The Effect of the Financial Crisis on Older Households in England*

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Abstract: Prices of real and financial assets fell substantially in the UK during 2008–09. The fourth wave of the English Longitudinal Study of Ageing (ELSA) was in the field throughout this 'financial crisis'. We use these data and earlier ELSA waves first to document the effect of the crisis on the finances of those aged 50 and over in England, and second, to estimate the effect of wealth shocks on household consumption and individual expectations of the future. Many households experienced a significant wealth shock, but these shocks led to modest spending effects and small revisions to expectations regarding future bequests. Expectations of bequests seem particularly tied to housing wealth.
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1. Introduction

The financial year 2008–09 saw huge falls in financial asset prices in the UK. For example, the FTSE all-share Index fell by one-third. Concurrently there were large declines in house prices, with the Nationwide House Price Index dropping by almost one-fifth. Taken together, these will have caused substantial, largely unanticipated, drops in household wealth. It is important to understand which households were affected, and by how much, and how affected households adjusted. These potentially large wealth shocks also afford an opportunity to revisit longstanding questions about the effect of wealth on consumption, expectations, and other outcomes.

The English Longitudinal Study of Ageing (ELSA) was in the field throughout the period of the 'financial crisis', collecting its fourth wave of data over the period June 2008 to July 2009. The survey collects details of all components of wealth for a large sample of individuals living in England aged 50 and over. It also collects data on household expenditures and individual expectations of the future, in addition to substantial information on physical and mental health, sociodemographic circumstances, and psychosocial factors. The third wave of data, collected two years earlier in 2006–07, allows a directly comparable pre-crisis baseline for the same set of individuals. It is the first time in the UK that such large wealth fluctuations have been observed at a time when such comprehensive individual and household level data on wealth, other household and individual circumstances and measures of well-being have been available for analysis.

In this paper we use these data in two ways. We first document the effect of the crisis on the finances of those aged 50 and over in England. Then, in the second part of this paper we use these wealth shocks to estimate the effect of wealth on household consumption expenditures, and on expectations regarding bequests and the adequacy of future resources. These estimates speak both to the issue of how these households responded to the recent

financial crisis and to the broader question of the effects of wealth on consumption and bequests. Given the inter-temporal budget constraint, households can adjust to a wealth shock in a number of ways: by adjusting current consumption expenditure or labour supply, or by adjusting planned future consumption expenditure or labour supply (notably the age of retirement) or by adjusting the consumption of their heirs (through altered bequests plans). Wealth shocks may also have direct and indirect effects on wellbeing. Crawford (2011) studies the effects of the same wealth shocks on retirement intentions, finding that individuals in general did not respond to these shocks by delaying their planned retirement age. In ongoing work we are examining the effect of these shocks on health and wellbeing.

In characterizing the effect of the crisis on personal finances, we begin by documenting the portfolio exposure of older people in England in wave 3 of the ELSA study, just prior to the financial crisis in 2006–07. We then simulate the potential wealth changes experienced by individuals using the level and composition of individuals' wealth holdings in wave 3 and adjusting these by the changes in asset price indices between the individuals' two interview dates. We also calculate the change in wealth over the period from the peak to the trough of the UK stock market. We then compare these simulated wealth changes to individuals' reported wealth changes. The latter are derived by comparing wealth reported in 2008–09 (wave 4) with 2006–07 (wave 3) for each individual. Reported wealth changes will differ from simulated wealth changes for a number of reasons: (i) the value of their particular assets may have changed by a different amount to the aggregated indices used in our calculations (i.e. heterogeneous returns); (ii) even in the absence of the financial crisis they would have engaged in saving (or dissaving) behaviour between the two waves, (iii) their saving behaviour between the two waves may have responded to the crisis itself; (iv) their assets may have been reported with error in either or both of waves 3 and 4.

In the second part of the paper we estimate the effect of wealth shocks on consumption expenditure and expectations using an instrumental variables strategy, in which we instrument reported wealth shocks with simulated ones. This is important as reported wealth shocks will reflect active saving and investment decisions, made in part in response to financial crisis, and will also contain measurement error. Variation in simulated wealth shocks comes from whether an individual's wealth was more or less exposed to asset price changes. There are, in turn, two sources of variation in exposure. First is the composition of their pre-crisis portfolio. Second, as we shall show below, the effectively random timing of interviews provides substantial variation in exposure to the subsequent asset price changes between wave 3 and wave 4.

