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Declan French, Donal McKillop, and Tripti Sharma

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Housing equity withdrawal in later life: is a home more than asset-based welfare ?

Declan French*, Donal McKillop, Tripti Sharma

Queens Management School, Belfast, UK

Abstract

The UK government has encouraged the role of the home as a welfare asset especially among the elderly. Although UK pensioners express a desire to use their homes to support their retirement, few actually downsize or borrow against the value of their home using an equity release product. In this paper, we examine housing equity withdrawal behaviour by analysing the cost and benefits of housing equity withdrawal, variations in financial behaviours and attitudes to homeownership along with a consideration of regional effects. Using the UK Wealth and Assets Survey, we find that quantifying the likely amount released and transaction costs explains many of the patterns we observe in the data. Our empirical analysis helps explain the low level of housing equity withdrawal, regional variations in this activity and the choice between downsizing and equity release. We also show that releasing housing wealth would double household private pension wealth in the South of England and boost the regional economy by 30 per cent in Wales, the South East and South West. Current demand and supply developments will likely expand this market but the the trade-offs made at both household and societal level are not fully understood.

Keywords: equity release, downsizing, retirement

1. Introduction

The UK government has traditionally advocated homeownership as a means of providing lifetime security but the last decade has seen a paradigmatic shift to a housing-asset based welfare society (Smith, 2015). Government wishes to encourage pensioners to use their housing wealth to help pay for the cost of their social care, to release money to adapt their homes and to support their incomes (Lords, 2013). However, financial products to facilitate withdrawing housing equity are little used and government proposals to use house values to support care for the elderly have been fiercely resisted.

*Corresponding author. Queens Management School, Queen's University Belfast, Riddel Hall, 185 Stranmillis Road, Northern Ireland, UK BT9 5EE

Email address: declan.french@qub.ac.uk (Declan French)

Almost 80 per cent of people aged 65–74 in the UK own their own home and two-thirds of those over 65 years of age are homeowners without a mortgage (ONS, 2016). With less generous pensions, and more retirees with debt and a lack of retirement savings, many households' most valuable asset is now their home (Clarke et al., 2016). Many homeowners approaching retirement express an intention to either downsize or borrow against the value of their home using an equity release product but the reality is that only a small percentage ever do (Leach, 2012). Why more people do not use their home to supplement retirement income is not well understood (Disney et al., 2002).

In our study, we use data from the British Wealth and Assets Survey to analyse the cost and benefits of housing equity withdrawal, variations in financial behaviours and attitudes to homeownership along with a consideration of regional effects. We find that quantifying the likely amount released and transaction costs explains many of the patterns we observe in relation to housing equity withdrawal. Our empirical analysis helps explain the low level of housing equity withdrawal, regional variations in this activity and the choice between downsizing and equity release.

The paper proceeds as follows. The next section provides some background to the UK housing market and an overview of studies on why households decide to convert housing wealth to cash. In our empirical analysis, we quantify the potential costs and benefits of housing equity withdrawal and use forecasting to estimate the likely bequest. These measures along with data on household finances and financial attitudes are then used in a nested logit model with multiple imputation to explain when households decide to draw down their housing wealth. We conclude our investigation by quantifying the impact housing equity withdrawal could make on retiree wealth and on gross value added in each region if every homeowner eligible to withdraw housing equity proceeded to do so. The final section offers some conclusions and suggestions for further research.

2. Background and literature overview

In the UK as in most Western countries, a majority of personal savings for old age takes the form of housing wealth (Ong et al., 2013). Household property wealth is greater than

pension wealth in all regions of GB but the differential is greatest in London and the South of England (Belfield et al., 2015). Historically, the main channel for withdrawing equity from homes has been through downsizing. This can take different forms including a reduction in the number of rooms or the value of the dwelling or alternatively a change from ownership to rental tenure (Banks et al., 2010). There are few estimates of the number of elderly households downsizing in the UK. Banks et al. (2010) estimate that before the financial crisis 23 per cent of homeowners aged 50 and above moved over a ten-year period though not necessarily to downsize while the English Housing Survey indicates that there was a particularly large reduction in house moving post-financial crisis (EHS, 2010).[1].

For those wishing to remain in their own homes an alternative to downsizing is to borrow against home equity through the purchase of an equity release plan. Typically, the customer receives funds in a lump sum while retaining ownership of the home. The loan amount and accumulated interest are repaid through the sale of the property which takes place after the customer dies or moves to long-term care (Alai et al., 2014). The market for equity release products in the UK has been steadily growing in size but is still regarded as being small and under-developed constituting only half a per cent of the total mortgage market (O'Mahony and Overton, 2015).

2.1. Costs and benefits of housing equity withdrawal

The home has assumed a welfare asset role providing a buffer to be drawn on to insure against shocks to income, health and family wellbeing (Painter and Lee, 2009). Housing equity withdrawal is more likely in households with difficulties in smoothing consumption due to problem debt, few liquid assets and collateral constraints (Klyuev and Mills, 2007). Housing provides collateral for borrowing and therefore many households consider withdrawing equity as risky and a last resort solution to financial problems (Benito, 2009).

The decision to withdraw housing equity is conventionally treated in financial terms. From this point of view, both forms of housing equity withdrawal achieve the same economic

[1]Data for 2009–10 in Table FA2301 of the English Housing Survey indicates there were 10,056,000 households where the household reference person was aged 45 and over, while Table FA4141 indicates that 133,000 of these were resident for less than a year (1.3 per cent). A subset of these households will have downsized.

end of converting housing equity to cash. Angelini and Laferrère (2012) find empirically that the availability of equity release plans in a country has a negative effect on the likelihood to downsize and that equity release and downsizing therefore act as substitutes. Ong et al. (2013) also conclude channels of equity withdrawal are interchangeable based on comparisons between Britain and Australia housing markets.

The income released from downsizing depends on conditions in the housing market including the level of house prices and Beach (2016) calculates that downsizing by one bedroom would release the highest amount in London (£71,262) and the lowest amount in Wales (£24,237).[2] Similarly, the income released through an equity release scheme depends on the quality and location of the home but also on the age of the borrower with the percentage of house value released rising with age (ERC, 2017a).

Transaction costs are a deterrent to housing equity withdrawal. Sass et al. (2017) highlights transaction costs including costs of commissions, taxes, moving and fixing up a new home as a major inhibitor to downsizing for homeowners. Also, transaction costs in the form of initial set-up costs and ongoing interest rate charges have been identified as inhibiting uptake of equity release products (Nakajima and Telyukova, 2017) and the choice between alternative channels of withdrawing equity are principally guided by comparative transaction costs in some authors' opinions (Disney, 2009).

