchised leasehold value

V^{T} = the existing unenfranchised leasehold value

$FHVP$ = the freehold vacant possession value

γ = per period ground rent

The first term in equation (1) represents foregone ground rent, the second term the reversionary value and the third term half the marriage value. The marriage value is only payable when the lease has 80 years or less left remaining. The marriage value is an important consideration in lease extensions as it accounts for the fact that an extended lease is more valuable than the value obtained from adding together the existing lease length and an additional 90 years. This additional gain in uplift in short lease extensions is due to price discounts attached to enfranchised and unenfranchised leasehold values increasing non-linearly as a lease expires. The marriage value captures the difference between the value of the combined new and

combined existing legal interests, ensuring that that both the leaseholder and freeholder equally share in this additional gain from an uplift in the value of the apartment following a lease extension. If the leaseholder also owns a share of the freehold, then the premium payment is reduced by that proportion.

The capitalisation (τ) and deferment (λ) rates for extending leases with 20 and more years left are based on statutory values set by the Lands Tribunal[iii]. The values $\lambda = 5.0\%$ and $\tau = 6.0\%$ are used for apartments in Prime Central London (PCL). Adjustments are made for leases under 21 years to reflect recent market conditions.

The concept of a price discount to a FHVP value is fundamental in analysing leasehold values. Relativity describes the leasehold value at a particular lease length relative to its FHVP value, thereby capturing the price discount at a particular lease length. In leasehold extension negotiations, the marriage value component of the premium calculation is discussed in terms of Relativity curves. A Relativity curve describes the leasehold values relative to the FHVP value at different lease lengths. Expressing the premium relative to its FHVP value:

$$S^T = \frac{\left[1-(1+\tau)^{-T}\right]}{\tau}\frac{\kappa}{FHVP} + \left[\frac{1}{(1+\lambda)^T} - \frac{1}{(1+\lambda)^{T+90}}\right] + \frac{1}{2}\left[\left(RCE^{T+90} + \frac{1}{(1+\lambda)^{T+90}}\right) - \left(RC^T + \frac{1}{(1+\lambda)^T} + \frac{\left[1-(1+\tau)^{-T}\right]}{\tau}\frac{\kappa}{FHVP}\right)\right] \quad (2)$$

where:

$S^T = \frac{Premium^T}{FHVP}$, the premium rate

$RC^T = \frac{V^T}{FHVP}$, the unenfranchised Relativity of the existing lease

$RCE^{T+90} = \frac{VE^{T+90}}{FHVP}$, the enfranchised Relativity of the extended lease

Equation (2) highlights that the marriage value component depends on the values of the extended enfranchised Relativity (RCE^{T+90}) and the unenfranchised Relativity (RC^T) at the existing lease length. The unenfranchised Relativity captures the price discount when leaseholders do not have the right to extend a lease. The premium will be bigger for higher values of the extended enfranchised Relativity (RCE^{T+90}) and

smaller for lower values of the unenfranchised Relativity (RC^T). Estimates of the extended enfranchised leasehold value are readily available from 'comparables' or appropriately specified hedonic models. The unenfranchised leasehold value, however, presents a conundrum as it represents the leasehold value without enfranchisement rights and is not observed directly in a market where almost all leaseholders have such rights. The consequence is that property agents apply heuristics and their own proprietary unenfranchised Relativity curves in lease extension negotiations. The Law Commission argues that this causes uncertainty, raises transaction costs and leads to disputes, which is why the government is keen to eliminate it. Figure (1) highlights the concepts and issues.

Insert Figure 1: Unenfranchised Relativity Curves and Premium Rates

In both diagrams, the FHVP value is set equal to 1 and represented by a dashed horizontal line. It does not depend on lease length. Panel A displays a selection of unenfranchised Relativity curves (in decimals) applied by agents (Savills, Gerald Eve, Knight Frank) in lease extension negotiations. It includes the authors unenfranchised Relativity curve derived in XXXX (2022)[iv]. The curves reveal how the price discount of a leasehold to its FHVP value increases non-linearly as the lease expires. Panel B highlights the implications for the premium calculation in lease extensions. The differences in the dotted lines reveal the extent the premium based on equation (2) varies at each lease length for a particular leasehold when different unenfranchised Relativity curves are applied, ceteris paribus. These differences translate into large variations in premiums. For example, a two-percentage point difference can lead to an additional £10,000 to extend a lease for a £500,000 dwelling.