Many individuals will have been adversely affected by the financial crisis and associated recession. The ELSA data capture the experience of a group who are of particular interest, specifically those close to, but not yet, retired. These individuals will have potentially suffered a substantial drop in their long-run living standards. Unlike those who have already retired, they typically hold relatively large amounts of wealth in unannuitised pension funds which, if they have not been invested in safer assets, will be exposed to movements in the stock market. They are therefore at high risk of relatively large wealth losses. However unlike younger individuals they do not have much of their (planned) working life remaining which means that wealth losses will be more sorely felt. If older individuals want to avoid these losses reducing the resources they will have available in retirement they will need to save more than they had planned over their relatively few remaining working years or perhaps work for longer than previously planned, whilst younger

individuals would be able to spread such adjustment over a much longer period (and therefore potentially over more margins).[2]

From the point of view of estimating wealth effects on consumption, older individuals are also of particular interest as well. A correlation between wealth changes and consumption changes among younger individuals might results from a shock to income expectations, through a collateral channel, or through a pure wealth effect. As the first two channels are unlikely to be operative among retired and near-retired individuals, the ELSA sample affords an opportunity to identify a pure wealth effect. Additional strengths of the ELSA data, relative to prior micro-data studies of wealth effects on consumption, are the fact that we have measured wealth changes (not just baseline) and that we have a very comprehensive measure of wealth, including pension wealth.

To preview our main findings we find that many households experienced substantial wealth shocks. However, these wealth shocks appear to have had modest effects on the current consumption expenditure of households, and to have led to quite small revisions to expectations regarding future financial security and bequests. Shocks to different kinds of wealth have different effects and, in particular, expectations of bequests seem tied to housing wealth.

The remainder of this paper proceeds as follows. The next section provides an overview of related literature on the effects of the recent asset price changes on wealth, and the effects of unexpected wealth changes on consumption, expectations and bequests. In

[2] Changes in annuity rates will also almost exclusively affect older individuals approaching retirement, and can dramatically change the value of pension income an individual can expect from their pension fund. During the financial crisis annuity rates were very volatile, and have declined markedly as a result of the Bank of England's policy of quantitative easing. However, changes in annuity rates are not taken into account in the work – pension wealth in 2006–07 and 2008–09 is evaluated using the same annuity rates – since the effect on rates should be temporary, and individuals are assumed either to be planning already to draw their pension after rates recover, or to be able to delay this so that they are not affected by the temporary decline in rates.

Section 3 we describe the data used in this study, and our empirical strategy for estimating potential wealth changes and the effect of wealth shocks on household consumption expenditure and on individual expectations. Section 4 documents the effect of the crisis on the finances of those aged 50 and over in England. Section 5 uses these wealth shocks to estimate the effect of wealth on consumption expenditures, and on expectations regarding bequests and the adequacy of future resources. Section 6 concludes.

2. Related Literature

A number of papers have attempted to investigate the effect of the recent global financial crisis on wealth holdings, in the both the US and the UK. Since data on wealth holdings in the years covered by the financial crisis are only recently becoming available, most of these studies simulate wealth losses using pre-crisis wealth holdings and national price indices. Bosworth and Smart (2009) find that, on average, U.S. households aged over 50 lost nearly a fifth of their net wealth. Banks, Crawford and Tetlow (2010) consider households in the UK and estimate that for older households average losses from the crisis would have been relatively small as a share of either gross or net wealth, of the order of around 5%. Johnson, Soto and Zedlewski (2008) use U.S. data on wealth in the period covered by the financial crisis, and consider the losses in retirement account accounts between September 2007 and September 2008. They find that the total funds accumulated falls by 18.3%, with the median accumulated retirement account for households aged 50 and over in 2008 being around the level it was in 2005.