2.2. Tastes and preferences

Both forms of housing equity withdrawal are more common in London and the South-East (Beach, 2016; Key Retirement, 2017). If transaction costs are moderate then these spatial patterns may simply be due to higher house values in these areas.

But attitudinal and cultural differences within countries have been demonstrated to influence household financial decisions (Badarinza et al., 2016). Regional differences in financial confidence and knowledge (Bucher-Koenen and Lusardi, 2011) and attitudes to risk (Clark et al., 2009) have been found to shape attitudes to pension saving and retirement

[2]The figures show the average equity released for a one-bedroom change. The amount released would be double if the person downsized by two bedrooms.

planning. Guiso and Sodini (2013) find that trust in formal financial institutions and systems differs across countries and regions, and low levels of trust reduce household participation in markets. Leyshon et al. (2004) argue that financial ecologies emerge over time with areas such as London and the South of England considered as connected and typified by a diverse and sophisticated financial infrastructure leading to customers who are more financially knowledgeable; more confident in dealing with financial products and financial institutions; have better access to credit; and are more active in searching out financial opportunities. The divergence between connected and peripheral areas is accentuated in periods of financial crisis due to higher closure rates of financial institutions in less connected areas (Zhao and Jones-Evans, 2016; Henry et al., 2017).

The bequest motive has often been cited as an important impediment to drawing down housing wealth as homeowners are reluctant to consume their children's inheritance (Toussaint and Elsinga, 2009). The desire to bequest has been identified as a factor both in reducing the incidence of downsizing (Banks et al., 2010) and in restricting the uptake of equity release plans (Sass et al., 2017). However, some studies have suggested that the desire to bequest may actually be facilitated through housing equity withdrawal. Equity release plans, for example, are used in different ways by different income groups, with those on high incomes using them to make early bequests and large one-off purchases (Overton, 2010).

Owning a home provides a range of positive feelings from independence to security and control (Saunders, 1990). Emotional attachments to the home are particularly salient among the elderly where dwellings and physical possessions are so interlinked with personal histories (Johnson and Bibbo, 2014). Releasing equity *in situ* is then more attractive than setting up a new home in a smaller dwelling but equity release also threatens a homeowner's sense of financial security and generates negative feelings around indebtedness, loss of ownership and a failure to meet normative expectations (Fox O'Mahony and Overton, 2015a,b).

3. Data and Methods

3.1. Data

The data used in this study comes from waves one to four of the Wealth and Assets Survey (WAS) for Great Britain. This is a longitudinal panel study of private households and is designed to be nationally representative. Wave one commenced in July 2006 with fieldwork spread over the following two years and achieved a sample of 30,511 households. Interviews for subsequent waves were then conducted at two-yearly intervals and all interviews for wave four were completed by July 2014. The survey gathers data on the economic well-being of households including the level of assets, savings, and debt; saving for retirement; how wealth is distributed among households or individuals; and factors that affect financial planning. Uniquely, a module on equity release schemes is also included.

3.2. Motivating the analysis

To motivate our analysis of the role of housing assets in sustaining livelihoods in retirement, we first examine pre-retirement saving in the first wave of the survey (figure 1). We see that in all GB regions, property wealth and pension wealth were the main household assets with the more liquid financial and physical assets typically constituting only around 13 per cent of total household wealth. In particular, property wealth was greater than pension wealth in all parts of GB. In London, the South East, and South West, property wealth was around 80 per cent larger than pension wealth, whereas property wealth values were over double the value of private pensions in Wales. The regional variation in property assets was not reflected in regional levels of perceived retirement income adequacy. Consistently across the country, over one-third of all pre-retirees were not confident that their retirement incomes would provide them with an adequate standard of living. Despite the fact that property wealth in London and the South East was almost twice as large as in the North East, North West, Wales, and Scotland, the percentage of households who felt their retirement income would be inadequate was almost the same.

But it is not the case that households disregard housing assets in retirement planning. Pre-retirees in this survey were also asked their expected sources of retirement income (figure

2). The percentage of pre-retirement households reporting that they would downsize (45 per cent) or borrow against the value of their home (16 per cent) was generally very high overall indicating that a large number of pre-retirement households in Britain regard their home as a financial asset to support their welfare in old age. Higher proportions in the North East (77 per cent), Yorkshire and the Humber (51 per cent), West Midlands (43 per cent) and Scotland (46 per cent) expected to downsize than in London (40 per cent). Also, the proportions expecting to borrow against the value of their home were among the lowest in regions with the highest median property wealth – London (14 per cent) and the South East (14 per cent).

However, in practice very few people use their homes in this way. In figure 3, we examine the proportions of retired heads of household in wave one who state they have ever used equity release. We see that the highest proportions actually taking out equity release plans are in the East, London, and the South East, confirming the North–South differences reported elsewhere (Key Retirement, 2017). Also, the actual levels of equity release are very low compared to what we would expect from the stated intentions of pre-retirement households in the previous figure. In the next subsection, we aim to understand these patterns.

3.3. Theoretical framework and model specification

In our main analysis, we use a nested logit model to understand the decision to withdraw housing equity and the form of housing equity withdrawal (HEW) used.

Each head of household labelled i chooses from the following set of alternatives: she can decide to not use HEW ($NoHEW$); she can decide to informally withdraw housing equity by *Downsizing*; or she can decide to formally withdraw housing equity by purchasing an *Equity Release* product. These choices are partitioned into two nests where $B_1 = \{NoHEW\}$ and $B_2 = \{Downsizing, EquityRelease\}$. The utility that she obtains from choice j can then be decomposed as

$$U_{ij} = W_{ik} + Y_{ij} + \epsilon_{ij} \tag{1}$$

for $j \in B_k$ and $k \in \{1, 2\}$, where

- W_{ik} depends only on individual-specific variables that describe the choice of nest k.
- Y_{ij} depends only on variables that describe the choice of alternative j. These variables are alternative-specific for each individual.