Under the proposals to eliminate the marriage value and increase the extended lease length to 990 years, the (post-reform) premium rate[v] will become:

$$S^T_{Reform} = \frac{\left[1-(1+\tau)^{-T}\right]}{\tau}\frac{\kappa}{FHVP} + \left[\frac{1}{(1+\lambda)^T} - \frac{1}{(1+\lambda)^{990}}\right] \qquad (3)$$

where:

$\frac{1}{(1+\lambda)^{990}}$ = the post-reform new reversionary value as the extended lease length is standardised to 990 years.

Equation (2) reveals that the additional gain in uplift in a leasehold value following an extension accrues solely to the leaseholder. The effect on the premium is displayed in panel B in figure 1. The bold black line represents the post-reform premium rate (equation 3). The gap between the pre- and post-reform premium rate indicates the extent of its reduction. We estimate the average premium reduction to be between 4.7% and 7.5% of the FHVP value, with the maximum reduction between 7.9% and 11.0%, depending on the unenfranchised Relativity curve used to calculate marriage value. The change in the gap between the post-reform and pre-reform premium rates reveals that the marriage value's relative importance in determining the premium value initially rises but then decreases because the reversionary component begins to dominate the calculation in leases 20 years and under.

Aims and Objectives

We examine the broader financial implications of the premium reduction for short lease extensions from eliminating the marriage value payment and increasing the extended lease length to 990 years with zero ground rents. We contribute to the literature by extending the analysis to consider the aggregate impact on the national and regional markets and the distribution of windfall financial gains among different types of leaseholders. We outline the channels the premium reduction affects leaseholders and freeholders. Since short leaseholds are sold at a price discount to their FHVP value, we require estimates of the pre- and post-reform price discounts at each lease length to assess the reform's aggregate impact on the market. Hedonic apartment price models are estimated to obtain estimates of price discounts and enfranchised relativity under the current regime. We also use the hedonic model to test for a freehold share premium to assess whether owning a share of the freehold affords protection against having to sell at a price discount. To derive the post-reform enfranchised Relativity and leasehold values, we use the unenfranchised Relativity curve derived in XXXX (2022) and an option price simulation model[vi]. Given these results, we can then examine the aggregate and distributional impacts at a subnational level. The government is also considering prescribing values for the capitalisation and deferment

rates but have yet to announce these. We do not examine these possible changes in our analysis, but our analytical framework can incorporate them.

Theoretical Framework

The freehold vacant possession (FHVP) value of an apartment is distributed between the leasehold and freehold legal interests. Following a leasehold extension, the value of the freeholder's interest comprises of the premium received and the new reversionary value while the leaseholder's interest is made up of the extended leasehold value minus the premium paid.

From the freeholder's perspective, the elimination of the marriage value reduces the value of the premium they receive. In most cases, the proposed extension to the lease length to 990 years has a negligible effect as the pre- and post-reform new reversionary values are approximately equal to zero[vii]. From the leaseholder's perspective, they benefit from the reduction in the premium and the increased value of having a longer extended lease. These are the outcomes identified in the Law Commission Valuation report.

However, we argue that owners of short leases do not have to extend their lease to experience a financial gain due to the capitalisation of the reduced premium into short leasehold prices. A reduction in the premium does not affect a dwelling's FHVP value as that is determined by market fundamentals, only the distribution of its value between the freehold and leasehold legal interests. This implies that the original freehold and leasehold legal interests in an apartment with a short lease will decline and rise in value respectively. The Law Commission Valuation report did not take this effect into consideration.

The capitalisation of the reduced premium into short leasehold prices will have different impacts on the price discount at each lease length because the marriage value payment varies by lease length (figure 1 panel B). The capitalisation will be greatest for leases with lengths between 20 and 80 years. For longer leases, this impact is insignificant as the marriage value payment is not applicable and leasehold values are already close to the FHVP value. For shorter leases (20 years and under) the impact will be dampened by the reversionary component in the premium. Thus,

the change in the value of the leasehold interest get reflected in an adjustment to the enfranchised Relativity curve. By contrast, the analysis undertaken in the Law Commission's Valuation report implicitly assumes that the price discounts and enfranchised Relativity remain unchanged.