Coile and Levine (2006) and Gustman, Steinmeier and Tabatabai (2010) argue that older individuals have relatively little invested in the stock market and so even a sizable decreases in the value of financial assets will only have small effects on their wealth. However, Coile and Levine (2010) find that for individuals in the top third of the income distribution, long-term declines in the stock market in the years immediately preceding

retirement do lower their incomes in retirement through a reduction in investment income. Engen, Gale and Uccello (2005) investigate the effects of stock market fluctuations on the adequacy of retirement wealth accumulation, and find that since those that do hold stocks are typically households with substantial wealth, fluctuations in stock market values can affect wealth without having much effect on households' ability to save for retirement. They simulate a stock market decline of 40% and find that this has a negligible impact on the share of households with inadequate wealth.

There is a large literature that studies the effects of wealth on consumption expenditure. Poterba (2000) and, more recently, Paiella (2009) are excellent surveys. This literature takes as its starting point the predictions of the life-cycle model (Modigliani and Brumberg, 1954; Modigliani, 1986). Agents are presumed to revise their consumption behaviour in response to unanticipated changes in wealth. A forward looking agent with certainty equivalent preferences will change their annual spending by the annuity value of a wealth shock. For an agent with a 20 year horizon, this might be 5% of the shock, or a bit less, depending on interest rates. This is then the marginal propensity to spend (out of a wealth shock) predicted by a simple life-cycle model. Effects may be smaller if, agents can partially insure against permanent shocks or if they are not fully forward looking. The starkest life-cycle model also suggests a single marginal propensity to spend out of all kinds of wealth. Different marginal propensities to spend might arise if there are transactions costs that vary by type of wealth or if households have mental accounts.

The literature uses both aggregate and micro data to estimate this relationship. Studies using aggregate data find marginal propensities to spend remarkably close to the baseline theoretical prediction; numbers of 3 to 5% are common. Marginal propensities to consume often differ between, for example, housing wealth and financial wealth, although there is no uniform finding that one is larger than the other.

A criticism of studies based on aggregate data is that they cannot hope to isolate a causal effect of wealth on spending because changes in spending are typically related to, or at least contemporaneous with, changes in other factors such as credit tightness or income expectations that likely affect spending. There is a small but growing literature that uses micro data to estimate the relationship between wealth and spending. Part of the motivation for these studies is to isolate the channels, causal and otherwise, that relate wealth and spending, through comparing groups for whom different channels may be less important or more important, or by directly controlling for factors such as income expectations. Nevertheless, considerable disagreement remains.

Studies employing micro data have focused particularly on changes in asset prices (particularly house prices and stock prices). There are two reasons for this. First, under the assumption that asset price changes are fully persistent (i.e. the best predictor of an asset price tomorrow is its price today), asset price changes are a source of unanticipated shocks to wealth. Second, as a practical matter, there are very few longitudinal household surveys that collect both wealth and spending information with sufficient frequency to study the effect of shocks to the former on the latter. Consequently, asset price indices are combined with micro data on spending, and changes in asset price indices serve as a proxy for wealth shocks.

Our analysis follows in this spirit in that we use changes in asset prices as the source of the shocks to wealth we study. However, a strength and relative novelty of our analysis is that we do have longitudinal information on both all elements of wealth and some elements of spending. We can therefore look at the relationship between wealth changes and spending changes, while using asset price changes as an instrument, rather than a proxy. We elaborate on this strategy further in the next section.

There are a very small number of studies that use micro data to study how older households adjust expenditure in response to an adverse wealth shock. Using wealth shocks

associated with the collapse of the dot-com bubble, Kezdi and Savek (2004) estimate a marginal propensity to spend out of wealth shocks of 5 to 7% for older American households. In a recent study based on American survey data from the period of the great recession, Christelis *et al*. (2011) find much smaller marginal propensities to spend out of wealth shocks. A novel feature of their analysis is that they can identify households that believe that asset prices are permanent and those who think they are transitory. The former exhibit larger adjustments.[3]

There has been relatively little literature to date that considers the effects of unexpected wealth changes on expected bequests. Hurd and Smith (2002) study the elasticity of bequests with respect to wealth changes generated by relatively rapid growth in the stock market. They find that over half of the wealth increase over time is expected to be bequeathed, indicating that bequests are one margin along which older people do respond, rather than just adjusting their spending or labour supply decisions.[4]

3. Data and Methods

Data

The English Longitudinal Study of Aging (ELSA) is a panel survey study that contains a vast array of information on the wealth, health, economic and social position, and expectations of the older population. The ELSA survey is broadly representative of the household population of England aged 50 and over. It began in 2002–03 and is conducted every two years, with periodic refreshment samples being added so that it remains representative of the population aged 50 and over. The 2006–07 (wave 3) sample contained

[3] Shapiro (2010) and Hurd and Rohwedder (2010) document wealth losses and households spending falls among older Americans but do not directly estimate the marginal propensity to spend out of wealth shocks.

