Long-term care policy and housing market efficiency

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Abstract

In many countries government policy on funding long-term care for older people incentivises holding housing wealth over financial wealth through exempting housing wealth from the test for means-tested government support with long-term care costs (a "homestead exemption"). I analyse the degree to which such exemptions distort the housing demand of older people and the effects on younger people through the housing market using the UK as my setting. I build and estimate an overlapping generations model of the housing market where multiple generations trade houses over the course of their life cycles while facing income, longevity and health risk. By comparing housing market steady states with and without the homestead exemption, I find that a budget-balanced removal of the homestead exemption would reduce house prices by 8% and increase welfare by an equivalent of a £357 annual increase in consumption per household. The main beneficiaries are those with less housing wealth in the initial steady state, whereas those who lose out most are those with long-term care problems and more inherited wealth in the initial steady state.

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1 Introduction

Many countries round the world face ageing populations and ensuing rising costs of long-term care (LTC) for older people (Gruber et al. 2025). The sustainability of current state provision of LTC has been called into question in countries including the US (CBPP 2025), the UK (Nuffield Trust 2025), Canada (Woolley 2023), and many European Union countries (Mosca et al. 2016). Policymakers thus face difficult decisions about how best to fund LTC, with many countries proposing or enacting major reforms to their LTC systems (The King's Fund 2011; Yamada et al. 2020).

A separate policy issue that is receiving widespread attention is a burgeoning housing affordability crisis. In many countries the supply of housing cannot keep up with demand for housing so prices rise (Hilber 2023; Lucy 2025; Reisenbichler 2025). In the UK case, rents take up an increasing proportion of household incomes (ONS 2025c) and households take longer to save up to buy a house, and in some cases are priced out of the housing market entirely (National Housing Federation 2025).

A thread which ties these two apparently distinct policy questions together is that of the "homestead exemption" for means-tested support with LTC costs, whereby a household's principal residence is in many cases not counted as part of eligible assets for the means test. Countries like the UK and US provide means-tested long-term care whereby people's wealth is assessed and those falling below a wealth threshold are eligible for state support with their long-term care costs whereas those with wealth above the threshold have to self-fund. While the exact nature of this exemption will differ between countries, and often within countries, the main principle is the same: housing wealth is better protected from being depleted by long-term care costs than financial wealth is. This creates an incentive for people to hold more of their wealth in housing than they otherwise would, distorting housing decisions and decreasing the efficiency of the housing market in allocating houses to those who value them most. In particular, there is a disincentive for older people to downsize, even if their homes are very big, because doing so would expose more of their wealth to the risk of being depleted by the LTC costs. As older people with big houses are less likely to sell, prices increase in the housing market and younger people find it more difficult to afford family homes. As such, while the homestead exemption is designed to protect families from having to sell their homes to pay for care it may have important negative effects on the wider population.

To the best of my knowledge, this paper is the first to examine the link between these two policy problems. The main contribution of this paper therefore is in its quantitative analysis of how LTC policy affects housing affordability through an overlapping generations model of the housing market where households face LTC risks. While other papers have offered important insights on the distortions (and protections) provided by the homestead exemption in different settings (Achou 2023; Chang et al. 2023; McGee

2021), they generally estimate life-cycle models for individual households and treat the house price as exogenous, rather than allowing households to interact through the housing market as they pass through their life cycle, thus generating endogenous house prices. As such, the literature to date has not considered what the wider effects of these LTC policies would be on housing market efficiency which could significantly alter the evaluation of their welfare consequences. My key finding, that repealing the homestead exemption brings significant welfare improvements in average equivalent to an increase in annual consumption of £357 (2012 GBP), fills this gap in the literature and provides important insight into the potential drawbacks of such policies.

The paper proceeds as follows. For concreteness I focus on the UK setting. I first use reduced-form evidence to establish that people are responsive to small changes in the incentives to downsize, exploiting changes to the Stamp Duty Land Tax (SDLT), a transaction tax for housing. If they were not responsive, this would call into question the degree to which behaviour is truly being distorted by the financial incentives of the LTC system. I show that a £5000 decrease in the transaction tax, equivalent to 2.8% of the average house price in the UK at the time of the reform, is associated with a 1.15pp increase in the probability of moving on an annual basis. This replicates findings elsewhere in the literature (Best et al. 2018; McGee 2021) that housing decisions are indeed sensitive to proportionally small changes in transaction taxes and thus we might expect the incentives provided by the LTC system to be significantly distortionary.

With this established, I then set out an overlapping generations model of the housing market. Agents in the model face income, longevity and health risk and make consumption and housing choices every period. They trade a fixed stock of housing, with bigger houses offering more housing services and also allowing agents to adjust the composition of their wealth portfolio towards more housing and where the house price is determined endogenously by aggregate demand and supply. Agents exhibit both temporary and persistent heterogeneity in their preferences for housing.

I estimate this model using the method of simulated moments, matching UK data moments on moving rates and housing choices over the life cycle. I then use the estimated model to evaluate a counterfactual steady state where the homestead exemption is removed and taxes are adjusted to balance the budget. In this counterfactual steady state, house prices are 8% smaller. Agents on average receive an increase in welfare equivalent to a £357 increase in consumption per annum. The biggest benefits accrue to those with kids and those who had less housing wealth, whereas those with the biggest losses are those with LTC problems or with higher inherited wealth in the initial steady state.

This paper does not model the transition between steady states, and therefore does not permit a full analysis of the likely welfare benefits and costs of a reform to the homestead exemption which also allows for transition costs. These would be particularly relevant in the case of a reform which tends to reduce house prices because of the immediate effect on homeowners with a mortgage, who might face foreclosure. In addition, this paper does not model the supply side of the housing market or try to understand why house supply is apparently so insensitive to demand, rather treating supply as fixed. For these reasons, this paper does not claim to offer a comprehensive analysis of the effects of long-term care policy on housing market efficiency, but rather offers some important first estimates of the extent to which long-term care policy can reduce welfare through distorting the housing market and reducing efficiency.

In doing so, this paper contributes to two distinct literatures. The first concerns saving and consumption decisions in old age especially as they relate to portfolio choices and the effects of the LTC system. Many papers have highlighted the importance of long-term care and medical expenses in driving high rates of saving by older people (De Nardi, French, and Jones 2010, 2016; De Nardi, French, Jones, and McGee 2025; Nakajima et al. 2025). Lockwood (2018) shows the importance of bequest motives in driving low rates of dissaving of wealth while Nakajima et al. (2020), Blundell et al. (2016) and McGee (2021) point to the importance of housing wealth in driving high wealth holdings at older ages. This paper builds on that literature by discussing how the saving decisions of older people, particularly with regard to housing, can have important effects on younger people, and quantifies the welfare cost of policies that distort older people's saving decisions.

The second literature to which this paper contributes is the literature on distortions and efficiency in the housing market (Best et al. 2018; Gervais 2002; Sommer et al. 2018). In particular, this paper is in the spirit of work by Cho et al. (2025), Kaas et al. (2021) and Han et al. (2023) who build quantitative models to assess how costly transaction taxes on housing are. This paper contributes to this literature by analysing a novel type of distortion, namely incentives to save in housing through the LTC system.

The rest of this paper proceeds as follows. In Section 2, I discuss the policy context around homestead exemptions in LTC systems and I carry out reduced form analysis of the effects of reforms to a transaction tax for housing in the UK in order to show that even older people's moving decisions are sensitive to incentives to downsize. In Section 3, I set out an overlapping-generatiosn model of the housing market. In Section 4, I discuss estimation and model fit. In Section 5, I carry out welfare and counterfactual analysis. Section 6 concludes.

2 Empirical facts

2.1 Data

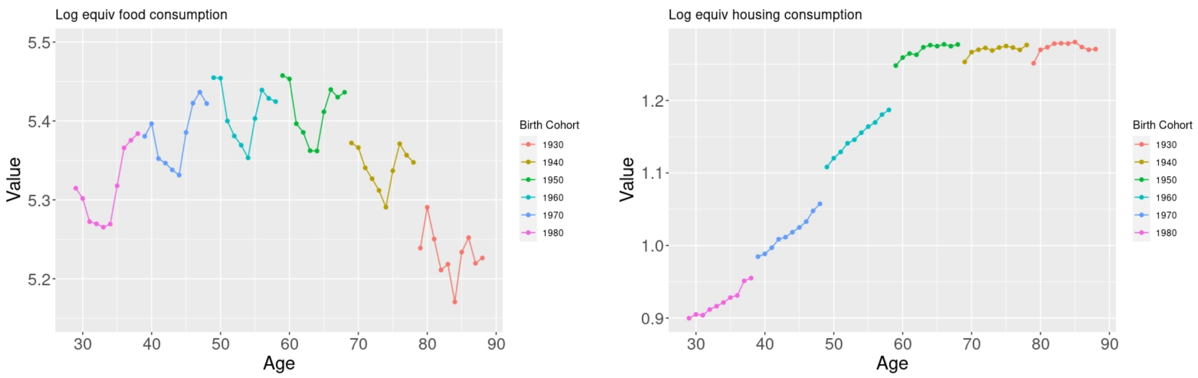
I use two main data sources throughout this paper, for both the descriptive analysis and the estimation of the model: Understanding Society (UndSoc) and the English Longitudinal Study of Ageing (ELSA). UndSoc is a representative annual panel survey of UK households whereas ELSA is a representative biennial panel survey of the over-50s in England. Both surveys ask respondents a battery of questions regarding housing, income and household choices, with ELSA in particular featuring many questions about LTC needs and beliefs about the LTC system. I use UndSoc Waves 1 to 9 (2009-2018) and ELSA Waves 4 to 9 (2008-2019), to capture a period in between the financial crash of 2007-08 and the COVID pandemic of 2020 onwards, which might lead to abnormalities in the data. In Appendix A I present descriptives for the two samples.