Modelling the channels

We use the model developed in XXXX (2022) to capture the capitalisation of the premium reduction. This model is also used to derive the unenfranchised Relativity. As leaseholders have the right but not the obligation to extend their lease, the value of the enfranchised leasehold with T years unexpired is the value of the unenfranchised leasehold plus the embedded option value. Since the FHVP value is a common numerator, this relationship can be expressed as a Relativity:

$$RCE^T = RC^T + C^T \quad (4)$$

where:

RCE^T =pre-reform enfranchised Relativity

$C^T = max(0, E[\eta^T])$ = the option value

$E[\eta^T]$ = the anticipated payoff from exercising the right to extend the lease at any time prior to expiry.

The option value incorporates the leaseholder's anticipated financial payoff from extending the lease. At each lease length, the anticipated payoff reflects the gain from the uplift in leasehold values net of the premium paid, taking into consideration future house price growth and volatility.

The FHVP and unenfranchised leasehold values are unaffected by changes to the premium as they depend on market fundamentals and the lease length[viii]. However, a change to the formula that results in a premium reduction increases the embedded option value as short lease extensions become more attractive, resulting in an increase in the post-reform enfranchised leasehold value. This means that the post-reform enfranchised Relativity can be obtained by adding the post-reform option value (expressed relative to the FHVP value) to the unenfranchised Relativity. Expressing

the post-reform relationship between the enfranchised and unenfranchised leasehold values as Relativities:

$$\mathrm{RCE}^{\mathrm{T}}_{\mathrm{Reform}} = RC^{T} + C^{T}_{Reform} \quad (5)$$

where:

$C^{T}_{Reform} =$ post-reform option value relative to the FHVP value, outlined in greater detail below.

Details on how we obtain our unenfranchised Relativity curve can be found in XXXX (2022). In this paper we focus on outlining the option pricing model to explain and capture the channel by which price discounts reflected in the enfranchised Relativity adjust to a change to the premium formula[ix].

Option Pricing Simulation Model

Given that a leaseholder does not have an obligation to exercise the right to extend a lease, the decision to procced will involve considerations of the expected payoffs from an extension at each year remaining on the lease and then selecting the lease length to extend which maximises the anticipated payoff. The option value represents the unconditional expected payoff from extending a lease over the entire unexpired lease term:

$$C^{T}_{Reform} = \max\left(0, E\left[\eta^{T}_{Reform}\right]\right) = max\left(0, E\left[E\left(\eta^{T}_{Reform}|exercised\right)\right]\right) \quad (6)$$

where:

$E\left(\eta^{T}_{Reform}|exercised\right) =$ the anticipated payoff for exercising the right to extend the lease at length T.

For a particular lease length T in the remaining term, the conditional expected payoff depends on the expected uplift in the leasehold value, comprising of the difference between the extended and current leasehold value, minus the premium payable:

$$E\left(\eta^{T}_{Reform}|exercised = T\right)$$

$$= E\left[\left(RCE_{Reform}^{990-0.5} - RCE^{T-0.5}\right) - S_{Reform}^{T} | exercised = T\right] \quad (7)$$

where:

$E\left[RCE_{Reform}^{990-0.5} - RCE^{T-0.5}\right] =$ expected uplift in the leasehold value, expressed as Relativities.

$S_{Reform}^{T} =$ post-reform premium rate

$RCE_{Reform}^{990-0.5} =$ the enfranchised Relativity of a 990-year lease six months after a notice is served.

We assume that it takes six months for a lease extension transaction to be completed, as this is the maximum amount of time that a lessee must submit a claim to the Tribunal to keep the lease `alive'. Otherwise, it lapses. The expected uplift occurs six months later but premium is determined at the date the notice is served.

Although the post-reform Relativity, RCE_{Reform}^{990}, is not observed, this problem is overcome by assuming that there is a one percentage point discount to the FHVP value for this very long lease, $RCE_{Reform}^{990-0.5} \approx 0.99$. This assumption is justified by our hedonic model estimate of the share of freehold premium reported later. The pre-reform enfranchised Relativity (RCE^{T}) is obtained directly from our hedonic model.