[4] There is a larger literature that looks at the effect of wealth shocks, and in particular, stock market returns on retirement decisions. Recent examples include Gustman, Steinmeier and Tabatabai (2010) and Goda, Shoven and Slavov (2010).

9,771 respondents, while the 2008–09 sample (wave 4) contained 11,050 – a sample of 7,908 respondents were surveyed in both waves 3 and wave 4.

The ELSA survey collects a large amount of detail on the components of financial and housing wealth held by individuals and households. The survey also collects information on private pension scheme membership and sufficient detail on individuals' private pension schemes to enable likely pension income to be estimated. The present discounted value of these pension income streams from retirement to death can then be estimated as a measure of private pension wealth. State pension wealth is also estimated, based on individuals' reported current and past labour market behaviour along with various assumptions about past and future behaviour.[5] The comprehensive nature of the wealth measure in ELSA sets it apart from most other data sources in the UK.

In addition to data on wealth, ELSA also collects quantitative information on individuals expectations of the future using questions that ask the 'per cent chance' of various events occurring. These questions have been validated both cross sectionally and longitudinally both within ELSA and other studies (see for example Emmerson and Tetlow 2006, Hurd and McGarry 2005). We consider individuals' expectations in two areas which represent different margins along which older individuals may respond to wealth losses arising from the financial crisis. The first area we consider is the adequacy of resources. ELSA respondents are asked what the chances are that at some point in the future they will not have enough financial resources to meet needs. The second area considered is bequests. Individuals are first asked what the chance is that they will leave an inheritance totalling £50,000 or more, then those individuals who stated a zero per cent chance are asked what the chance is that they will leave any inheritance, whilst those who stated a positive probability are asked what the chance is that they will leave an inheritance totalling £150,000 or more.

[5] The methodology used to estimate private and state pension wealth for ELSA respondents is described in detail in Crawford (2012).

As it turns out 85% of the ELSA sample give a positive probability of leaving an inheritance of £50,000 or more and so we focus only on the question relating to bequests of £150,000 or more.

The final tranche of ELSA data that we make use of relates to consumption expenditures. ELSA respondents are asked about their weekly food bills ('food in'), their monthly spending on takeaways and meals out ('food out'), their expenditure on clothes in the last four weeks ('clothes'), and their spending on fuel in the home ('fuel').[6] In the Expenditure and Food Survey for 2006, these four categories of spending made up 26% of total spending by households headed by a person aged 50 or over (and 30% of non-housing spending).[7] Expenditure data in ELSA are collected in a two-stage process: respondents are first asked to report a spending amount, then any respondent who either refuses or does not know the amount is then routed into a series of questions designed to elicit an interval in which their spending lies. Expenditure is then imputed for these individuals (using a hotdecking procedure that conditions on age and household type) and all expenditure figures are converted into annual amounts.

To the ELSA data we merge data on asset price changes between 2006 and 2009. We construct a monthly FTSE all-share index to capture aggregate fluctuations in the stock market – this is based on the average daily closing value of the FTSE all-share index in each month, taken from Yahoo!Finance. To capture aggregate house price fluctuations we use the Land Registry monthly regional house price index. This uses sales data collected on all

[6] Fuel spending in ELSA is collected via a series of very detailed questions which ask respondents to report the amount spent on gas, electricity, coal, paraffin or bottled gas, oil and wood separately, and where the exact questions asked depend on the payment method and payment frequency.