2.2 Policy context

2.2.1 Housing demand and consumption over the life-cycle

Figure 1 plots log equivalised food consumption (as a proxy for non-durable consumption) and log equivalised housing demand over the life-cycle, using data from UndSoc to illustrate the UK case.

Figure 1: Consumption types over the life cycle



(a) Log equiv. food consumption

(b) Log equiv. housing consumption

Notes: data from Understanding Society (2009-2018)

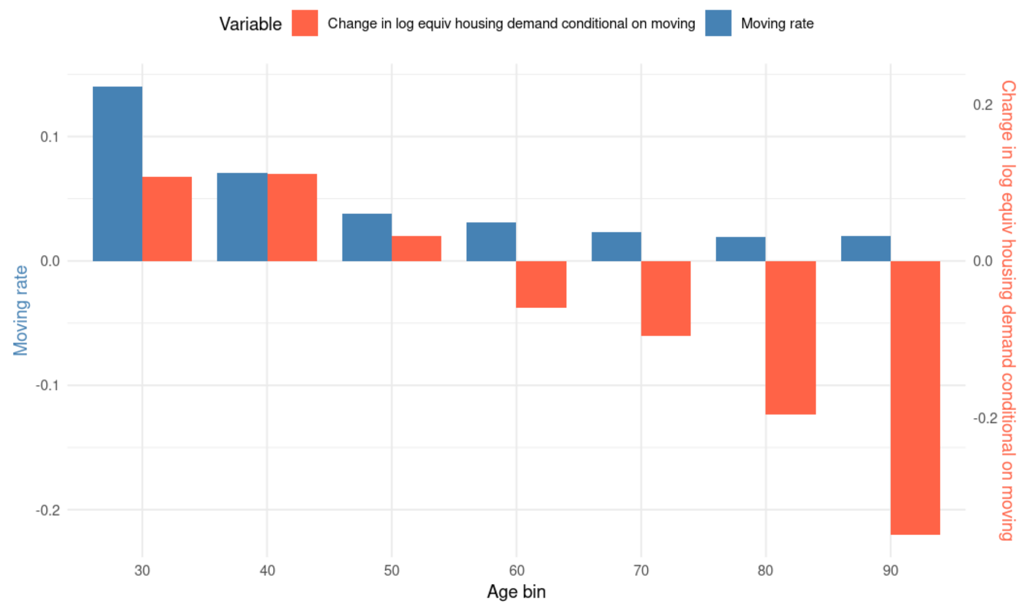
Here, log equivalised food consumption is the log of real food spending[1] divided by the square root of household size, whereas log equivalised housing demand is the log of the number of rooms in the household's home divided by the square root of household size.

There are two notable different patterns here. Consumption is hump-shaped, with the highest consumption in middle age. In contrast, housing demand increases up to middle age and then seems to flatline. In other words, there is no evidence of households adjusting their consumption bundle towards non-durables and away from housing in old age: an increasing proportion of their consumption bundle is made up of housing.

It could be argued that this is due to an increasing preference for housing as agents get

[1]Nominal food spending is deflated using the UK CPI (Federal Reserve Bank of St Louis 2025).

Figure 2: Movement rates and change in log equivalised housing demand conditional on moving over the life cycle



Notes: data from Understanding Society (2009-2018)

older. However, Figure 2 plots the change in log equivalised housing demand, conditional on moving (orange, right hand axis), along with moving rates (blue, left hand axis).

What this figure shows is that conditional on moving, older households make very large adjustments to their housing demand, with households who move at age 90 reducing their equivalised housing demand by approximately 34.9% whenever they move. However, they move very rarely at these ages (2.0% of households move house per annum at age 90, compared to 14.0% at age 30) so these changes come very infrequently. Given these facts, it is difficult to conclude that preferences for housing relative to non-durable consumption are much higher at older ages, because otherwise households which did move would not make such large downward adjustments to their housing consumption. We might expect, therefore, that insofar as agents' preferences over housing and non-durables is constant over the life-cycle, policies which prevent older people from downsizing encourage them to over-consume housing, which subsequently will drive up the cost of housing for younger people.

2.2.2 LTC policy and housing wealth around the world

Many different countries round the world offer means-tested government support with LTC needs. In many cases, housing wealth is treated more generously or exempted entirely from the means test, meaning that it is better protected against LTC costs.

Table 1 summarises some key examples of countries which treat housing wealth differently as part of means test for support with LTC costs. I class these countries together as offering some form of a “homestead exemption”.

Table 1: Treatment of housing wealth in long-term care (LTC) costs

Country	Treatment of Housing Wealth	Source
Australia	Primary residence not included for aged care means assessment	Services Australia (2025)
France	Primary residence is not counted for eligibility for the Allocation Personalisée Autonomie	Robertson et al. (2014)
Ireland	Only 7.5% of the value of the home is contributed up to a maximum of three years	HSE (2025)
UK[2]	Primary residence is not counted as an asset when determining means-tested support with LTC costs	NHS (2023)
US	Primary residence is not counted as an asset when determining means-tested Medicaid eligibility	DHHS (2005)

2.2.3 LTC policy and housing wealth in the UK

In the UK system, the means test comprises of an asset test and an income test.

In England, the income test allows for agents to contribute their income towards the cost of their care, provided that their residual income is above their Personal Expenses Allowance (PEA, for those in care homes) or above their Minimum Income Guarantee (MIG, for those receiving care in other settings). Certain forms of income are disregarded, notably including income from employment but not income from pensions. In 2025, the PEA was £1.6k per annum and the baseline MIG was £13.7k (£9k) for a single person (member of a couple) above the age of 66, with certain adjustments for level of disability or household size. In other words, agents are required to contributed some portion of their (non-disregarded) income towards their care, regardless of their assets. More details are given in NHS (2023).

The asset test, the main focus of this paper, is summarised in Table 2. In words, an agent pays out of their chargeable assets until their chargeable assets hit a threshold of £23.25k, after which they pay a portion of their LTC costs until their chargeable assets reach £14.25k, after which the state (in the form of the local authority) covers everything, apart from what they can afford out of their income (i.e. what leaves their income above the PEA or MIG).

[2] Note that in the UK the different constituent countries (England, Scotland, Wales, Northern Ireland) have slightly different LTC funding policies, such as different capital limits in the means test for Wales and Scotland relative to England. Where the constituent countries have an aspect of policy in common, such as excluding the primary residence from the means test for support with LTC, I will refer to this as the UK policy, but in cases where the policies diverge I will be specific as to which constituent country's policy I am describing (generally England's).

Table 2: Means-tested support based on asset level

Chargeable asset level	Means-tested support
Above £23.25k (“upper capital limit”)	No means-tested support.
Between £14.25k and £23.25k	Full support, apart from paying what can be afforded out of income, and paying an extra “tariff income” of £1 per week for every £250 above the lower capital limit.
Below £14.25k (“lower capital limit”)	Full support, apart from paying what can be afforded out of income.

Notes: in a couple, each member is generally allocated an equal share of chargeable assets held in common. Figures from Department of Health and Social Care (2025).

A crucial feature of the asset test, noted in Table 1, is that the value of the primary residence is included in chargeable assets only if they are receiving care in a care home on a permanent basis and they do not have a spouse or dependant living in their primary residence. In other words, provided the agent or a close relative is staying in the home while the agent receives care, the value of the primary residence is disregarded. The criteria that a dependant or close relative would have to meet in order for this disregard to apply, as well as other details of the asset test, are set out in NHS (2023)[3].

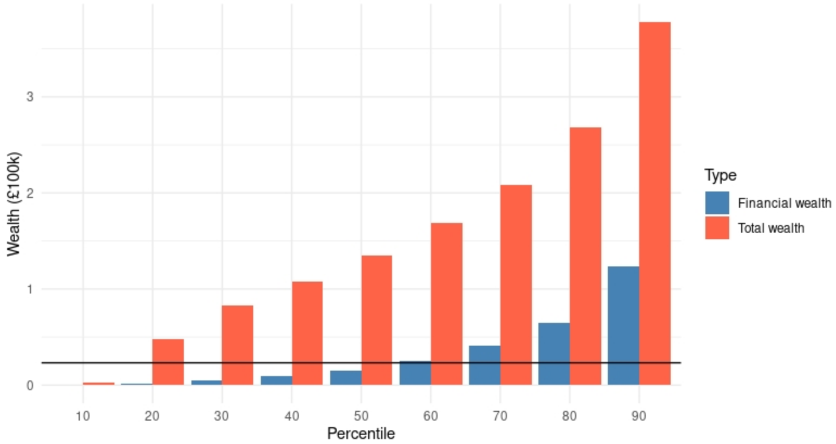
This creates an incentive for people to save more in housing wealth than in financial wealth: financial wealth does not enjoy the same protections as primary housing wealth so can be more easily decumulated.

To show how many people are affected by these considerations, Figure 3 below plots percentiles of the financial (i.e. non-housing) wealth and total wealth distributions for those aged between 70 and 75, taken from the ELSA. The horizontal black line represents the upper capital limit in the asset means test. The graph shows that only around 40% of individuals in this age range have financial wealth above the upper capital limit, and thus would (at least initially) receive no means-tested support with their long-term care costs. However, the 20th percentile of the total wealth distribution is above the upper capital limit, so at least 80% (to be exact, 83%) of individuals would receive no means tested support if there were no distinction between housing and financial wealth in the asset test.

The degree to which the homestead exemption distorts agents’ behaviour will obviously be conditioned by agents’ knowledge of the long-term care system: if agents are completely myopic about long-term care payment arrangements until they develop care

[3]Even if neither the agent nor the close relative are staying in the home, the agent can still defer selling the home to pay for care by applying for a Deferred Payment Agreement, essentially a home equity loan from the government which allows for the agent to pay for care out of their housing wealth without selling their home in their lifetime. The home is only sold after the agent dies to repay the loan (unless the agent or a third party has repaid the loan in the meantime.