We apply the Longstaff-Schwartz Least Squares Monte Carlo simulation method to obtain the embedded option value. This method identifies the lease length in the remaining term of a lease that maximises the expected payoff, considering future house price growth and volatility. We use the statutory values applied in professional practice outlined earlier as inputs for the capitalisation and deferment rates.

Hedonic Modelling

Expressing a finite leasehold value relative to its FHVP value in logarithms yields:

$$lnVE^{T} = lnFHVP + lnRCE^{T} \quad (8)$$

A hedonic apartment price model can be used to derive the pre-reform enfranchised Relativity from:

$$lnVE^T = X'\beta + lnRCE^T \quad (9)$$

where:

$X'\beta$ =apartment and location characteristics and time dummies to represent the FHVP value.

The hedonic model yields an estimate of the enfranchised Relativity by controlling for the apartments' physical and location attributes and market conditions. The lease length specifications used to capture the enfranchised Relativity are outlined in more detail in XXXX. (2022). They include (i) lease buckets and (ii) a right- tailed restricted cubic spline:

(i) $lnRCE^T = \sum \gamma D^T \quad (10)$

where:

$\gamma = RCE^T$

D^T = lease bucket taking value of 1 if the lease length T falls within certain intervals and zero otherwise, with the default bucket representing lease lengths 900 and above years.

(ii) $lnRCE^T = \gamma_1 L + \sum_{k=1}^{K} \gamma_{k+1}(L - k_k)^3{}_+ \quad (11)$

where:

k are the knot points

$L = L^\infty - L^T$

L = the difference between the existing lease and very long lease

L^∞ = the very long lease (999 years)

L^T = the existing lease

Data

We match leasehold PCL data from Lonres to transacted prices from the Land Registry for the period 2010-2016. Following Bracke et al. (2018) and Lai and Milcheva (2021),

we exclude apartments with lease lengths between 250 and 899 years due to a lack of observations. We retrieve 22,377 observations, but 4,734 were dropped during estimation as singletons. Estimation of hedonic models on leasehold and share of freehold subsamples further reduced the number of observations to 12,854 and 3,599, respectively due to the singleton issue. Table 1 displays the descriptive statistics of the sample.

Insert Table 1: Descriptive Statistics

In our sample, share of freehold apartments typically have longer leases, higher prices, and are larger than leasehold apartments. Kruskall Wallis tests indicate that these differences are significant at the 5% level. Only 7.8% of share of freehold apartments have leases between 20 and 80 years, compared to 17.6% of leasehold apartments. None of the share of freehold apartments have leases of less than 21 years, reflecting the market.

We attempted to derive regional enfranchisement Relativity curves using the data sources and methods outlined by Lai and Milcheva (2021) but were unable to obtain plausible estimates of Relativities for short leaseholds. The Upper Tribunal established that PCL Relativity curves could be used outside London[x]. We therefore used the Relativity curves estimated from our sample to infer the reform's impact across regions.

We assess the aggregate impact on the market by gathering information about the leasehold stock and lease lengths from the Land Registry and the Ordinance Survey Address Base. We calculated their FHVP values by applying our pre-reform enfranchised Relativity curve at the sale date and inflating them using the Land Registry local authority house price indices. We estimated the values of dwellings that did not appear in the Land Registry Price Paid data based on the characteristics of neighbouring properties. We then applied our pre-reform and post-reform enfranchised Relativity curves to calculate their leasehold values on April 15, 2022.

To investigate the distribution of windfall gains among different lessee types, we match Experian's household tenure and household income datasets to our data. We divide households into three broad categories based on their regional income deciles: low-income (deciles 1-3), middle-income (deciles 4-7), and high-income (deciles 8-10). We also categorise short leaseholds rented to households as investor owned. Using four lessee categorisation helps to identify the distributional implications of the premium reduction.

Hedonic and option price model results

The results of our hedonic models are displayed in Table 2. Models A and B are estimated on the combined sample, model C on the share of freehold subsample and models D and E on the leasehold subsample. Model A is the only model which excludes controls for lease length. Models B to D employ lease buckets to control for lease expiration. The wider bucket intervals in model C are necessary due to there being relatively fewer observations of the share of freehold apartments with short lease lengths. The lease length in model E is incorporated using a right-tailed restricted cubic spline function (XXXX 2022). Model A fails the link test for functional form implying that its estimates are likely to be biased. All the other models pass this diagnostic test.