P_{ij}, the probability of choosing alternative j, is the product of P_{iB_k}, the probability of choosing nest k, and $P_{ij|B_k}$, the conditional probability of choosing alternative j given that nest k has been chosen. The alternative-specific variables also enter as explanatory variables in the choice of nest through the quantity I_{ik}, known as the *inclusive value* (Train, 2009). Letting $W_{ik} = w_{ik}\gamma$ and $Y_{ij} = x_{ij}\beta$, we have

$$P_{ij} = P_{iB_k} \times P_{ij|B_k} = \frac{e^{w_{ik}\gamma+\lambda_k I_{ik}}}{\sum_{\imath=1}^{K} e^{w_{i\imath}\gamma+\lambda_\imath I_{i\imath}}} \times \frac{e^{x_{ij}\beta/\lambda_k}}{\sum_{\jmath\in B_k} e^{x_{i\jmath}\beta/\lambda_k}} \text{where } I_{ik} = ln \sum_{\jmath\in B_k} e^{x_{i\jmath}\beta/\lambda_k} \tag{2}$$

The set w_{ik} comprises indicators of financial sophistication, behaviours, attitudes and hardship as well as measures of wealth and assets. The different methods of HEW are distinguished by the amount the household can release by each method and the cost the household faces for using each method. The set x_{ij} then comprises estimates of the amount and cost associated with downsizing and equity release for each household.

3.4. Defining downsizing and equity release

We define our *downsizing* variable as homeowners who move to a lower value house between consecutive waves. Homeowners are those owning their address outright, or buying it with the help of a mortgage, or paying part rent and part mortgage. Those moving address from one wave to the next are identified in the survey but only those households whose new home has a lower value than their previous home or who move to rental accommodation are regarded as downsizing.

Those raising money through *equity release* in waves two to four are identified from a response of 'yes' to: 'It is possible to raise money for retirement based on the value of your home through an arrangement known as equity release. Have you or your partner raised any income or capital from the value of your current home?'.

3.5. Individual-specific variables

Our first set of individual-specific explanatory variables describe the financial situation of the household. The *debt-to-income* ratio is the ratio of all household financial liabilities to household income including arrears on consumer credit and household bills as well as non-mortgage borrowing. The *debt burden* variable indicates whether the household considers the repayments and interest on credit, loans, and arrears to be a financial burden. The *loan-to-value* is the ratio of the value of all mortgages to the sum of all property values . *No money left over* indicates whether the household hardly ever or never had money left over at the end of the week or month in the previous year. We include a number of measures of household wealth : the value of contents of the main residence and any other property of a household (*physical wealth*), the value of formal and informal financial assets net of any financial liabilities (*net financial wealth*), and the value of all pensions that are not state basic retirement or state earnings related (*pension wealth*). We incorporate house value and regional house price inflation by constructing a bequest variable. The amount available to bequeath will be the value of the house at the year of death.[3] Year of death was calculated using expectation of life by age, gender and country from 2007–09 life tables (ONS, 2017). The longer expectation of life was taken when the homeowners were a couple. Projected house value at this time was estimated using forecasts of regional house inflation and the forecasting methodology is explained in detail in Appendix 1. The bequest amount at time of death for each choice is then discounted to the present using a discount rate of 7.65 per cent, following the methodology outlined in Bracke et al. (2016).[4]

Our second set of explanatory variables describe the financial characteristics of the head of household. We include indicator variables to capture whether the head of household agrees

[3]The implicit assumption is that there is nothing to bequeath if the homeowner withdraws housing equity. This is plausible if the homeowner downsizes by renting or if the amount owed on an equity release product is greater than or equal the house value at time of death.

[4]Bracke et al. (2016) find that housing has implied discount rates with a declining time schedule. For the 2004-2008 Q3 period, gross discount rates were between 2.5 per cent and 6 per cent for terms less than 25 years. Taking the middle of this range and factoring in nominal rental growth of 3.4 per cent using actual rents for housing (series D7CE) from the UK Office of National Statistics for Q2 2007 to Q2 2008 we get a net discount rate of 7.65 per cent. We use nominal rental growth as house prices are inflated in nominal terms.

with a number of statements on planning for the future: *Buy things when can't afford*, *Buy things on credit* and *More of a saver than a spender*. We include an indicator variable *Poor mathematical skills* for whether the head of household self-rates their mathematical skills for daily life as poor. *Trust financial institutions* is an indicator variable for whether the head of household trusts banks, building societies, or insurance companies for advice about saving for retirement.

Our final set of explanatory variables are household demographic variables as controls plausibly associated with HEW. In addition, we test the ability of our model to capture all regional variations in HEW using dummy variables for government office region. All explanatory variables are taken from wave one data.

3.6. Alternative-specific variables

We create two alternative-specific variables for choosing between no HEW and downsizing or equity release: (a) potential amount raised by the choice and (b) cost of the choice.

(a) *Amount*: If the household wishes to withdraw housing equity by downsizing to a smaller home then it will gain the difference between the value of its current home and a smaller suitable home. Champion (2005) finds that three-quarters of retired people who change address find a home within 50km of their previous address. The transition to retirement may involve longer-distance moves, but even among those aged 55–64 only 7.4 per cent move over 200km.[5] Also, Leach (2012) found that few couples aged between 65 and 75 move to properties with fewer than three bedrooms due to the need to accommodate visiting relatives and the need to have some independence from each other. The amount potentially released by downsizing is then the maximum of the difference between the value of their current home and the price of a three-bedroomed house at the fifth percentile in their government office region of residence and zero. All households whose potential gain from downsizing is zero are excluded from the sample.

[5]Similarly, Banks et al. (2012) find that 80% of homeowners over 50 years of age who move stay within their region of residence and Leach (2012) report that those who downsized tended to move to a smaller property within the same area.

If the household wishes to withdraw housing equity through an equity release product then the potential amount drawn down will be a proportion of their house value and this proportion will depend on the homeowner's age. Depending on the age of the youngest homeowner, LTV can typically vary from 20.5 per cent at age 55 to 52 per cent at age 90 (TFC, 2017).[6] The amount potentially released by equity release is then the proportion of the house value determined by the age of the youngest homeowner. As low value properties are ineligible for these plans, the amount potentially released by equity release was set to zero for houses with values less than the current threshold of £70,000 discounted to 2008 using the UK Consumer Prices Index (CPIH). All households in such low value properties were excluded from the sample.

(b) *Cost*: The major upfront costs in downsizing include stamp duty on buying the new home, mortgage lender valuation fee, surveyor fee, legal fees, fee for electronically transferring mortgage money from the lender to the solicitor, estate agent fee for selling existing property, and removal costs. The stamp duty payable on a three-bedroomed house at the fifth percentile in their current government office region of residence is calculated from rates pertaining in 2008–09 (HMRC, 2017). The estate agent's fee was calculated at 3 per cent of house value plus 20 per cent VAT. All other costs were calculated based on 2017 costs estimated by the Money Advice Service, which were then discounted to 2008 using CPIH (MAS, 2017).