Figure 3: Distribution of financial and total wealth, ages 70-75



Notes: wealth given at the individual level, with each member of a household being allocated equal share of household wealth. Horizontal black line represents upper capital limit of £23.25k. Monetary values in 2012 GBP. Data from ELSA (2008-2019).

needs then agents' moving decisions at younger ages will not be affected by the incentives of the long-term care system[4]. While there are not questions in ELSA that allow a direct examination of knowledge of the homestead exemption, there are some questions that let us understand agents' beliefs about the long-term care system more generally. Of those aged between 50 and 70, 46% say that they have thought about how to pay for their future care costs "a little" (37%) or "in great detail" (9%). 65% of people in this age range say that their own savings will be a source of funding for their future care needs, while 44% say that their local authority will be a source of funding. As such, while forward planning about long-term care costs is by no means universal, there is a large proportion of the population who look ahead to how to fund their social care costs and many of these plan to rely on local authority funding for at least some of their care.

2.3 Sensitivity to financial incentives to move

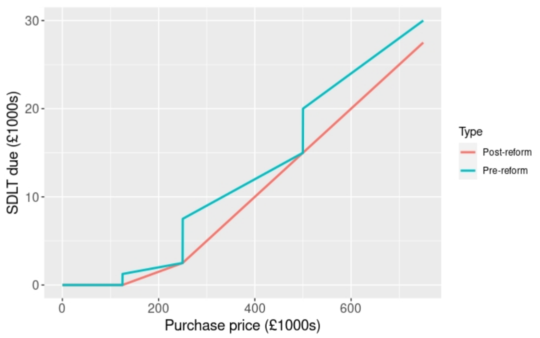
It is difficult to establish directly a causal link between LTC policy and behaviour because of the lack of variation in the policy over time. What I do in this section is establish that in general, older people's moving behaviour is sensitive to financial incentives to move, which suggests that reforms to the LTC systems which alter financial incentives to move could have an important effect on moving behaviour and therefore the housing market as a whole. If older people did not change their moving behaviour in response to financial incentives, then changes to the LTC system to encourage downsizing would likely have little impact on the housing market.

[4]Note, however, that even in this completely myopic case agents with care needs would not be forced to sell their home when care costs arise which would clearly impact the supply of housing and thus the housing decisions of younger people.

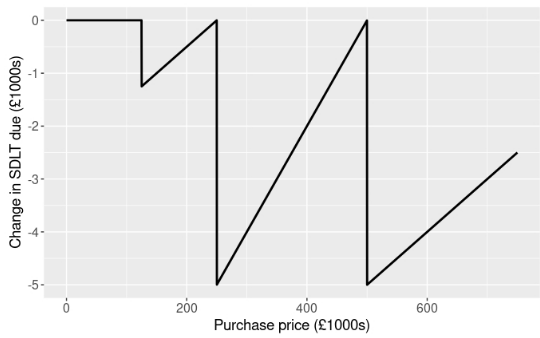
In particular, I focus on a reform to the Stamp Duty Land Tax (SDLT) in England. SDLT is a transaction tax which must be paid when property is purchased, with the tax levied proportional to the purchase price of the house, and with different rates being charged for property values above different thresholds (HMRC 2025). Notably, the SDLT schedule used to have significant discontinuities because of its "slab" structure: having a house price £1 above a relevant threshold would cause the higher rate to be levied on the entire house value. Previous papers (Best et al. 2018; McGee 2021) have exploited these discontinuities in the SDLT and have used RDDs to establish that older people do respond to changes in transaction costs for housing. In particular, McGee (2021) finds that an increase in transaction tax of £5000 at a discontinuity in the SDLT schedule is associated with a decrease in biennial moving rates of 2.85 percentage points, approximately a 50% reduction, for older people in the UK.

In this section I supplement these findings by exploiting a more recent reform to the SDLT in the UK - namely the abolition of the "slab" system and its associated discontinuities which occurred in December 2014. This was an overnight unanticipated change in SDLT rates (HMRC 2014). Figure 4 displays the pre- and post-reform stamp duty schedules.

Figure 4: SDLT reform December 2014



(a) SDLT burden by purchase price



(b) Change in SDLT burden

Notes: data from HMRC (2025)

As can be seen from the right-hand panel of Figure 4, people at different parts of the house price distribution will have received different reductions in the their transaction cost of trading a house. In particular, those whose house price used to be just above one of the SDLT thresholds (e.g. the threshold at £250k) will have found it suddenly easier to sell their house because prospective buyers will see their tax burden for completing the purchase go down significantly, whereas for those just below the threshold the change in incentive to sell is much smaller.

I exploit this variation in treatment to identify the effect of SDLT on moving behaviour. Using my UndSoc sample at the household level, but restricting the sample to the households where the head is over-50 to focus on the moving behaviour of older people, I estimate via OLS:

$$Move_{i,t} = \beta_1 Post_t + \beta_2 TS_{i,t-1} + \beta_3 Post_t \times TS_{i,t-1} + f(Hsval_{i,t-1}, \beta_{poly}) + X_{i,t}\beta_X + u_{i,t} \quad (1)$$

where $Move_{i,t}$ is a dummy for whether the agent moves house between periods $t-1$ and t and $TS_{i,t-1}$ ("Treatment Strength") is the change in SDLT payable on a house with the value of agent i's house in period $t-1$ due to the reform. Here, $f(Hsval_{i,t-1}, \beta)$ is a polynomial in house value in the previous period parameterized by β_{poly} and $X_{i,t}$ is a vector of other controls.

Here, the parameter β_3 captures the difference in moving rates by treatment strength in the post-period. If the difference in moving rates between less- and more-treated households increases in the post-period then this suggests that the treatment is inducing these households to move more. This identification argument relies on there being parallel trends in moving rates for less- and more-treated households, an assumption formally tested in Appendix A. Table 3 below shows the results of the estimation of Equation 1.

Table 3: Regression results

	$Move_{i,t}$
$Post_{i,t}$	-0.0021
	(0.0023)
$TS_{i,t-1}$	-0.0028***
	(0.0007)
$Post_{i,t} \times TS_{i,t-1}$	0.0023**
	(0.0007)
Num.Obs.	97 470
R2	0.083

Notes: households with household head aged over 50 only. Other right-hand-side regressors include a cubic in house value in previous period, a cubic in age of household head, marital status of household head, number of kids in household, number of rooms in house in previous period, whether renting in previous period, and household fixed effects. Standard errors clustered at household level. +p <0.1, * p <0.05, ** p <0.01, *** p <0.001

The coefficient on $Post_{i,t} \times TS_{i,t-1}$ is positive and significant, suggesting that the reduction in stamp duty rates did increase households' moving behaviour. In particular, an increase of 0.23 percentage points in the annual moving rate per £1k reduction in stamp duty burden translates to an estimated increase of 1.15 percentage points in the annual moving rate per £5k reduction in SDLT burden, an estimate comparable in magnitude to the 2.85pp reduction in biennial moving rates the over-50s from a £5k increase in SDLT burden found by McGee (2021).

Therefore, we have supplementary evidence that older people are indeed responsive to financial incentives to move. This points towards the possibility that other policies which create financial disincentives to move, such as the homestead exemption, could have an important effect on moving behaviour and thus on the housing market more broadly.

3 Model

3.1 Model overview

The decisionmaker in the model is the household. A household comprises of either a single person or a married couple. The household can change in size over time as household members die and kids are born and leave the household.

Time is discrete, with each period lasting 5 years. At the start of every period, productivity, health and utility shocks are realised. Then, each household makes a continuous consumption choice and a discrete housing choice over house size and whether to own or rent.

Multiple generations of households are alive in the model at the same time. There is a fixed stock of housing which is traded in each period, with the price being determined by aggregate demand. When households die, their wealth is passed on to one of the new households in the youngest generation as a bequest.

3.2 Resources

3.2.1 Liquid wealth

A household earns income y_t through the labour market and - post-retirement at age 65 - through a fixed state-provided pension. Their labour market income is a function of productivity shocks and demographics[5]. They pay taxes on their labour market income to fund government expenditures on pensions and the long-term care system.

Households save in a risk-free asset a_t, which accrues real interest R_t every period. As such, households' liquid wealth budget constraint will be:

$$a_{t+1} = (a_t + y_t - c_t - \chi_t - r_t + m_t)(1 + R) \tag{2}$$

where y_t is income net of income taxes, c_t is consumption, χ_t are long-term care costs, r_t is rent (if the household chooses to rent in the current period) and m_t are the net proceeds from any housing transactions that the household chooses to carry out in the current period.

[5]For more details on the income process, see Appendix B

3.2.2 Housing wealth

Agents also can hold wealth in housing. Every period, they choose whether to own or rent, and whether to live in a small, medium or big house. To keep the model tractable, I impose that agents cannot rent medium or big houses, so therefore they can only make one of four discrete housing choices every period: renting a small house, owning a small house, owning a medium house or owning a big house.

Let h_t represent the number of units of housing stock that an agent owns. Let p be the cost per unit of housing. Small houses consist of 1 unit of housing stock, medium houses consist of 1.5 units and big houses consist of 2 units, therefore (for instance) the price of buying a big house is fixed at double the price of buying a small house. The agent's housing wealth is therefore $p \times h_t$.

Households are able to borrow up to some fraction θ of their housing wealth, which represents their ability to take out mortgages to buy homes. Therefore, if an agent holds housing wealth ph_t in period t, the lower bound on a_{t+1} in Equation 2 is $-\theta ph_t$.

When households purchase a house, they have to pay SDLT on their purchase, with the tax revenue going to the government. They also suffer a fixed utility cost of moving house detailed below.