In general, the estimates of the physical dwelling and building characteristics in the models are plausible. The default category lease bucket is the very long lease, defined to be 900 years and above. The pattern of the magnitude of its estimates in models D and E validate the existence of Relativity.

Insert Table 2: Hedonic model results

We use the share of freehold apartments to assess the freehold premium whereas existing hedonic studies (Giglio et al. (2015) and Lai and Milcheva (2021)) used houses, which is inappropriate given their very different physical characteristics and re-development potential. Model A includes a dummy to capture the share of freehold premium but as it fails the link test the estimate of 3.6% is likely to be biased. Model B includes lease buckets as additional controls and yields an estimated premium over a very long leasehold equal to 1.2%, in line with values employed in professional practice. The premium captures the financial advantages in extending the lease,

greater control over ground rent determination and building management and maintenance expenditure, and a share in redevelopment potential. It justifies our assumption of using 0.99 to represent the post-reform extended 990-year lease value in the simulation model.

The magnitude of the price discount is derived from a lease bucket estimate using the formula $1 - e^{\gamma}$, where e^{γ} represents Relativity. For example, in model D an apartment with a lease lying between 41 to 50 years sells at a $1 - e^{-0.296} = 25.6\%$ price discount compared to an identical apartment on a very long lease. Equivalently, the enfranchised Relativity is $e^{-0.296} = 74.4\%$ of the value of a very long lease.

In model B, the lease bucket estimates are better defined for shorter lease lengths. The magnitude of the price discount at around 80 years appears to be low. The estimates from model C present a probable explanation. There does not appear to be any price discounts for the share of freeholds until their leases have 70 or less years left[xi]. Model C further informs us that owning the freehold share does not protect a lessee from having to sell at a discount when the lease turns short.

Model D yields the expected pattern of price discounts. Compared to a very long lease, long leases have a Relativity of approximately 97% which decreases to 94% (or 6% price discount) at 80 years. Relativity begins to fall more steeply for leases lying between 81-90 years, supporting the observations made in Dixon et. el. (2000) and the Law Commission Valuation report that steep price discounts only occur under 90 and 85 years respectively. Our results reveal that non-linearities in Relativity are only significant in short leases, as the decline is gradual for longer lease lengths.

Different methods to model Relativity are explored in XXXX. (2022). We report the estimates of a right-tailed restricted cubic spline function as this model yielded plausible estimates of uplift gains, an unenfranchised Relativity curve which fitted data from Land Valuation Tribunal (LVT) outcome decisions reasonably well, led to plausible marriage value calculations and lay within the range of unenfranchised curves applied in the surveying profession. The knots in the cubic spline are robust to

a test involving the incorporation of a simple dummy variable distinguishing short from longer leases.

Our cubic spline estimates are more readily interpretable by looking at the derived enfranchised Relativity curve. Panel A in figure 2 compares our and the published Savills (2016) enfranchised Relativity curves. The Savills (2016) curve is derived from the same data source but uses different methods. Our enfranchised Relativity curve lies above Savills (2016) as the lease turns short but falls more steeply until about 40 years when its decrease becomes shallower.

Insert Figure 2: Pre- and Post-Reform Enfranchised Relativity and Unenfranchised Relativity Curves

Panel B in figure 2 displays our estimated pre- and post-reform enfranchised curves and the unenfranchised Relativity curve obtained in XXXX (2022). The post-reform enfranchised Relativity curve lies above the existing enfranchised Relativity curve, indicating an increase in the price of short leaseholds in the market, the extent to which varies by lease length. We estimate that the average and largest price increases are approximately 7% and 10% of the FHVP value of a dwelling respectively. At very short lease lengths (20 years and less) the reform's impact is dampened due to reversionary value considerations. Long leases near 80 years will experience a rise in prices to close to their FHVP values due to the anticipated reduction in the cost of renewing the lease at a future date. By contrast, the Law Commission Valuation report (2022) assumed that the enfranchised Relativity curve remained unchanged in its assessments.

Discussion

We turn our attention to discuss the broader financial implications of adopting the proposals to eliminate the marriage value and standardise the lease length extension to 990 years.