[7] This is the fraction of total spending by the age group that went to these four expenditure categories. The average budget share of these four categories together is somewhat higher at 30% of total spending and 38% of non-housing spending since higher spending households, who have a greater weight in total expenditure calculations but an equal weight in the average share calculations, tend to have lower expenditure shares on these items.

residential housing transactions in England (and Wales) to calculate an index based on repeat sales of property. Finally to capture aggregate fluctuations in DC pension funds the FTSE Pension DCisions index is used. This is an index of total fund return (in other words, it assumes that any dividends are reinvested) that reflects the asset allocation decisions made by leading DC pension plans in their default investment strategies.

[Figures 1 and 2 about here]

Measuring Wealth Shocks

Changes in wealth and expectations between 2006–07 and 2008–09 can be calculated directly by comparing individual responses in wave 3 and wave 4 of the ELSA data.[8] This change in wealth is not necessarily, however, the effect on the financial crisis on individuals' finances – that would require that individuals were doing no active or passive saving over the period, so that in the absence of the financial crisis wealth would have been unchanged. Clearly this is unlikely to have been the case. Stocks of wealth are likely to be accruing some return, and individuals, at least those pre-retirement, are likely to still be actively saving and increasing their wealth holdings.

We therefore also simulate the potential wealth changes that individuals may have experienced from the financial crisis. In what follows, we refer to these as "simulated wealth changes". To do this we divide wealth holdings into broad categories, defined according to the likely price change experienced over the period:

- Risky financial wealth: Investment 'Individual Savings Accounts' (Share ISAs and life insurance ISAs), premium bonds, national savings accounts, 'Personal Equity Plans' (PEPs), Shares, Trusts, Bonds and Gilts
- Defined contribution (DC) pensions: current DC pensions, retained DC pensions;

[8] State pension wealth is assumed not to change between 2006–07 and 2008–09. State pension wealth would not have been directly affected by the financial crisis, and the noise-to-signal ratio generated from assuming no change is likely to be lower than that generated from differencing measurement error in the estimated data.

- Housing wealth: Gross value of main home and net value of second homes;
- 'Safe' wealth: Current accounts, savings accounts, cash ISAs, 'Tax Exempt Special Savings Accounts' (TESSAs), physical wealth, current defined benefit (DB) pensions, retained DB pensions, pensions in receipt, state pensions, mortgages, debts.

We then assume that risky financial wealth is exposed to changes in the FTSE all-Share index, that DC pension wealth is exposed to changes in the FTSE DCisions index, that owner-occupied main homes are subject to the change in the regional house price index, that all other housing wealth is subject to the change in the England and Wales average house price index, and that 'safe' wealth (and any debts) are not exposed to any price changes over the period. For each individual we take the change in the relevant index as the change between the month of interview in wave 3 and the month of interview in wave 4. The distribution of these individual-level between-wave index changes is shown in Figure 3. The distributions for the FTSE all-share and FTSE DCisions price changes arise from the distribution of interview dates in wave 3 and wave 4, while the distribution of house price changes arises from the distribution of interview dates and the distribution of region of residence. In essence, to simulate the potential wealth changes, we take an individual's wealth as reported in wave 3 and adjust the broad components by the individual-level between-wave change in the relevant average price indices.

[Figure 3 about here]

There are at least four reasons why we would expect our simulated wealth changes to differ from changes in reported wealth. First, even in the absence of unexpected shocks to assets prices, we would expect active changes in all categories of wealth over the approximately two year interval between interviews. Those who are still working and preparing for retirement we would expect to be saving and accumulating wealth, while those

who are retired or no longer working are likely to be drawing down savings and consuming their wealth. These active changes are not captured in our simulated wealth.

Second, our simulations use aggregate indices to update wave 3 portfolios. In reality, individual level differences in investment portfolios, in the location and type of property, and so on, will imply very heterogeneous returns that are not captured by our simulations.

Third individuals who experience a wealth or income shock from the financial crisis or the associated recession are likely to respond in some way. For example those who have experienced a negative shock to their DC pension fund wealth may opt to save more in order to make up the loss they have experienced and restore their pension resources. Our predicted wealth losses may accurately capture the initial loss to the DC fund and would not capture the offsetting increase in wealth resulting from any increase in saving.