3.2.3 Long-term care costs

Every period, every household member is in one of three health states: Healthy, Sick or Dead. This implies that the household as a whole is in one of six health states, corresponding to the six combinations (without regard for the order) of the health states of the at most two members of the household[6]. There is no divorce in the model so couples only break up when one member dies.

If an individual is sick, they face long-term care costs χ_t. They can, however, receive government support with their long-term care costs. The rule for calculating government support (when the homestead exemption is in place) is as follows:

- Calculate the agent's share of eligible household assets[7]. Call this sum d_t,
- The agent faces a LTC cost equal to $\min(\chi_t, d_t - \kappa)$, where κ is the lower asset threshold in the asset means test. In other words, agents are forced to spend down their eligible assets up until the lower asset threshold.

[6]In other words, the household is in one of the following six health states: Both household members healthy, one healthy and one sick, one healthy and the other dead/absent, both sick, one sick and the other dead/absent, or both dead. In principle, a richer model could track who exactly in the household is sick, which may be relevant if the two household members have different costs of being sick or different probabilities of sick. However, I abstract away from these differences for the sake of simplifying the model.

[7]If the agent is in a couple, half of eligible assets are allocated to them. Otherwise, all of eligible assets are allocated to them.

In a world with a homestead exemption, then net housing wealth (housing net of mortgage debt) is not included as an eligible asset provided that the house is still being used as a home, e.g. if the agent still has a spouse living in the house. In this case, eligible assets consist of liquid wealth (excluding any mortgage debt)[8]. If there is no homestead exemption, or if the agent does not have a healthy spouse living in the house, then net housing wealth is included as an eligible asset.

For instance, if the asset test threshold were κ=£20k and an agent has a healthy spouse and their share of household assets is £25k of non-mortgage liquid assets and half of a £250k house with no mortgage, and faces a bill of £100k for their care, then they would pay a sum of £5k=£25k-κ. If there were no homestead exemption (or if they did not have a healthy spouse) they would face the full £100k cost.

If, after paying long-term care costs, a renting household's income is less than the consumption floor $\bar{c}$, they exhaust their income and the government tops up their consumption to level $\bar{c}$, capturing means-tested support through the benefit system

3.2.4 Demographics

Households change size over the life cycle as kids are born and leave the household and as household members die. The probability of a household member dying in a given period is determined by the process for health outlined above.

To model the presence of children as parsimoniously as possible, I assume there are two possible states with respect to children: either there is a child in the household or there is no child in the household. The probability of switching between these two states is a function only of age and whether the household is a single person or a couple, and hence the arrival and departure of children are exogenous shocks. These simplifying assumptions mean that I do not need to keep track of multiple children's ages as extra state variables or endogenise the decision to have children.

3.3 Preferences

Agents value consumption, housing services, and bequests. Let s_t be a vector of all state variables for a household at time t - s_t will include demographics, start-of-period liquid wealth and housing wealth, health and productivity. Let d_t be the household's discrete choice over the four housing options at t, which implies the level of housing services they enjoy h_t.

For every period when they are alive, a household's utility function is given by:

[8] I do not keep track of mortgage debt separately from non-mortgage liquid wealth, instead summarising both in state variable a_t. For the sake of the asset test, I assume that anyone with $a_t < 0$ has mortgage debt equal to a_t and 0 non-mortgage liquid wealth. Anyone with $a_t \geq 0$ has mortgage debt equal to 0 and non-mortgage liquid wealth equal to a_t. As such, agents cannot hold both positive balances of non-mortgage liquid wealth and positive mortgage debt at the beginning of any period.

$$u_a(c_t, d_t, s_t) = \frac{((\frac{c_t}{\xi_c(s_t)})^{\alpha}(\frac{h_t}{\xi_h(s_t)})^{1-\alpha})^{1-\lambda}}{1-\lambda} - \omega \times (d_t = rent) - \phi \times (move_t = 1) + \epsilon_t(d_t) \quad (3)$$

where $\xi_i(s_t)$ is an equivalence scale[9] for good i as a function of state variables s_t and $\epsilon_t(d_t)$ is a utility shock comprising of a temporary and persistent shock to utility which depends on the houshold's discrete choice, discussed in more detail below. In other words, households have CRRA preferences over a composite good of housing services and consumption. This CRRA preference function is adjusted by a fixed utility cost of being a renter (ω) and a fixed cost of moving ϕ and perturbed by utility shocks for each of the four discrete choices over housing.

When the household dies, the household's utility is given by:

$$u_d(beq_t) = \left(\frac{\gamma_1}{1-\gamma_1}\right)^{\lambda} \frac{(\left(\frac{\gamma_1}{1-\gamma_1}\right)\gamma_0 + beq_t)^{1-\lambda}}{1-\lambda} \quad (4)$$

i.e. they experience a warm glow from the level of bequests that they give (De Nardi 2004; Lockwood 2018). The parameter γ_0 controls the extent to which bequests are a luxury good and γ_1 controls the strength of the bequest motive. In particular, as set out by Lockwood (2018), in a one-period problem with perfect certainty where households are deciding how much to consume and how much to bequeath, households with these preferences would choose to bequeath a proportion γ_1 of their assets above the threshold of γ_0.

As such, the value function for a household in period t will be:

$$V_t(s_t) = max_{c,h}\{u_a(c_t, d_t, s_t) + \beta[(1-\delta_t)E(V_{t+1}(s_{t+1}|c_t, d_t, s_t)) + \delta_t u_d(beq_t|c_t, d_t, s_t)]\} \quad (5)$$

where $\delta_t(s_t)$ is the probability of dying in any period, as a function of state variables s_t.

3.3.1 Utility shocks for housing choices

Every period, households make a discrete choice over housing. These choices are determined both by the consumption and housing services benefits associated with this discrete choice and by the utility shock $\epsilon_t(d_t)$ associated with discrete choice d_t.

In this case, $\epsilon_t(d_t)$ is the sum of two distinct shocks - a temporary shock $\nu_t(d_t)$ and a persistent shock $\rho_t(d_t)$.

The temporary shock is a familiar *iid* Type 1 Extreme value preference shock with scale parameter σ_ν. Given this temporary shock, if the value associated with each discrete

[9] I set the equivalence scale to be the square root of household size, treating a child as equivalent to half a household member.

choice i is v_i (inclusive of the persistent shock associated with i), then the probability of discrete choice i being chosen by the household is given by $\frac{\exp(v_1/\sigma_\nu)}{\sum_i \exp(v_i/\sigma_\nu)}$ (Train 2003). The reason for including this shock in the model is to allow for some *iid* unobserved heterogeneity in preferences for particular housing choices, otherwise the model would not allow observationally equivalent households in the model to make different choices as they do in the data.

The persistent shock, $\rho_t(d_t)$, captures persistent heterogeneity in attachment to a specific house. Intuitively, some households have a strong preference for their current home in particular while others are indifferent. To model this, I assume that for some households, $\rho_t(d_t)$ takes a positive value $\bar{\rho}$ if they remain in their current house ($d_t = d_{t-1}$) and zero otherwise. For other households, $\rho_t(d_t) = 0$ regardless of the choice. Households with a positive $\rho_t(d_t)$ for staying in their current house are said to have a positive preference shock for their current house.

Importantly, this shock is persistent: if a household stays in the same house, its preference shock remains the same next period ($\rho_{t+1}(d) = \rho_t(d)$ for all d). If it moves, it faces a fixed probability of having a positive preference shock for its new house (in other words, households cannot tell in advance if they will like their new house/area). Consequently, households with a positive preference shock are less likely to move and tend to remain in their current home for multiple periods, in the same way that agents who like a particular house or area are more likely to stay and continue enjoying that house or area.

This feature of the model introduces persistent heterogeneity in housing preferences and ensures that the model does not underestimate the welfare costs of policies that incentivise moving, like repealing the homestead exemption.

3.4 The aggregate economy

3.4.1 Overlapping generations and the housing market

Multiple generations are alive at the same time within the model. In particular, households enter the model at age 30 and live to a maximum age of 90, so a maximum of 13 generations (at 5 year intervals) can be alive at the same time.

Different generations interact in two different ways: through bequests and through the housing market. Interaction through bequests is simple. When a household dies, their bequest (i.e. the sum of their liquid and housing wealth) is set aside. Each member of the new generation of households (i.e. those starting the model at age 30) draws without replacement from the set of bequests from the households which die at the start of the period, and takes this bequest as their initial condition for liquid wealth. As such, the descendents of homeowners are more likely to be homeowners themselves simply through mechanical intergenerational transmission of wealth.

As for the housing market, there is a fixed supply S_h of housing. The housing market clears at the price when the sum of households' demand for housing is equal to supply. As such, if e.g. older households have higher demand for housing because of the homestead exemption this will push up the price of housing for all households.

I assume that the price of renting is pinned down by a no arbitrage condition:

$$r = pR \tag{6}$$

where r is the per period cost of renting a house and R is the real interest rate. This is because in the absence of capital gains the value of a house as an asset is assumed to be equal to the annuitised sum of rent for the house.

3.4.2 The role of government

The government's expenditure is on pension payments to the over-65s, means-tested support with LTC costs, and benefit payments to those whose income is below the consumption floor. Their revenue comes from income tax payments levied on households of working age as well as SDLT receipts. The proportional income tax rate τ on working-age income is set at a level that would have balanced the budget in the previous period (and thus, in steady state, will balance the budget in the current period).

4 Estimation

4.1 Parameters estimated outside the model

To reduce computational burden I set a large number of parameters outside the model, using either assumed values from the literature or matching moments in data sources such as UndSoc, ELSA or the ONS Life Tables. The parameters that are set outside the model are summarised in Table 4 below, with further discussion given in Appendix B.