Impact of reform on national and regional markets

The aggregate impact of the reform is likely to vary regionally due to variations in the stock of the short leasehold dwellings, lease lengths and the price of housing. These

are due to historical legacies in the propensities to create leaseholds which are related to the scale of landownership, type of industrialisation and urbanisation. For example, very long lease originations appear to have been more common in the North West but shorter originations occurred in the East Midlands. There are regional differences in lease renewal rates, with the implied non-renewal rates being much higher for the West Midlands, Wales, and North East compared to other regions.

Insert Table 3: Impact of Reform on the National and Regional Markets

Table 3[xii] displays the total stock of leaseholds and short leaseholds, the average lease length of a short leasehold, the pre- and post-reform value of the stock of short leaseholds, the change and the percentage change, and the weighted average value increase of the short leasehold stock. The penultimate column shows the percentage change weighted by the stock of all leaseholds to depict the underlying pressure on prices in the entire leasehold market. This column represents the immediate effect of the reform from the capitalisation of the reduced premium into short leasehold prices, assuming no lease extensions. Since the post-reform premium is significantly less expensive, it is likely to encourage a significant number of existing lessees to renew their leases. The final column shows the percentage change weighted by the stock of all leaseholds, but this time assuming all short leaseholds are extended. This assesses its potential longer-term impact assuming no additions to the short leasehold stock.

Short leaseholds nationally comprise about 11.2% of the total stock of leaseholds. The average short lease is around 48 years. We estimate the immediate impact of the reform will increase this stock value by £10.9 bn, equivalent to an average price increase of 9.9% per short leasehold, which translates to a 1.0% rise in prices in the leasehold market. The longer-term impact on the leasehold market as revealed by the final column is a 3.2% increase in prices.

The reform's impact will vary across regions due to differences in the stock, lease lengths, and housing prices. London, the West Midlands, and the South East have the most short leasehold stock. The expected immediate increase in stock value is highest at £4.2 billion for London, followed by £2.2 billion in the West Midlands and £1.3 billion in the South East. London's higher house prices mean that the average value increase

is £43,942, compared to £22,297 in the West Midlands and £21,338 in the South East. Lease lengths are shorter in the Midlands, Yorkshire and Humberside, and Wales, which partly explains why the average value increase in the West Midlands is predicted to be slightly larger than the South East even though housing is less expensive there. The predicted average increase in values in the mid-size regional short leasehold markets, which include the North East, Wales, and East, ranges from £16,262 to £20,278. The remaining smaller regional markets are predicted to see an average increase in values of between £14,105 and £18,023.

The premium reduction capitalisation is likely to raise housing affordability issues in the North East, West Midlands, and Wales, where short leaseholds form a high proportion of the total leasehold stock[xiii]. In these regions, price rises are expected to be 3.1%, 4.9%, and 3.7%, respectively. Over the longer term, housing affordability is expected to deteriorate further in these regions as all short leaseholds are extended, with projected price rises of 18.6%, 12.2%, and 7.4%, respectively. In other regions, price increases are projected to lie between 2.4% and 3.7%. The only region insulated from the impact is the North West, where the vast majority of leasehold stock is on a long lease.

Distribution of financial gains among different lessee types

We next examine the distribution of these windfall gains among the different lessee types, which are displayed as a matrix in figure 3.

Insert Figure 3: Matrix of financial implications by household income and housing tenure

The size of the square represents the total number of short leaseholds within a particular regional income grouping. A larger square denotes more dwellings, and its size can be compared within and across regions. The colour shade displays the proportion of rented in the PRS. The darker the shade the higher the percentage. The figure reveals that a high proportion of the stock are in low-income postcodes, indicating that it provides an affordable route to homeownership and investing. In the discussion below, we report the number of dwellings and the relevant percentage share in brackets next to the text.

The national comparison identifies that investors are likely to be the main beneficiaries of the premium reduction. In England and Wales, just under a third of the short leasehold stock (142,264, 31.7%) are rented out in the PRS, mainly to households in low- and middle-income postcodes. The next largest recipients will be occupier leaseholders living in middle-income postcodes (128,693, 28.7%), followed by those living in low-income postcodes (114,482, 25.5%). Households living in high-income postcodes form a significant minority as homeowners (63,034, 14.1%).