Costs in setting up an equity release scheme include administration fees, solicitor fees, and surveyor fees and are typically in the range of £2,000 to £3,000 in total depending on the amount released and the plan being arranged (ERC, 2017b). A cost of £3,000 discounted to 2008 using CPIH was assumed to apply to all households.

In the event of not withdrawing housing equity, the potential amount raised and the potential cost are obviously zero.

[6]The relationship with age given by TFC Homeloans, an ERS broker, was validated by cross-referencing with equity release calculators provided by two established providers: Hodge Lifetime (available at `www.hodgelifetime.co.uk/equity_release_calculators`) and Aviva (available at `www.aviva.co.uk/equity-release/calculator`).

4. Descriptive statistics

In our analysis, we focus on the subsample of homeowners aged over 55 years either retired in wave one or retiring in subsequent waves.[7]

Descriptive statistics are provided in table 1 for the subsamples of households who downsize or take out equity release plans and for the entire sample. It can be seen that these subsamples are generally distinct from the overall population in similar ways. Households who proceed to withdraw housing equity by downsizing or equity release in waves two to four are generally in worse financial circumstances than the sample as a whole in wave one with more debts and less wealth. They are also more impulsive and have slightly less trust in financial institutions than the overall sample whereas there is no clear difference in mathematical skills.

The low levels of HEW in our sample are striking. Only 137 households downsize and only 129 households use equity release plans out of a sample of 8,136 over the six years covered by waves two to four. To an extent, this is driven by the high rates of attrition over time in our sample, and rates would be higher with more complete data (see next section). The potential *amount* households could withdraw by downsizing is greater than by using an equity release plan (£147,400 vs £89,400) although the *cost* is generally higher (£11,400 vs £2,500).

5. Empirical results

5.1. Imputation

Attrition is an issue in the WAS just as it is in all longitudinal surveys. Of the 8,136 households in our dataset, only 6,066 are interviewed again in wave two while 3,695 are interviewed in all waves. While all our explanatory variables are taken from wave one, our downsizing and equity release dependent variables are formed from responses to questions in subsequent waves. Multiple imputation (MI) was used to account for missing data in these

[7] A home-owner is required to be aged 55 and over to qualify for the most common equity release product: the Lifetime Mortgage.

categorical variables under the assumption that the data are missing at random conditional on observed data. In MI, multiple datasets are generated with imputed values using a sequence of univariate models. Parameter estimates are then combined across these datasets with standard errors adjusted for variability due to missing data (Schafer, 1997). Multiple imputation suffers from less parameter estimate bias, provides superior statistical power and takes better account of missing data sampling variability than case-wise deletion or alternative missing data approaches (Janssen et al., 2010). In order to yield sufficient statistical power, 30 imputations were carried out.

5.2. Modelling housing equity withdrawal

The results of our nested logit regression analysis are presented in table 2. From the results in column 1, we see that economic reasons explain almost all of the motivation to withdraw housing equity.

Households in straitened financial circumstances are more inclined to resort to drawing down their housing wealth. Higher levels of unsecured debt-to-income make it more likely that households will liquidate housing assets and this effect is even greater when debt is considered a financial burden. The positive coefficient on households with no money left over at the end of their budgeting period also adds to the impression that HEW is driven by necessity.

Differences in impulsivity across households also help to explain HEW behaviour. We see that heads of households who are more present-biased are more likely to withdraw housing equity thus reducing their reserves for social care expenditure in later life and any financial buffer against negative economic shocks. The coefficient on buying things on credit is positively signed, while being more of a saver than a spender is negatively signed.

Coefficient estimates for the alternative-specific variables at the foot of the table explain the choice of the form of HEW – downsizing or equity release. The positive coefficient on the amount raised by HEW indicates that households will choose the method which allows them to release the most housing equity. Downsizing will therefore be more common for households whose house value is high relative to regional house values while equity release

will be more common for older homeowners who are permitted to release a higher percentage of their house value. The negative coefficient on cost indicates that households are deterred by the relative expense of the particular form of HEW. Downsizing costs vary according to the values of the house being sold and the house being bought, whereas there is little variation in the costs of setting up an equity release plan.

As seen in equation [2], the alternative-specific variables, amount and cost, also help explain the choice of HEW through the inclusive value. Regions with high house values will have high levels of housing equity withdrawal as households in these areas can release a greater amount of equity. Also, market developments which allow more housing equity to be withdrawn or which reduce costs would encourage more households to use their home in this way.

Although data limitations preclude a more comprehensive discussion of the role of tastes and preferences in relation to withdrawing housing equity, we can make a few observations which are consistent with inferences from figure 2 indicating these considerations are of relatively minor importance. The negative sign on the bequest variable indicates that, *ceteris paribus*, homeowners in regions with high house price inflation will have lower levels of HEW as liquidating property wealth reduces the amount available to bequeath but the coefficient estimate on the bequest variable is statistically insignificant[8]. We include a constant to capture the disutility of HEW unaccounted for by the set of explanatory variables. In the case of downsizing, this disutility includes the emotional attachment to homes and neighbourhoods, the nuisance of moving house, and the loss of social esteem which may accompany moving to a smaller property. In the case of equity release, this disutility includes the stigma of no longer being a homeowner and the negative image of equity release. The coefficient estimate given in column 1 indicates that this constant is signed negatively as expected but once again is not statistically significant.

[8]Regarding a house as just another asset, an increase on its rate of return will have a substitution effect and an income effect (Deaton, 1992). The substitution effect will make consumption of housing equity more attractive in the future to the homeowners' heirs, reducing housing equity withdrawal now, while the income effect will mean less housing equity needs to be preserved to satisfy a given amount of future consumption by the heirs encouraging housing equity withdrawal now. It is not clear theoretically which effect should dominate.

Once we account for the economic costs and benefits of HEW, financial hardship and variations in impulsivity at household level, spatial differences in housing equity behaviour largely disappear. In our second set of estimates, we include an indicator variable for all regions outside of London and the South East to test whether we have accounted for all geographical variation (column 2). Coefficient estimates for the household-specific variables are largely unchanged and the estimate for the dummy variable is statistically insignificant. In column 3, dummies are included for all regions where London is the baseline reference region. Coefficient estimates are similar to the previous models and none of the regional dummies are statistically significant. A joint test for the exclusion of all regional dummies was accepted for each of the 30 imputations. There therefore appears to be no evidence for effects on HEW behaviour due to the uneven provision of banking services ; an effect of different regional financial ecologies or regional variations in other household financial characteristics not captured in our data such as knowledge, risk aversion or money management skills. Our conclusion therefore is that the model in (1) explains all regional variation.