4.2 Parameters estimated inside the model

In total, I estimate seven parameters inside the model. These are parameters for which there are not well established values in previous literature and which cannot be easily set outside of the model. These parameters are summarised in Table 5 below.

Estimation of these internal parameters takes place by the Method of Simulated Moments. I construct the moments using data from Understanding Society (UndSoc) for 2008-2018.

In particular, I match three different types of moments:

- The proportions of households making each of the four discrete housing choices.

Table 4: External parameters

Parameter	Value	Source
Health state transition probabilities	-	ELSA, ONS (2025a)
Child state transition probabilities	-	UndSoc
LTC cost per period	£109.2k	Dilnot (2011)
Coefficient of CRRA	3	Author's choice
Discount factor over 5 years (β)	0.88	Author's choice
Income process	-	UndSoc
Real interest rate over 5 years	10%	Author's choice
Prob. of receiving persistent pref. shock for housing	0.25	Author's choice
Consumption floor	£38.8k	Author's choice
Supply of housing per household S_h	1.535	UndSoc
SDLT schedule	-	HMRC (2025)

Notes: see Appendix B for detail on how these values are chosen or estimated.

Table 5: Parameters estimated inside the model

Parameter	Description
α	Consumption share of composite good
ω	Utility penalty of renting
σ_ν	Scale of temporary pref. shock for housing choice
$\bar{\rho}$	Value of positive persistent pref. shock for current house
ϕ	Utility penalty of moving house
γ_0	Curvature of bequest motive
γ_1	Strength of bequest motive

- The proportion of households moving house in every period, both unconditionally and conditional on not moving the previous period.
- The 25th, 50th and 75th percentiles of the liquid wealth distribution.

I calculate the first two sets of moments from UndSoc and evaluate them for each five-year age bin between 35 and 85. I calculate the third set of moments from ELSA and evaluate them for each five-year age bin between 50 and 85.

In addition, I use UndSoc data to regress housing demand for homeowners on controls for age and household size as well as individual fixed effects, and treat the variance of the residuals from this regression as an additional moment to be matched.

In total, this gives 91 moments to be matched. I then find the parameter vector μ which solves:

$$\hat{\mu} = \text{argmin}(\hat{m}(\mu) - m)W(\hat{m}(\mu) - m)' \tag{7}$$

where $\hat{m}(\mu)$ is the vector of simulated moments at the parameter guess μ, m is the corresponding vector of empirical moments taken from the UndSoc data and W is a weighting matrix.

The simulated moments are calculated by drawing from the distribution of households aged between 28 and 32 in the UndSoc data and creating a household to start the model at age 30 with the same observable exogenous state variables, i.e. starting health, couple status, and child status[10] as the draw from the data. The household is then subject to exogenous shocks to their health, productivity and utility and make choices over consumption and housing over their life cycle, and I use these choices to construct the simulated moments outlined above. I set the weighting matrix W equal to the identity matrix.

4.2.1 Identification

Here I briefly sketch out how matching these different moments will help identify parameters of interest.

The consumption share of the composite good will be identified by the proportions of people demanding different house sizes. In particular, the less important is consumption

[10]Note that starting wealth at the beginning of the life is not taken from the data but is rather generated by the model, because inheritances are endogenous to the bequests of the people who died the previous period in the model. Also, I impose that everyone starts the model with a random draw from the stationary distribution of the productivity shock and that everyone starts the model without a positive persistent preference shock for their current house, as neither of these two shocks are directly observable in the data. Also, note that in order to start off the OLG model I must make some initial assumption about the state variables of older generations - therefore, for the first period, I populate all living generations in the model using the same method of drawing from the youngest age bin in the UndSoc data, before simulating the model for many periods to remove the influence of these arbitrary initial conditions

(hence more important is housing) in the composite good, the higher demand will be for bigger houses.

The disutility of renting will be identified by the proportion renting versus owning small houses. As an agent enjoys the same amount of housing services whether owning or renting a small house, the key difference in the incentives to take either of these two choices is the fixed disutility of renting.

The overall cost of moving will be identified by moving rates in the data, while the value of the positive persistent preference shock will be identified by moving rates conditional on not moving in the previous period. This is because agents who did not move in the previous period will be disproportionately likely to have experienced a positive preference shock for their current house, so the bigger the difference between the unconditional moving rate and the moving rate conditional on not moving the previous period, the more significant is the role of the persistent preference shock.

The strength of the bequest motive will be identified by the extent of liquid wealth holdings in old age, while the curvature of the bequest motive will be identified by matching the 25th, 50th and 75th percentiles of the liquid wealth distribution separately.

Finally, the scale of the Type 1 Extreme Value temporary preference shock will be identified by the variance in housing demand conditional on age, household size and household fixed effects. The bigger this variance in the data, the bigger the role played by unobserved temporary heterogeneity in preferences in the model.

4.3 Results

The results of the estimation are given in Table 6.

Some of the parameter estimates bear commenting upon. The share of consumption in the composite good is given as 0.690, suggesting that housing services constitute a relatively small proportion of the composite good. McGee (2021) finds that the consumption share of the composite good is 0.567, allowing a greater share for housing, though in his model there is house price risk so it is already less advantageous to hold housing, explaining why the underlying preference for housing would need to be higher to match moments on house choices by households

The parameter for the disutility of renting is slightly positive, so agents suffer a slight utility penalty from renting. Note that even without a penalty for renting in the model, certain features of the model might lead it to predict low levels of renting relative to the data. One is that the model does not have a great deal of income and wealth heterogeneity or any (regional) price heterogeneity for reasons of tractability, whereas in the data those on persistently low incomes or in very high price areas may never be able to save enough to buy a house so will be "trapped" as renters. The second is that, again for model tractability, there is no house price risk in the model, which makes owning relative to

Table 6: Estimation results

Parameter	Estimate
α - consumption share of comp. good	0.690
	(.)
ω - utility penalty of renting	0.125
	(.)
γ_0 - curvature of bequest motive	0.636
	(.)
γ_1 - strength of bequest motive	0.916
	(.)
σ_ν - scale of temporary pref. shock for housing choice	0.326
	(.)
$\bar{\rho}$ - value of positive persistent pref. shock for current house	0.283
	(.)
ϕ - utility penalty of moving house	0.688
	(.)

Notes: estimation via the Method of Simulated Moments. Standard errors to be calculated by bootstrap.

renting more attractive than it might be in the data. For these reasons, the low utility penalty of renting here would best be interpreted as a lower bound on the true value.

The bequest motive parameter estimates suggest a strong bequest motive but that bequests are a luxury. In particular, a household with these preferences, if given £Xk at the start of a five-year period and knowing that they will die with certainty at the end of the period, would bequeath 92% of their residual wealth after consuming £63.6k (£12.7k per year) - i.e. they would bequeath $0.92 \times (X - 63.6)$ if $X > 63.6$, and 0 otherwise. This is consistent with strong bequest motives estimated in the literature on consumption and saving at old ages (Lockwood 2018).

The final three parameter estimates are most easily interpreted altogether. If, in the absence of any cost of moving, the agent would be indifferent between their current housing situation and the other three possible housing choices (such that her probability of staying in the same house is 25% and her probability of moving is 75%), the introduction of a utility penalty of $\phi = 0.688$ for moving means that her probability of staying becomes 73% and her probability of moving becomes 27% - i.e. her probability of staying almost triples. If, on top of this, the agent has received a positive preference shock for her current house of size $\bar{\rho} = 0.283$, her probability of staying becomes 87% and her probability of moving becomes 13%[11].

[11] These figures are arrived at as follows. Suppose the agent is currently renting (housing choice 1), but is indifferent between this and any of the other housing choices 2, 3 or 4. In that case, the value she attaches to renting is v_1 which is the same as v_2, v_3 and v_4. Hence, the probability of continuing renting is $\frac{\exp(v_1/\sigma_\nu)}{\sum_i \exp(v_i/\sigma_\nu)} = 0.25$. If instead v_2, v_3 and v_4 become -0.688 each, and v_1 is still 0, then this probability

4.4 Model fit

Here I show model fit for each of the sets of moments under the estimated parameters.

Figure 5 shows how well the model fits the probability of renting over the life cycle.

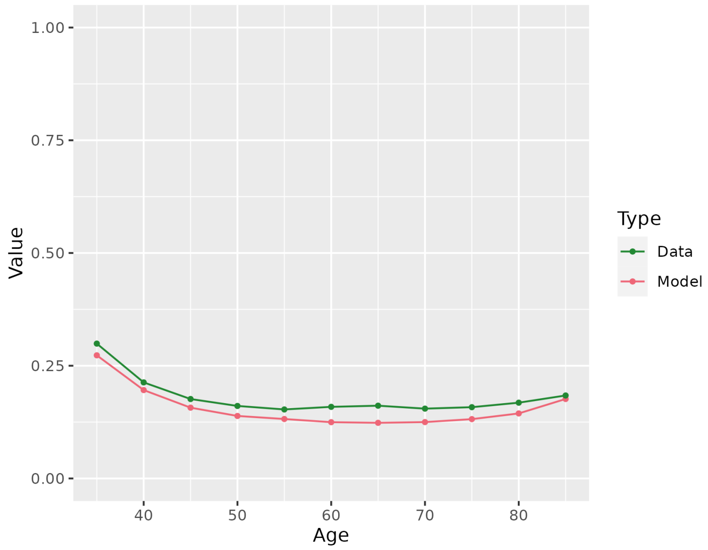


Figure 5: Model fit - proportion renting

The model fit here is encouraging. Both the mean level and the trajectory of renting over the life cycle are similar in the model and the data.

Figures 6, 7 and 8 show the proportion of people who own small houses, medium houses and big houses respectively in the model and the data.