The intra-regional figures, based on each lessee group's share of the regional short leasehold stock, highlight the differences in the distribution of the windfall gains. In Wales (15,667 44.7%), the West Midlands (43,577 43.2%), North East (16,188 40.2%), and North West (6,949 35.5%), the main beneficiaries will be occupier leaseholders in middle-income postcodes. In London (46,766 47.8%), East (15,846 47.6%), South East (25,536 42.2%), and East Midlands (4,336 35.0%), the main beneficiaries will be investors. In Yorkshire and Humberside, the majority of gains will be shared between occupier leaseholders living in low- (7,883, 32.0%) and middle-income (7,822, 31.8%) postcodes and in the South West, occupier leaseholders living in low-income postcodes (8,294, 34.4%) and investors (8,808, 36.6%). Most investors own lesser quality dwellings, which means that their gains in general will be lower compared to occupier leaseholders within the same region, but as most of their stock are in high house price regions, the absolute gains are likely to be higher when compared across regions.

There are regions where a significant proportion of occupier leaseholders live in high-income postcodes: the North East (11,821, 29.4%), Wales (8,059, 23.0%), North West (3,339, 17.1%) and West Midlands (16,983, 16.9%). London has the second largest number of leaseholders living in high-income postcodes, but they own the smallest share of its regional stock (11,553, 11.8%).

Figure (3) reveals that occupier leaseholder rates are noticeably higher in less affordable regions where investors dominate, such as London (24,073, 24.6%), South East (22,822, 37.7%) and East (9,966 29.9%). This suggests that short leaseholds

provide a route for lower-income households to own a home and a route for investors to achieve high rental yields in a high house price location.

The reforms to the leasehold system could have implications for both homeownership and private renting. In table 3, we estimated that the reforms could lead to an increase in short leasehold prices (column 9) and longer-term price rises (final column) in leasehold markets in London and the southern regions by an average 2.5%. These price rises will decrease homeownership affordability. Furthermore, the greater financial incentive to extend short leases is likely to reduce their supply and curb an affordable route into homeownership.

Short leaseholds provide affordable rented accommodation for low-income households. Over 50% of the privately rented short leasehold stock is in low-income postcodes in each region, except for the North East (45.8%) and Wales (39.0%). If the reforms induce investors to either sell up to realise the windfall gain or refurbish the extended leasehold to achieve a higher rental value, it will decrease the supply of rented accommodation to lower income households and increase rents.

Future pipeline

The potential impacts are likely to be much larger due to the pipeline of leases expiring. According to the Land Registry data, there are 96,530 and 252,059 leases that will turn short in the next 5 to 10 years respectively, of which approximately 40% and 21% are in London, 46% and 64% in the South East and 10% and 10% in Eastern, the least affordable regions in England.

Conclusion

Leasehold extensions enable owners of this legal interest to prolong the life of their asset. Our hedonic models validated the existence of Relativity (price discounts as the lease expires) and a freehold share premium, and that owning a share of the freehold does not protect the lessee from having to sell at a price discount.

In this paper, we focus on examining the broader financial implications of reducing the premium in short lease extensions by removing the marriage value and standardizing lease extensions to 990 years. The Law Commission Valuation report (2020) concluded that holders of the freehold interest would incur a loss approximately equal to the premium reduction and leaseholders who extend their lease would benefit from the reduced premium and the increase in the extended leasehold value to 990 years. We point out that leaseholders who choose not to extend their lease also benefit from the rise in the underlying short leasehold value from the capitalisation of the premium reduction. For example, the average increase in short leasehold values in London is projected to be £43,942. More generally, we argue that the implementation of any proposals which reduce the lease extension premium will get capitalised in leasehold (and freehold interest) prices. We believe that the application of an option pricing simulation model to obtain the post-reform enfranchised leasehold values is a novel approach. Furthermore, it can be also applied to any unenfranchised Relativity curve to obtain estimates of post-reform leasehold prices.