Finally, the reported changes in wealth will contain reporting error. Reporting detailed information on wealth is a challenging task for many respondents. Where respondents did not know or refused an answer to a question about their wealth holdings, the relevant wealth was imputed, adding to the measurement error. Moreover, to the extent that measurement error in reported wealth levels is not fully persistent (not least because imputation is done on a cross sectional rather than a longitudinal basis), differencing the data (to give changes) will worsen the noise-to-signal ratio.

Estimating the Effects of Wealth Shocks

We estimate the effects of the wealth changes taking place during the crisis on expenditure and expectations using an instrumental variables (IV) methodology, where observed changes in wealth between the two waves are instrumented by simulated wealth changes. For the purpose of this estimation we use simulated wealth changes based on the wealth portfolios observed at wave 2 and the specific change in asset values that would have hit such a portfolio over the period between the individual's wave 2 and wave 4 interview

dates. This is in contrast to the simulated wealth changes for which descriptive statistics are shown in section 4, which are based on wave 3 portfolio share and asset price changes between wave 3 and wave 4. If we used the wave 3 portfolio shares to construct our instrument, measurement error in those shares could generate a spurious correlation between our instrument and wealth changes between waves 3 and 4. This will not be a problem with our instrument as constructed, so long as measurement errors in reported wealth are not serially correlated.

For expenditure, the basic specification is:

$$\Delta X\ (real) = \ \alpha + \beta \Delta wealth\ (real) + \gamma\ \%\Delta relprice + \delta Z + \varepsilon \qquad \text{(EQ1)}$$

where X is expenditure (either on a good or a basket of goods) and price is the relative price of the relevant expenditure item (food in, food out, clothing, fuel, or the sum of these four) in the month of interview. The relative price is derived by dividing the price index for the relevant good by the overall Retail Price Index (RPI). For the sum of the 4 components, a price index is constructed using the price indices of each component, and weighting the % changes by the average budget shares of the 4 components across individuals in wave 2: 59% food in, 17% clothing, 14% fuel and 10% food out. Expenditures and wealth are converted to real terms by dividing by the RPI in the month of interview. The vector Z is a set of individual level characteristics that might be associated with changing consumption over time, including: ten year age bands, education level, change in the number of people in the household and the change in the number of earners in the household.

Real expenditures are measured in pounds (sterling) per year and real wealth is measured in hundreds of pounds. Thus the coefficient β can be interpreted as the change in annual spending on the relevant item, given a £100 increase in real wealth (or wealth component). As explained above, both theory and the prior literature predict a value of 0.03 to 0.05 for the marginal propensity to spend out of wealth shocks, meaning that a household

experiencing a positive wealth shock of £100 would increase spending on all items by £5 annually. As even our total expenditure measure does not capture all expenditure items, and those that it does capture are primarily necessities, we should expect smaller effects. Effects will also be different to the extent that households depart from this stylized benchmark (for example, if agents can insure against permanent shocks, or if they are not fully forward looking).

We also estimate an expanded model that allows for different propensities to spend out of shocks to different kinds of wealth:

$$\Delta X\ (real) = \ \alpha + \beta_1 \Delta nethousingwealth\ (real) + \beta_2 \Delta pension\ wealth\ (real) + \ \beta_3 \Delta net\ non - pension\ non - housing\ wealth\ (real) + \gamma\ \%\Delta relprice + \delta Z + \ \varepsilon \qquad \text{(EQ2)}$$

In all our estimates $\Delta wealth\ (real)$, $\Delta pension\ wealth\ (real)$ and $\Delta net\ non - pension\ non - housing\ wealth\ (real)$ are instrumented for using the simulated change in the relevant component of wealth.[9]

For expectations, the basic specification assumes that individuals are rational forward looking agents and therefore, in the absence of any shocks, their expectations about future inadequacy or future bequests would be constant over time. Therefore the effect of the wealth shocks can be identified using the specification:

$$\Delta EXP = \ \alpha + \beta \Delta wealth \ + \varepsilon \qquad \text{(EQ3)}$$

Where EXP is the expectation, measured as a per cent chance from 0 to 100, of a) having inadequate resources in future and b) leaving a bequest of greater than £150,000. For the former $\Delta wealth$ is expressed in real terms, for the latter $\Delta wealth$ is expressed in nominal terms since the question about expectations of leaving a bequest is couched in nominal terms. In both cases $\Delta wealth$ is expressed in

[9] We do not instrument for $\Delta nethousingwealth\ (real)$ because the change in the reported housing wealth is in general likely to be an accurate measure of the wealth change caused by the financial crisis, since there is little active saving or dissaving of housing wealth in the absence of a shock and measurement error in housing wealth tends to be small.