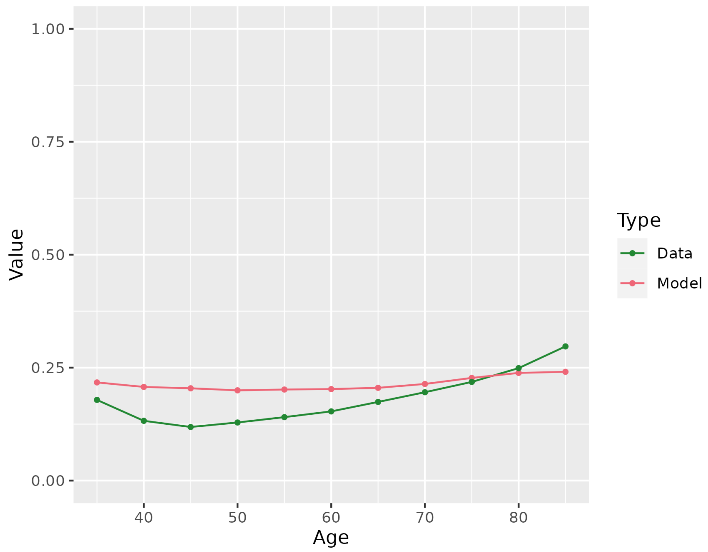


Figure 6: Model fit - proportion owning small houses

becomes 0.733, and if on top of this v_1 becomes 0.283, then this probability becomes 0.867.

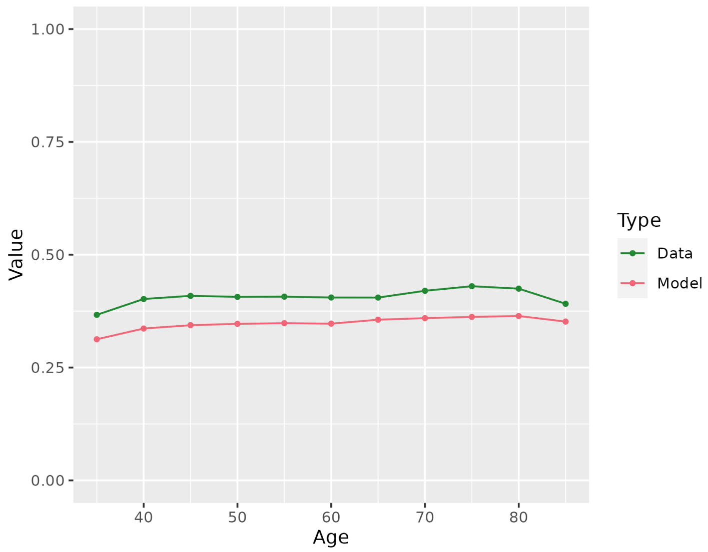


Figure 7: Model fit - proportion owning medium houses

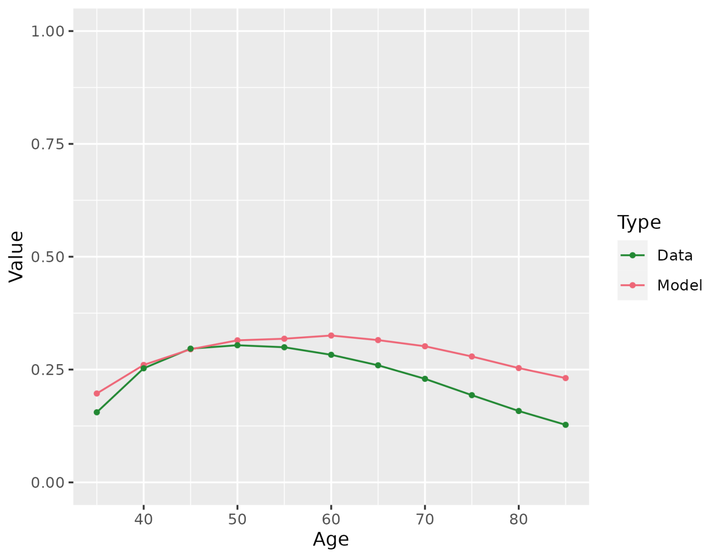
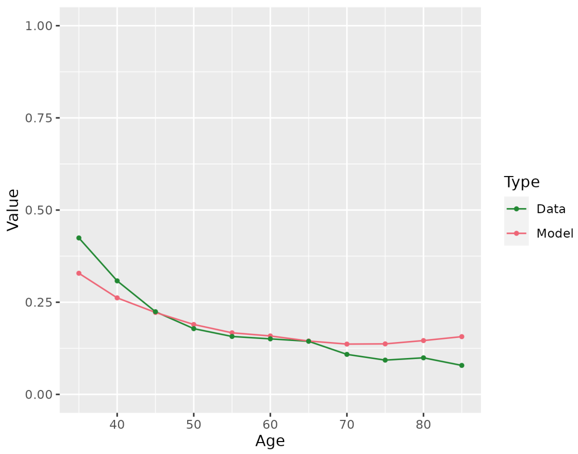


Figure 8: Model fit - proportion owning big houses

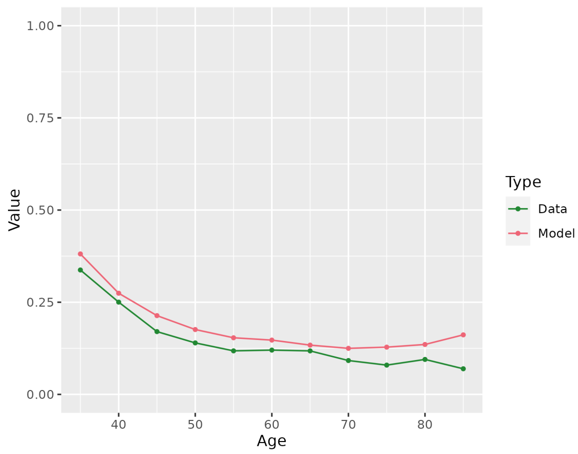
In each case, the fit is reasonably good. The mean proportion of people owning small houses is approximately correct though the model does not mirror the trajectory of small-house ownership that is observed over the life cycle. The model overstates the proportion of people buying big houses and understates the proportion buying medium houses, which suggests that the model is imposing returns to housing that are not diminishing enough.

Figure 9 shows the probability of moving in a given period in both the model and the data. The left-hand panel shows the unconditional probability and the right-hand panel shows the probability conditional on not moving the previous period.

Figure 9: Model fit - probability of moving



(a) Unconditional



(b) Conditional on not moving in $t-1$

Again, the model is able to broadly match data patterns when it comes to moving. An important caveat here is that agents in the model are only counted as moving if they change their house choice, for instance changing from renting to owning a small house, meaning that if an agent is renting in both $t-1$ amd t then they are not counted as moving. In contrast, in the data, agents can move house even when doing rent-rent transitions, which might explain why moving rates in the data are relatively high at young ages before declining.

Figures 10, 11 and 12 show the model and data results for the 25th, 50th and 75th percentiles of the wealth distribution respectively, with the unit on the vertical axis being £100k.

Here is where we observe the most significant failures of model fit. In particular, agents in the model often borrow against their housing late in life to keep their consumption high, whereas agents in the data (even those at the 25th percentile of the wealth distribution) tend to pay off their mortgage and not re-borrow as they get older. This suggests that an important extension of the model would be more careful consideration of the real-world constraints and disincentives people face when it comes to borrowing against their housing wealth late in life.