5.3. Housing equity withdrawal, inadequate pensions and regional economies

In this last subsection, we consider the impact HEW could have on retiree wealth and to regional economies. Estimates are given in table 3 of the potential benefits retired households could gain from downsizing or equity release. If we assume as before that retired households can move to a three-bedroomed property with a value at the fifth percentile for their region, then we can compute the percentage of households that can avail of downsizing (column 3). Median values for the amount released under this assumption and the impact this would have on households' wealth are given in columns 4 and 5. There is a large variation in the median amount released across regions with the amount for the South East almost double that in Scotland or the North East. A similar pattern emerges even when we scale these amounts by pension wealth. The amount released by downsizing is as large as the household private pension pot in the South, while only half as large in the North East and Scotland. The calculations are then repeated for equity release resulting in similar conclusions (columns 7–9). Equity release will make most difference to households in the South and London

where the amount released is almost as large as the private pension pot, and the least difference to households in Scotland and the North East (column 9). Releasing housing equity can therefore make a significant difference to welfare in retirement for homeowners with adequately sized properties almost doubling private pension wealth in many regions. [9]

We also estimate the impact on regional economies if all those eligible in wave one proceeded to withdraw housing equity. To estimate the number of households that could withdraw housing equity, we multiply 2011 Census figures for the number of retired households in each region by the proportion who could withdraw housing equity (columns 3 and 7 in table 3). Assuming that each of these households withdraws the median amount (columns 4 and 8), we can estimate the total amount of money potentially released if all eligible households withdrew housing equity. It is not clear that all of the proceeds would be spent and contribute to the local economy. While the housing equity withdrawn is often spent on house maintenance, home improvement, holidays, everyday expenses and health care needs, many homeowners reinvest the proceeds or pay down debts. We follow Hurst and Stafford (2004) in estimating the average propensity to consume home equity (APCE) - see Appendix 2 for more detail. We estimate that roughly four-fifths of housing wealth withdrawn was used by the household for consumption. Applying estimates of the APCE to the total amount of money potentially released gives the total amount of consumption in each region. These figures are then divided by the gross value added (GVA) in each region in columns 6 and 10 to determine the relative effect on the regional economy i.e.

$$\frac{\text{Total amount}}{\text{GVA}} = \frac{\text{Retired households} \times \text{Per cent eligible} \times \text{Median amount} \times \text{APCE}}{\text{GVA}} \quad (3)$$

We see from the results in columns 6 and 10 that the economic effects are very large in all

[9] It should be noted that entitlement to state pension benefits is not included in these pension wealth calculations and will be more or less uniform across all regions. Therefore the actual contribution to household pension resources will be less than given here. In order to roughly quantify how our results would change, we take median state pension wealth from Banks et al. (2005) as £72,173. Applying this uniformly across our sample would reduce the GB ratio of amount/pension wealth from 0.84 to 0.54 for downsizing in column 5 and from 0.68 to 0.44 for equity release in column 9.

regions. If every eligible retired homeowner proceeded to downsize and spend the proportion of the housing equity released indicated by the APCE in their regional economy then this would provide a one-off boost to the economies of the South East, South West and Wales of around one-third of annual GVA. In most other regions, the additional spending would also be substantial, ranging from around one-sixth to one-quarter of GVA. The effect on the London economy would be smallest at 7 per cent despite having the highest house values in the UK. Repeating these estimates for equity release gives similar if slightly lower results. The economic impact would be largest in the South West at 27 per cent of GVA and lowest in London at 6 per cent.

6. Conclusion

In this study, we have examined housing equity withdrawal behaviour among elderly households using a model based on the cost and benefits of housing equity withdrawal, variations in financial behaviours and attitudes along with a consideration of the financial geography within which economic decision-making takes place. By operationalising economic incentives and transaction costs along with variations in impulsivity we can explain the low level of housing equity withdrawal, regional variations in this activity and the choice between downsizing and equity release.

Housing equity withdrawal is seen to be prompted by financial difficulties with those households experiencing onerous debts and with little spare cash more likely to drawdown their housing wealth. Homeowners are also more likely to draw down housing wealth when the benefits are higher and the costs are lower and this cost-benefit analysis also dictates the choice of form of equity withdrawal. These findings reinforce observations made in a number of earlier studies about UK attitudes to housing. More so than in other countries, studies suggest that homebuying in the UK is increasingly a financial transaction where the decision to buy is driven mainly by financial considerations and house values are treated thereafter like any other conventional asset class through investing and disinvesting (Soaita and Searle, 2016).

Once we account for variations in impulsivity across households, our model also explains all the regional variations in behaviour observed. Regions with high house values will have high levels of housing equity withdrawal as households in these areas can release a greater amount of equity. Our analysis demonstrates that other attitudinal and cultural differences across regions such as financial sophistication or the existence of regional financial ecologies do not appear to significantly affect housing equity withdrawal decisions. We find little evidence that the emotional investment in the home is foremost in housing equity withdrawal decisions either. Large proportions of pre-retirement homeowners take a more functional attitude expecting their home to provide money for their retirement. There is no evidence of disutility associated with housing equity withdrawal reflecting the emotional attachment to homes and neighbourhoods, the nuisance of moving house and loss of social esteem in downsizing or a sense of loss of ownership, greater insecurity, negative feelings around indebtedness and a failure to meet normative expectations for equity release. We find also that the motive to bequeath the home to children does not reduce the likelihood of withdrawing housing equity.

What is striking then is how much behaviour we can explain by purely economic considerations. Over the last decade, the UK government has sought to encourage the elderly to draw down their housing wealth to pay for social care and to supplement their retirement income. Our study indicates that elderly households are willing to withdraw housing equity if the economic costs outweigh the benefits and will therefore respond to economic incentives. If the amounts that can be released increase or costs come down then housing equity withdrawal will become more commonplace. Up till now, the equity release market has been neither competitive nor innovative but equity release interest rates have been coming down faster than mortgage rates and new providers have recently entered the market (FCA, 2016; ERC, 2017a). Supply-side policy changes may also be imminent for downsizing with commentators as well as academics increasingly encouraging the government to assist downsizing by reducing stamp duty (Hilber and Lyytikinen, 2017). Demand for housing equity withdrawal is also likely to increase with mortgages sold on an interest-free or endowment basis coming to maturity over the coming years.