Our main contribution is to highlight the unintended consequences of government intervention in making it more affordable for short leaseholders to extend their leases. Price discounts on short leaseholds provide an affordable route for lower income households to own a home. However, the proposed reforms are likely to increase short leasehold values due to the capitalisation of the reduced premium. The projected rises in the values of the short leasehold stock in England and Wales are significant, with the largest impacts occurring in the West Midlands, the South East, and London. There are implications for housing affordability in regions where short leaseholds comprise a high proportion of the total leasehold stock, such as the North East, the West Midlands, Wales, and the East Midlands. Furthermore, the greater financial incentive to extend short leases could lead to longer term price rises in high house price regions in London and the south by an average of 2.5%, with double digit increases in regions

such as the West Midlands. Investors tend to own lesser quality dwellings in higher house price regions. They may be induced to sell up or refurbish their properties to achieve a higher rental value, which would lead to a reduction in the supply of cheaper rented accommodation for households in low-income areas in these regions.

The distribution of the financial gains will vary by region and leasehold group. Investors will be the main beneficiaries, followed by homeowning leaseholders in middle-income, low-income, and high-income postcodes. In London, the southern regions, and East Midlands, investors will be the largest group to benefit. In the West Midlands, North East, North West, and Wales, occupier leaseholders in middle-income postcodes will be the main beneficiaries. In Yorkshire and Humberside, most of the gains will be shared almost equally between homeowning leaseholders living in low- and middle-income postcodes. In the South West, they will be shared between investors and occupier leaseholders in low-income postcodes. We calculate that there will be a significant minority of occupier leaseholders in high-income postcodes who stand to benefit too. Windfall gains to significant numbers of investors and high-income occupier leaseholders are unlikely to be the intended targets of these reforms. The potential impact of a premium reduction is likely to be much larger than that considered here due to the pipeline of leases expiring.

Our study highlights the complex regional implications for levelling up and promoting housing affordability in the ownership and private rented markets. An alternative policy option which avoids these issues appears not to have been considered would be to obtain an objective measure of the unenfranchised Relativity, derived from transactions by applying financial theory.

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[i] The Leasehold Reform, Housing and Urban Development Act 1993 and The Commonhold and Leasehold Reform Act 2002.

[ii] In the case of purchasing the freehold, the premium is adjusted by replacing the lessor's new reversionary interests with compensation for `hope value', the potential development value if the lease is near termination. Our analysis focuses on leasehold extensions, but our method can incorporate enfranchisement implications too.

[iii] Earl Cadogan v Sportelli (2007) 1 EGLR 153.

[iv] Our unenfranchised Relativity curve fits Tribunal outcome data better than the agent's curves (see XXXX. (2022)).

[v] The capitalisation of the ground rent component will be restricted to a maximum of 0.1 percent of the freehold value. In equation (3), this implies that $0 \leq \frac{\kappa}{FHVP} \leq 0.001$. As an onerous ground rent payment is more relevant for recently created leases and does not affect most existing leaseholds (Giglio et al. 2015), we do not examine this implication in the paper.

[vi] We abstract from `hope' value or issues pertaining to development rights in the premium calculation which mainly affect leases near the point of expiration.

[vii] On the rare occasions when T + 90 < 99 years, then the lessor's interest will be further reduced because $\frac{1}{(1+\lambda)^{990}} < \frac{1}{(1+\lambda)^{T+90}}$.

[viii] The Gordon growth formula reveals that $V_t^T = RC_t^T FHVP_t = \left[1 - \frac{(1+g)^T}{(1+r)^T}\right]\frac{rent}{r-g}$, where none of the terms are affected by the premium.

[ix] We also used the Savills (2016) enfranchised and unenfranchised Relativity curves to provide an alternative estimate of the impact of the reforms examined as a robustness check on plausibility. The impacts are broadly similar.

[x] Trustees of the Barry and Peggy High Foundation vs Zucconi and Zanre, 2019, UKUT 0242

[xi] In the share of freehold, the premium payable depends on the number of lessee's owning a freehold share, as the saving from having a share is reduced when there are more owners.

[xii] We eliminated leases 21 years and under to avoid capturing unenfranchisable leaseholds. We also exclude leaseholds in the social rented sector. We also lost observations in matching dwelling prices to the stock. This means that the total leasehold stock reported in table 2 will differ from the estimated leasehold stock reported by ONS.

[xiii] Short leaseholds comprise 30.2%, 22.8% and 26.1% of the total leasehold stock in the West Midlands, North East and Wales respectively.