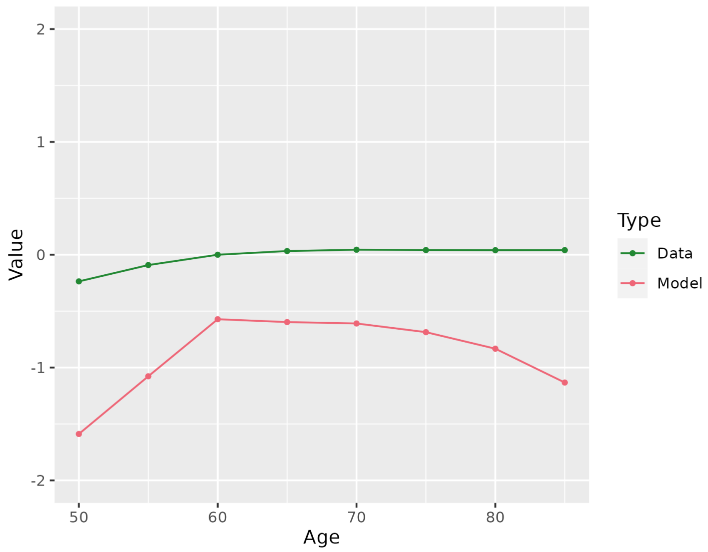


Figure 10: Model fit - 25th percentile of liquid wealth distribution

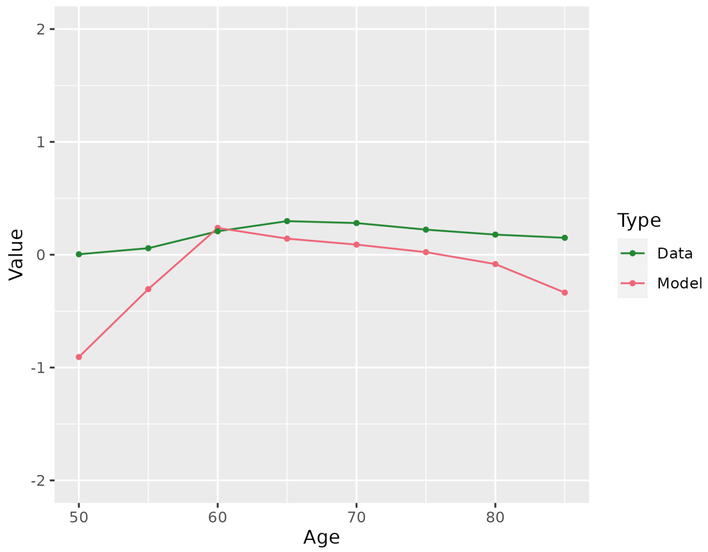


Figure 11: Model fit - 50th percentile of liquid wealth distribution

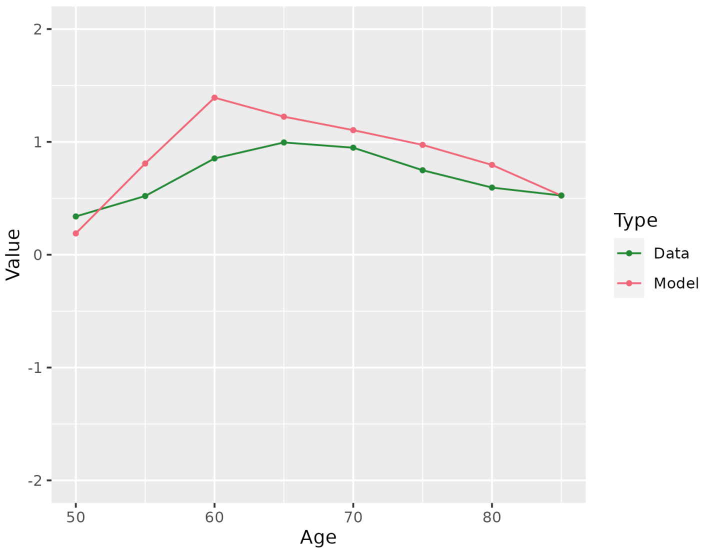


Figure 12: Model fit - 75th percentile of liquid wealth distribution

The final targeted moment is the variance of the residuals from a regression of housing demand on controls for age, household size and individual fixed effects in the data and the model. The data variance in this case is 0.10 and the model variance is 0.17, suggesting that the model is relying on more unobserved heterogeneity than exists in the data to generate these patterns of housing choices.

5 Welfare analysis and counterfactuals

The main counterfactual scenario of interest is the case where the homestead exemption is repealed and housing wealth is treated exactly like liquid wealth.

In this counterfactual scenario, aggregate demand for housing decreases because housing is less favoured as an investment asset. As a result, the equilibrium price must go down to clear the market. Indeed, in the new steady state the house price drops from £214k to £196k, an 8% drop.

As now the means test is less generous to households, government spending on long-term care costs goes down from £3.9k per person per period to £0.8k, and therefore the budget-balancing income tax that they need to levy goes down also from 24.8% to 23.3%[12].

[12] Recall that the income tax needs to fund pension payments and benefit payments as well which is why the change in the tax rate is not proportional to the change in government outlay on long-term care costs.

5.1 Changes to choices

Figure 13 plots house demand over the life cycle in the two steady states with their respective prices.

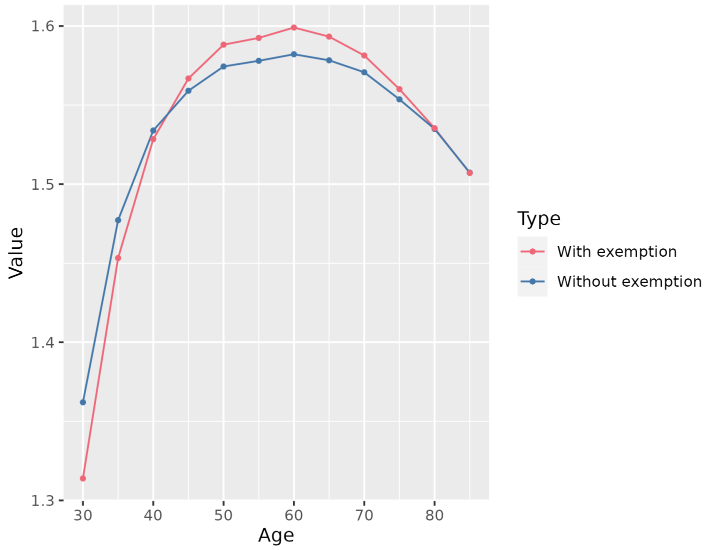


Figure 13: Counterfactual analysis - house demand

The key change is that in the new steady state (blue) agents have higher housing demand when at the beginning of life and lower housing demand in middle age. This is because in the original equilibrium house prices were high so agents took longer to save up enough to buy bigger houses, and because it was particularly advantageous to hold housing in middle age and early retirement at an age when the risk of long-term care costs was increasing but most households were still couple households and therefore were in a position to benefit from the homestead exemption[13]. The repeal of the homestead exemption removes these incentives and reduces house prices meaning that younger people can climb up the housing ladder faster.

Figure 14 shows equivalised consumption over the life cycle in the two steady states.

Due to the lower tax rate, consumption is higher in all periods of life, though particularly in early life. On average, equivalised consumption increases by 1.1%.

Figure 15 shows median (gross) housing wealth as a proportion of total wealth across the life cycle in both steady states.

In earlier parts of the life cycle, the median share of gross housing wealth is above 1, meaning that the household is in mortgage debt. In the new (blue) steady state the housing portfolio share is always lower because the extra incentive to hold one's wealth in

[13]Recall that the homestead exemption only applies if the person with care needs or their spouse is still living at home. At very old ages, most households are single households, and therefore there is no longer an incentive to hold large amounts of housing. This, combined with the higher price of housing and hence there being more equity to release by selling the house, explains why housing demand is approximately equal at old ages in the two cases.

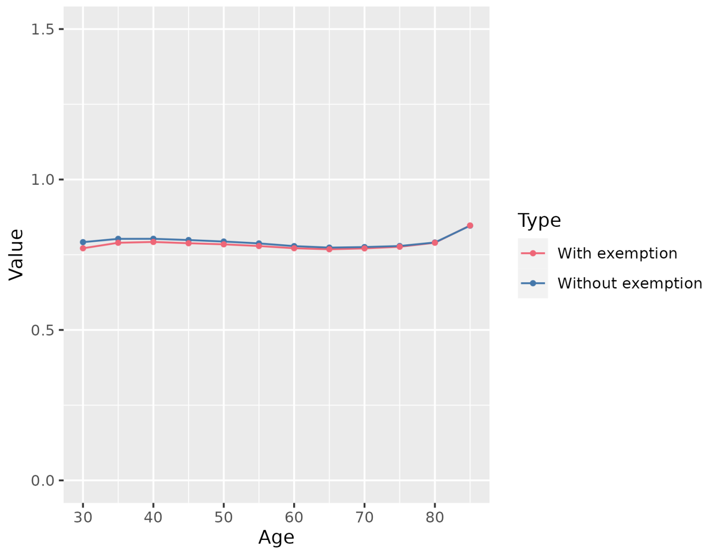


Figure 14: Counterfactual analysis: equivalised consumption

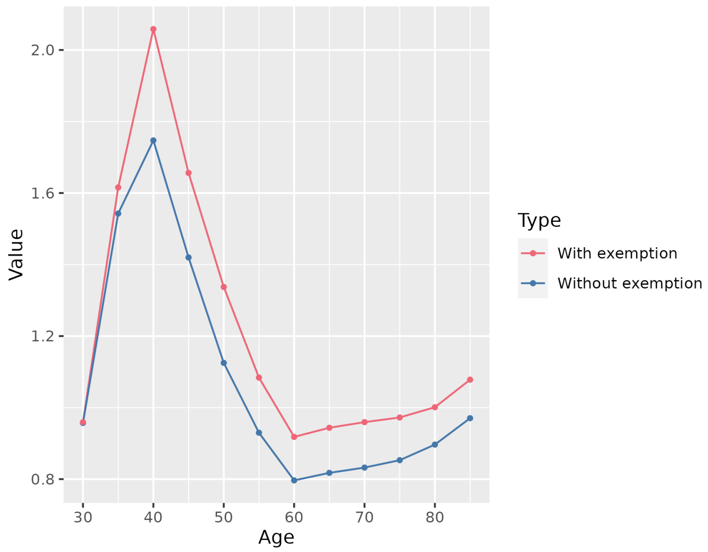


Figure 15: Counterfactual analysis: housing wealth as a fraction of total wealth

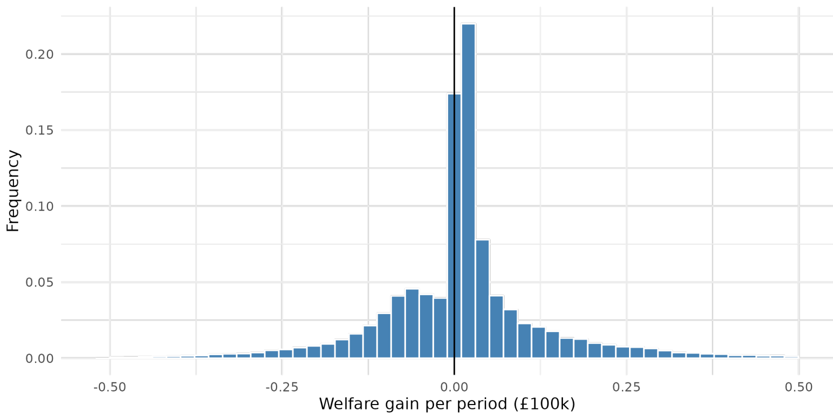
housing rather than liquid assets has been removed through the repeal of the homestead exemption.

5.2 Welfare

Overall, repealing the homestead exemption is welfare improving on average. In particular, I calculate for each household in the simulation their utility in the two steady states at a particular point in time and calculate how much extra consumption the household would need in the new steady state to be indifferent between their situation in the new steady state and the old steady state, and use this as a measure of the welfare loss (or gain, if negative) from the reform. The mean (median) welfare gain is £1.8k (£1.5k) every 5-year period, or £357 (£291) on an annual basis[14].