Although our estimates show that household pension wealth would be significantly increased and regional economies would receive a substantial one-off boost if all those able to cash in their housing wealth proceeded to do so, this is not necessarily a desirable policy development. Doling and Ronald (2010) have highlighted the macroeconomic consequences of an over-reliance on housing as a pillar of welfare. Rapid house price inflation has excluded many from homeownership with no access to property-based welfare ; poor financial planning often exhausts housing equity by overstimulating consumption in earlier years leaving little in reserve for social care expenditure in later life and the potential of property crashes threatens the viability of a welfare system overly dependent on housing assets. As we move towards a housing market with greater access to and greater use of housing equity withdrawal with households more willing to simply consider their home as another constituent of their portfolio of assets, the negative consequences of a housing-asset based welfare society have not been adequately addressed in policy discussions. How should inheritance tax address spatial inequalities in the ability of elderly households to provide for their welfare from housing wealth ? To what extent should more impulsive households be protected from themselves by controls around cashing in housing wealth ? How sustainable is a model of asset-based welfare when future house price inflation is not certain ? Further research is required to thoroughly understand the trade-offs households make in cashing in their housing wealth and society makes in adopting an asset-based welfare system.

Appendix 1 : Forecasting house values

To forecast GB regional house price inflation, we use the factor-augmented vector autoregression model (FAVAR) developed by Bernanke et al. (2005). Das et al. (2010) find that FAVAR models outperform all other models in forecasting real house price growth rate for the nine census divisions of the US.

In this approach, a large set of macroeconomic time series are expressed as the sum of a small number of common components and an individual part specific to each variable. These common components are then used to forecast regional house price growth.

More precisely, our dataset consists of 24 quarterly UK economic time series observed from Q2 1990 to Q2 2008. The series were transformed to be stationary where necessary following standard practice (Stock and Watson, 2006). We extract a matrix of r common components F_t using principal components analysis such that for each time series x_{it}

$$x_{it} = \lambda_i F_t + \xi_{it}$$

where λ_i are the factor loadings and ξ_{it} are the idiosyncratic components. The number of common components r was determined using the Kaiser-Guttman rule (retain components with eigenvalue $\lambda > 1.0$) (Guttman, 1954). This rule is the most commonly used stopping criterion in principal components analysis (Jackson, 1993).

The factors F_t are then used in a vector autoregression to predict regional house price inflation y_{jt} for region j :

$$y_{j,t+h} = \alpha_0 + \alpha_1(L)'F_t + \alpha_2(L)'y_{jt} + \varepsilon_{j,t+h}$$

where h is the time horizon and L is the distributed lag operator. The number of lags was determined using the Akaike information criterion (AIC), Hannan-Quinn information criterion (HQIC), and Schwarz-Bayesian information criterion (SBIC). Where they differed, we favoured the SBIC with its heavier penalty for degrees of freedom lost, resulting in a simpler model (Greene, 2011).

Following Shao et al. (2015), the first three quarterly UK economic time series in our dataset were: UK Gross Domestic Product quarterly growth, the one-quarter zero coupon yield rate and the spread between the 5-year zero coupon quarterly average yield from British government securities and the one-quarter rate. The remaining 21 time series were Total Claimant Count (growth), Household final consumption expenditure (growth), Construction Index (growth), CPI Index (growth), Employment Rate (aged 16-64), Gross Fixed Capital Formation (growth), General Government expenditure (growth), Households expenditure (growth), Non-profit institutions serving households (growth), Total exports of goods and services (growth), Real household disposable income (growth), Household Saving Ratio, Total imports of goods and services (growth), Inactivity Rate (aged 16-64),Compensation of Employees (growth), Other Income (growth), Gross Operating Surplus (growth),Taxes less Subsidies (growth), Output per worker (growth), Public sector Net Borrowing, Unemployment Rate 16+, Input of all manufacturing Index (growth), Output of manufactured product Index (growth), Production Index (growth), RPIJ Index (growth), RPI Index (growth), RPIX Index excluding mortgage interest (growth), Retail Sales Value including automotive fuel (growth) and Services Index (growth).

Appendix 2 : Estimating APCE

As in the survey used in Hurst and Stafford (2004), the WAS does not include direct measures of consumption. Instead, we follow these authors in examining changes in assets (including property) from wave one to wave four, $\Delta A_{1,4}$, as a result of withdrawing housing equity using the model below.

$$\Delta A_{1,4} = \gamma \mathbb{1}_{hew} e_{1,4} + \alpha A_1 + \beta Y_{1,4} + \delta^{'} \mathbf{\Theta_1} + \varepsilon_{1,4} \tag{4}$$

where $\mathbb{1}_{hew}$ is an indicator variable which is one if the household withdraws housing equity in waves two to four and zero otherwise ; the amount released by HEW is $e_{1,4}$; A_1 is assets in wave 1; $Y_{1,4}$ is household income in waves one to four; and $\mathbf{\Theta_1}$ is a vector of

household characteristics including region, head of household gender, age, education, and marital status as well as the number of children in the household from wave one.

The intuition is that there will be no change in assets (the sum of physical, net financial, and property wealth) for households who reinvest all the proceeds of HEW in another asset in their portfolio and therefore for these households $\gamma = 0$. If all of the proceeds are consumed then the sum of assets will change by the same amount as that released by HEW and for these households $\gamma = -1$. The coefficient γ then measures the propensity to consume housing equity withdrawn averaged across all households. Physical, net financial, and property wealth in wave one enter as separate explanatory variables in A_1 to account for differential rates of return on these different assets.