There is, however, notable heterogeneity in the gains from the reform. The fact that the median welfare gain is greater than the mean suggests that there is a long left tail to the welfare gains. The histogram of welfare gains plotted below shows this to be the case.

Figure 16: Histogram of welfare gains from reform



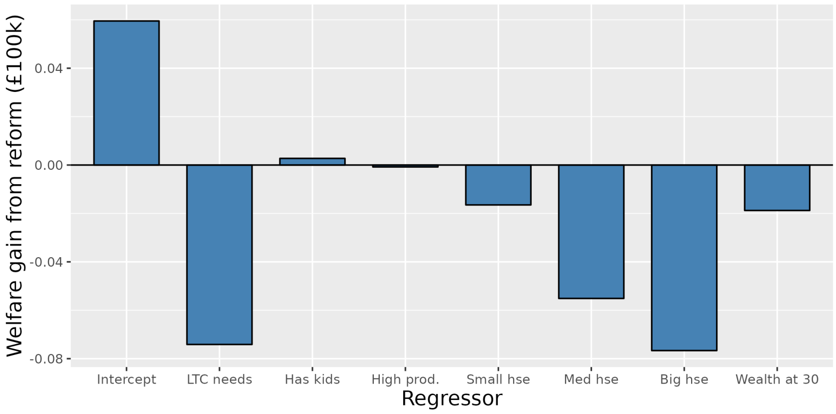
Notes: observations with welfare gain above or below £50k in absolute value (1.1% of cases) not shown.

To explore this heterogeneity in welfare gains, I regress the welfare gain measure I construct in the data on a set of regressors capturing the household's demographics in the old steady state in the particular period where I carry out my welfare comparisons. The results of this OLS regression is shown in Figure 17. Note that as with any OLS regression with an intercept, a negative value for the coefficient for a particular category

[14] In other words, if one was to evaluate utilities in both steady states at a particular moment in time, the average decrease in consumption required in the new steady state to make people indifferent between their current consumption bundle in the new steady state and their consumption bundle in the old steady state is £1.8k. As this compensation is paid to every household at every point in time in the age profile, this implies that on average households would have to be provided with £1.8k every period for all of their lives in order to be indifferent between the two steady states.

does not imply that the welfare gain for people in that category is negative; rather, it implies that the welfare gain for people in that category is lower than for people in the excluded category.

Figure 17: Heterogeneity of welfare gains regression



Unsurprisingly, the major losers from the reform are those who are suffering long-term care needs - their wealth is less protected post-reform, so they suffer a significant reduction in welfare. Those with kids gain very slightly more than those without due to increased consumption at young ages, while those in the high productivity state gain very slightly less than those in the low productivity state, because housing affordability is less of a benefit to those who could already afford housing.

Considering the coefficients on owning a small house, medium house and big house, the welfare gain from the reform decreases with the size of the house that a household owns. This is because those with big houses now have a larger proportion of their total wealth left unprotected from long-term care costs, so find the reform less beneficial than other households.

Finally, the coefficient on wealth at 30 - i.e. a measure of how much wealth the household starts their life cycle with, through inheritances - is -0.019. In other words, for every extra £100k that the agent started the model with in the pre-reform steady state, their gain from the reform decreases by £1.9k. This suggests that the benefits of the reform tend to accrue to those with less inherited wealth, other things being equal, though the gradient by inherited wealth is small in substantive terms. One reason for this is that the reduced house prices in the new steady state mean that receiving a bequest is less valuable insofar as it is easier to get on the housing ladder without bequests.

6 Conclusion

In this paper I have shown that the homestead exemption creates important distortions in the housing market by disincentivising older people from downsizing. As a result, house prices (and taxes) are higher and younger people find it difficult to climb the housing ladder, with the housing market being less likely to allocate houses to those who value them most and thus being less efficient. A budget-balanced reform to repeal the homestead exemption reduces prices by 8% and increases average welfare by £1.8k every 5-year period or by £357 per year. There is notable heterogeneity in the gains from the reform, with those with LTC needs, higher inherited wealth and bigger houses in the old steady state gaining relatively less or losing out.

For reasons of tractability the model of this paper simplifies some important features of the housing market. The most important simplification is the lack of house price risk which in other models would alter agents' preferences for holding housing and would expose them to risk of default in their mortgage payments. Moreover, the model of this paper abstracts away from other important sources of risks to households, such as employment risk, while it treats other shocks to the household's utility function (such as the arrival of children) as exogenous whereas more plausibly they would be treated as a decision of the household. Relaxing some of these strong assumptions to allow a more comprehensive treatment of the effects of the homestead exemption on household utility is a promising avenue for future work.

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Appendices

A Supplementary graphs and tables

A.1 UndSoc and ELSA descriptives

	UndSoc	ELSA
Age (of head)	54	67
Couple status	0.58	0.54
Household members	2.47	1.90
Rooms in house	4.71	4.69
Homeowner	0.62	0.78
N	207335	59373

Notes: data at household level. Statistics are means weighted by household-level weights. Data from 2009-2018 (Waves 1 to 9) of UndSoc and 2008-2019 (Waves 4 to 9) of ELSA.

A.2 Parallel trends regression

To test for parallel trends for the regression in Equation 1, I estimate the following regression for the pre-reform period only:

$$Move_{i,t} = \gamma_1 t + \gamma_2 TS_{i,t-1} + \gamma_3(t \times TS_{i,t-1}) + f(Hsval_{i,t-1}, \gamma_{poly}) + X_{i,t}\beta_X + u_{i,t} \quad (8)$$

In this case, the parameter γ_3 captures whether there are differential trends by treatment strength in the pre-reform period. The right hand side regressors are exactly the same as for the regression in Equation 1, detailed in the notes of Table 3.

The coefficient γ_3 is estimated to be 0.0007, with a standard error (clustered at the household level) of 0.0004, so the coefficient is not statistically significant even at the 10% level. From this, I conclude that there are parallel trends by treatment strength in the pre-reform period.

B Parameters set outside of the model

B.1 Health state and child state transitions

I calibrate health state transition probabilities as follows. I use data from ELSA from 2008-2019 to estimate transition rates on an individual basis between being healthy and having LTC needs, where agents are defined as having LTC needs if they are experiencing difficulties with at least two Activities of Daily Living, and are otherwise healthy. I also use ONS life tables (ONS 2025a) to find the probability of dying before one's next birthday at each age for UK adults. I then specify a simple model of health transitions where for each health state i (Healthy, Sick or Dead), the probability of transitioning to health state j at age t is given by $\frac{\exp(\alpha_{ij}+\gamma_{ij}\times age_t)}{\sum_k \exp(\alpha_{ik}+\gamma_{ik}\times age_t)}$. Obviously, death is an absorbing state, so this leaves 12 parameters to estimate[15]. I estimate these parameters by simulating agents who start healthy at age 30 in order to match the transition rates estimated from the data.

For the child state transition probabilities I simply calculate the probability of moving from having children in the household in the previous period to not having children, and vice versa, conditional on couple status of the household, for each 5-year age bin in the 2009-2019 UndSoc data, and use these as the probabilities for the model.

B.2 Preference parameters

I choose a coefficient of CRRA equal to 3, a value often assumed in the literature of saving of the elderly. The 5-year discount factor of 0.88 is derived from an assumed annual discount factor of 0.975. I set the probability of receiving a positive persistent preference shock for housing at 0.25 so that the event of agents developing a strong preference for a particular area is relatively rare.

B.3 Care costs

High-quality data on care costs is difficult to find for the UK. Even though ELSA has in more recent waves asked questions about LTC costs, it is a concern that there is likely to be a strong correlation between having high care costs and attriting from the sample.

For this reason, I use approximate measures of care costs from Dilnot (2011), which found that for an adult at age 65 the 20th percentile of future care costs was £0 but the 90th percentile was £100k (in 2009/10 GBP, thus £109.2k in 2012 GBP). By simulating my health transitions model set out above, I find that the agent at the 20th percentile of the distribution of periods spent with care needs after age 65 spends 0 periods with care needs and the agent at the 90th percentile spends 1 period with care needs. Therefore, I set the cost of one period's worth of support with care needs is £109.2k.

B.4 Income process

For the income process use my UndSoc sample to regress the log of household income on a cubic in age (of household head) and dummies for household health states for households below the age of 65, and I set this to be the baseline income for households below 65. For households above 65 (retirees), I set their income to be the mean income in retirement

[15] Namely, α_{ij} and β_{ij} for $i \in \{1, 2\}$ and $j \in \{1, 2, 3\}$.

for a household of their couple status, so the income profile over time by couple status is flat.

To capture income risk for those of working age, I assume that households are either in a low- or high-productivity state. If households are in a given productivity state their probability of transitioning to the other productivity state is 0.25. I assume that working age households in the high (low) productivity state have their log income increase (decrease) relative to baseline by μ, and set μ equal to 0.21 to match the variance of log household income conditional on a cubic in age, dummies for household health states and household fixed effects.

B.5 Other parameters

I set the consumption floor for households equal to £38.8k, which is the mean Universal Credit payment to households in receipt for 2022, in 2012 GBP (DWP 2025).

The SDLT rates are set equal to those as were in place between December 2014 and July 2020.

I set the real interest rate on a 5 year basis to correspond to a 2% annual real interest rate.

The supply of housing is set to be 1.535 per household. To arrive at this figure, I class houses with 2 or fewer rooms as small houses, houses with 3 rooms as medium houses and houses with 4 or more rooms as big houses. This division of house sizes into three categories is the one which matches most closely my assumption that medium houses provide 1.5 times as much housing services as small houses and big houses 2 times as much, given the distribution of rents by house size in the UK (ONS 2025b). I then calculate the mean housing demand in my UndSoc sample by this measure according to the house sizes demanded in the data and set housing supply equal to this.