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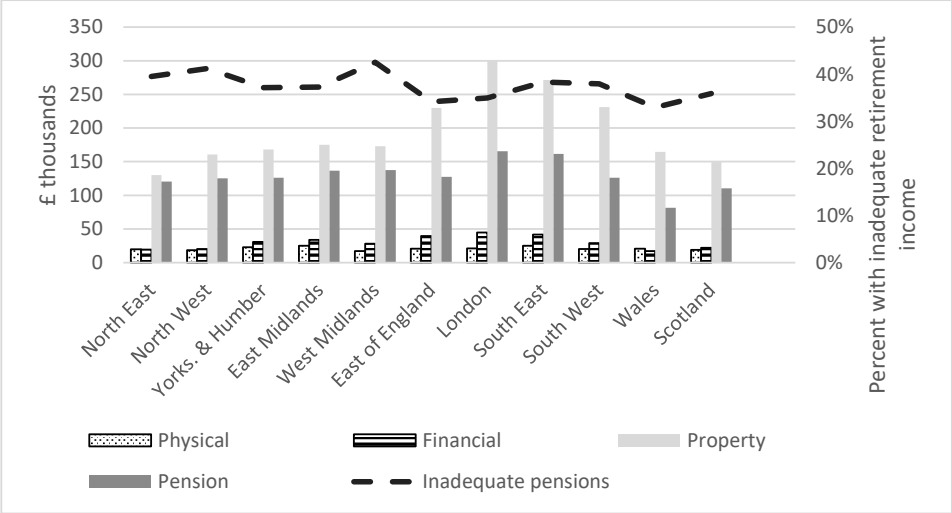
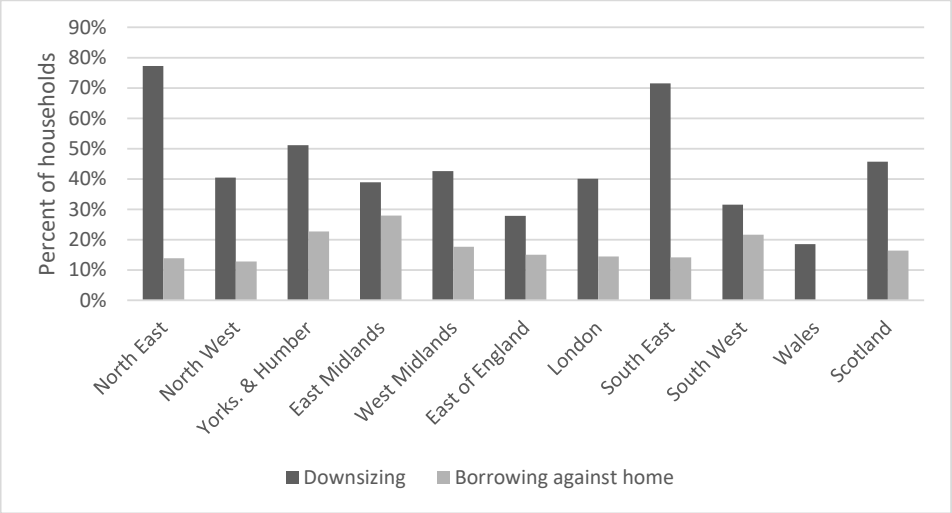
Figure 1: Median pre-retirement household wealth in wave one with levels of retirement income inadequacy



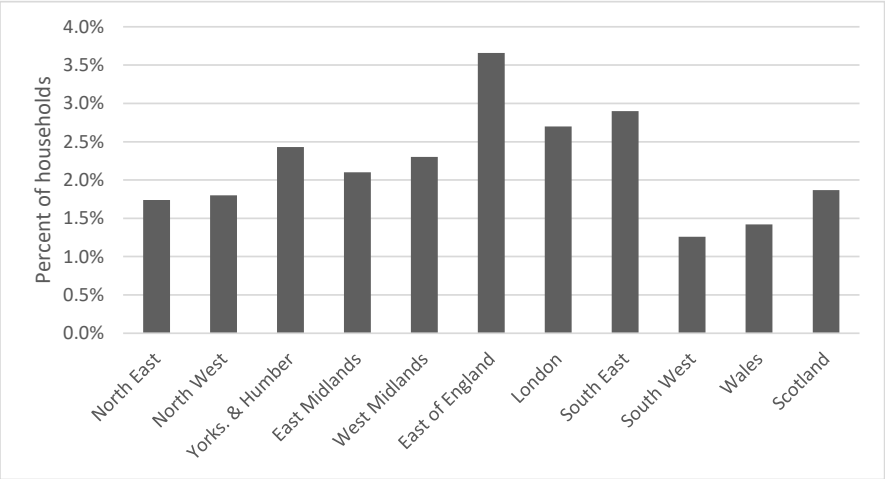
Note: Wave one was conducted July 2006 to June 2008. Sample is homeowners within ten years of state pension age and not retired in wave one. *Physical wealth* is the value of contents of the main residence and any other property of a household including collectables and valuables (such as antiques or artworks), vehicles and personalized number plates. *Financial wealth* is the value of formal and informal financial assets net of any financial liabilities. *Property wealth* is the value of any property privately owned in the UK or abroad net of any liabilities on the properties. *Pension wealth* is the value of all pensions that are not state basic retirement or state earnings related. Those responding 'not very confident' or 'not at all confident' to 'How confident are you that your [household] income in retirement will give you the standard of living you hope for?' are regarded as having *inadequate retirement income*.

Figure 2: Per cent of pre-retirement households in wave one expecting to use housing equity to provide money for retirement



Note: Responses of 'Downsizing/moving to a less expensive home' or 'Borrowing against the value of your home' to 'Which of the options on this card do you expect to use to provide money for your retirement?' Sample is homeowners within ten years of state pension age and not retired in wave one.

Figure 3: Per cent of retired heads of household in wave one ever using equity release.



Note : Sample is homeowners retired in wave one. *Equity release* is a response of 'yes' to 'It is possible to raise money for retirement based on the value of your home through an arrangement known as equity release. Have you (or your spouse/partner) ever raised any income or capital from the value of your current home (excluding any remortgage or top-up)?'.

Table 1: Descriptive statistics (means)

Household-specific variables	Downsized	Equity release	All
Debt-to-income ratio	0.28	0.47	0.07
Debt burden	0.16	0.19	0.07
Loan-to-value	0.08	0.13	0.03
No money left over	0.30	0.38	0.18
Physical wealth (£100k)	0.28	0.23	0.29
Net financial wealth (£100k)	0.75	0.33	1.10
Pension wealth (£100k)	1.80	1.53	2.56
Household income (£100k)	0.25	0.20	0.25
Bequest (£100k)	1.53	1.62	1.75
Buy things when can't afford	0.06	0.13	0.04
Buy things on credit	0.21	0.30	0.15
More of a saver than a spender	0.57	0.36	0.61
Poor mathematical skills	0.04	0.04	0.04
Trust financial institutions	0.10	0.16	0.17
Female head	0.39	0.32	0.36
Aged 65-74	0.48	0.53	0.39
Aged 75+	0.26	0.25	0.34
Retired	0.67	0.76	0.81
Number of children	0.01	0.01	0.02
Education degree or above	0.19	0.16	0.21
Has partner	0.56	0.59	0.59
Bad health	0.09	0.05	0.09
Partner bad health	0.06	0.05	0.04
N	137	129	8065
Alternative-specific variables	Downsizing	Equity release	No HEW
Amount (£100k)	1.47	0.89	0
Cost (£100k)	0.11	0.03	0
N	8065	8065	8065

Note: Means for wave one. The full sample is homeowners aged 55+ who are retired in wave one or who subsequently retire. *Individual-specific variables*: *Downsized* are households moving to a lower value house between consecutive waves. *Equity release* are households in waves two to four giving a response of 'yes' to 'It is possible to raise money for retirement based on the value of your home through an arrangement known as equity release. Have you or your partner raised any income or capital from the value of your current home?'. *Alternative-specific variables*: *Downsizing* assumes households can move to a three-bedroomed house

at the fifth percentile in their government office region of residence. *Equity release* assumes households can take out an equity release plan under standard conditions. *No HEW* assumes households do not withdraw housing equity.

Table 2: Nested logit model of housing equity withdrawal

Dependent variable : Housing equity withdrawal		(1) Constant	(2) Constant + London/SE	(3) Constant + Regions
Household-specific variables	Debt-to-income ratio	0.175***	0.174***	0.180***
		(0.061)	(0.061)	(0.061)
	Debt burden	0.560***	0.560***	0.555***
		(0.197)	(0.197)	(0.196)
	Loan-to-value ratio	0.020	0.022	0.012
		(0.058)	(0.058)	(0.273)
	No money left over	0.488***	0.489***	0.501***
		(0.152)	(0.152)	(0.153)
	Physical wealth	-0.006	-0.006	-0.006
		(0.182)	(0.183)	(0.179)
	Net financial wealth	0.015	0.015	0.017
		(0.034)	(0.034)	(0.033)
	Pension wealth	-0.029	-0.029	-0.027
		(0.026)	(0.026)	(0.025)
	Household income	0.254**	0.251**	0.253**
		(0.113)	(0.113)	(0.120)
	Bequest	-0.043	-0.020	0.071
		(0.140)	(0.155)	(0.236)
	Buy things when can't afford	0.409	0.407	0.415
		(0.253)	(0.253)	(0.254)
	Buy things on credit	0.366**	0.366**	0.368**
		(0.164)	(0.164)	(0.165)
	More of a saver than a spender	-0.317**	-0.317**	-0.315**
		(0.136)	(0.136)	(0.137)
	Poor mathematical skills	0.235	0.238	0.242
		(0.313)	(0.313)	(0.311)
	Trust financial institutions	-0.149	-0.151	-0.147
		(0.183)	(0.183)	(0.184)
	Outside London & South East		0.081	
			(0.224)	
	North East			0.218
				(0.530)
	North West			0.057
				(0.541)
	Yorkshire & Humber			-0.107
				(0.568)

	East Midlands			0.232
				(0.550)
	West Midlands			-0.068
				(0.549)
	East			0.238
				(0.506)
	South East			0.044
				(0.438)
	South West			0.249
				(0.539)
	Wales			0.123
				(0.499)
	Scotland			-0.191
				(0.575)
	Constant	-47.587	-40.741	-69.313
		(362.560)	(234.934)	(315.925)
Alternative-specific variables	Amount	0.861**	0.762*	1.033*
		(0.383)	(0.457)	(0.606)
	Cost	-43.021**	-39.470**	-56.651**
		(17.292)	(19.310)	(26.840)
Average log likelihood		-1486.4	-1486.3	-1486.3
Average number withdrawing housing equity		319	319	319
Average number of cases		8065	8065	8065

Note: Dependent variable is a choice of no housing equity withdrawal (nest 1), downsizing or equity release (nest 2). Sample is homeowners aged 55+ retired in wave one or who subsequently retire. Additional controls include dummies for household head female, head aged 65–74, head aged 75+, head retired, head in bad or very bad health, partner in bad or very bad health, head has partner, as well as the number of children in the household. The log-sum coefficient for the first nest is constrained to one to account for its degenerate nature. Estimates are pooled from 30 imputations. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Potential benefits from housing equity withdrawal by region

		Downsizing				Equity release			
Government Office Region	Owner-ship rates	Per cent eligible	Median amount released	Median amount/ pension wealth	Total amount/ GVA	Per cent eligible	Median amount released	Median amount/ pension wealth	Total amount/ GVA
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
North East	64.4	59.7	85440	0.58	0.19	62.0	56000	0.50	0.13
North West	73.6	68.9	92000	0.82	0.21	72.3	63750	0.62	0.15
Yorks. & Hum.	68.8	64.8	94747	0.94	0.20	67.1	61600	0.66	0.13
East Midlands	75.9	70.8	93000	0.83	0.23	75.3	67600	0.69	0.17
West Midlands	77.3	70.5	98448	0.85	0.24	76.3	67550	0.68	0.17
East	80.2	73.9	120000	0.86	0.27	78.9	88625	0.70	0.21
London	68.1	60.9	125000	0.90	0.07	68.0	108921	0.91	0.06
South East	82.9	76.6	160000	0.96	0.32	81.6	103500	0.79	0.22
South West	81.1	75.0	130000	0.99	0.36	80.2	92500	0.82	0.27
Wales	80.0	75.3	103000	0.84	0.35	77.0	64350	0.60	0.22
Scotland	68.7	62.2	84778	0.57	0.16	65.2	52650	0.40	0.10
GB	75.4	69.6	110000	0.84	0.22	73.9	77500	0.68	0.15

Note: Sample is homeowners aged 55+ retired in wave one. *Eligible households* is the percentage of households who can avail of downsizing or equity release under given assumptions (columns 3 and 7). *Median amount released* is the median potential amount released by downsizing or equity release (columns 4 and 8). *Median amount/pension wealth* is the median of the potential amount released divided by total household pension wealth (columns 5 and 9). In columns 6 and 10, the number of households where the household representative person is retired and aged 50+ is taken from tables DC4601EW and DC4601SC in the 2011 Census and multiplied by (*Per cent eligible* × *Median amount released* × APCE) / *GVA*. Regional *GVA* is 2011 gross value added (income approach) at current basic prices (`www.ons.gov.uk/economy/grossvalueaddedgva`).

Table 4: Average propensity to convert home equity into consumption (APCE)

	Downsizing	Equity release
APCE (γ)	-0.801**	-0.777*
	(0.108)	(0.354)

Note: Sample is homeowners aged 55+ retired in wave one or who subsequently retire. The APCE is an estimate of γ in equation [4] for downsizing and equity release. Dependent variable is change in household wealth from wave one to wave four (including property wealth). As in Hurst and Stafford (2004), the top/bottom 1% of the change in wealth distribution were omitted. Additional controls include initial physical, net financial and property wealth; household income at each wave; dummies for government office region; household head female; head age; head education; head has partner as well as the number of children in the household. * $p < 0.05$, ** $p < 0.01$.