£0,000s. As with expenditure we also estimate an expanded model that allows for different effects from shocks to different kinds of wealth.

$$\Delta EXP = \alpha + \beta_1 \Delta nethousingwealth + \beta_2 \Delta pension\ wealth + \beta_3 \Delta net\ non-pension\ non-housing\ wealth + \varepsilon \quad \text{(EQ4)}$$

We also test that our results are robust to specifications including the same set of characteristics Z that are included in the consumption regressions.

4. The Effect of the Financial Crisis on Wealth Holdings

Wave 3 exposure to asset price changes

The vulnerability of older households to the financial crisis will have depended on what wealth these households had and how exposed it was to the asset price changes that occurred over this period. Table 1 describes mean wealth holdings of ELSA respondents in Wave 3 (2006–07), disaggregated according to the type of wealth. The particular sample here is those that responded to both wave 3 and wave 4, in anticipation of our subsequent focus on wealth changes.

[Table 1 about here]

The most important single component of wealth was housing wealth, which accounted for 40.3% of gross wealth holding. Owner-occupied main residences accounted for 36.4% of wealth, with other housing wealth contributing a further 3.9%. Private pension wealth was also very important, with private pension wealth as a whole contributing a further quarter to gross wealth holdings – 3.8% from DC pensions and 19.5% from 'safe' private pensions (DB pensions and pensions already in receipt). State pension wealth is on average is relatively important, contributing one fifth of wealth across the ELSA sample. Financial assets in the form of savings and investments contribute about 12% of gross wealth. Debts among the ELSA sample are relatively low, as is typically the case among the older individuals, with

mortgage debts on average across the sample equal to 1.7% of gross wealth, and other non mortgage debt equal to just 0.3%.

Table 2 provides a breakdown of the average level and composition of wealth by various characteristics: age, education, household structure, wealth quintile and labour force status. Gross wealth is highest for younger groups (which may be a birth cohort effect), higher for those with more education, higher for couples than single individuals.

The proportions of housing wealth in total wealth are quite stable across quintiles of total wealth, except for the lowest quintile where it represents a notably smaller share. State pension wealth is of steadily decreasing importance across higher wealth quintiles. FTSE exposed wealth (investments and DC pensions) comprise a larger share of total wealth in the highest wealth quintile, for those currently working, for those aged 50 to 59 and for the higher education group.

[Table 2 about here]

Simulated wealth changes

We now turn to the simulated wealth changes through the financial crisis, which are, again, based on respondents' wave 3 portfolios and changes in asset price indices between the wave 3 and wave 4 interview dates for each respondent. Figure 4a displays the cumulative distribution of changes to total wealth as well as housing wealth and FTSE exposed wealth (which includes risky financial wealth and DC pension wealth) – the remainder of wealth is "safe" and presumed not to have been affected by the financial crisis. The median member of the ELSA sample has a simulated wealth loss between interviews of around one percentage point. Around 6% of the sample has a simulated wealth loss of more than 10% of total wealth.

[Figure 4a about here]

Remember, though, that many wave 4 interviews occurred before or during the largest movements in asset prices (see Figure 1). Thus the effect of the financial crisis on the wealth holdings of the population aged 50 and over in England is probably better represented by Figure 4b, which focuses on those ELSA respondents whose wave 4 interview was in the 2nd half of the field work period (that is, January to July 2009). Here we see a median simulated wealth loss of nearly 6%, and 14% of respondents have a simulated wealth loss of 10% or more. Figure 4c goes one step further and simulates the wealth loss of all respondents in our sample, not between interviews, but from the peak to the trough of the FTSE All Share Index (May 2007 to March 2009). These simulated wealth changes are larger still with a median loss about 8%. 38% of sample members have a simulated wealth loss of 10% or more and 4% of sample members have a simulated loss of 20% or more.

[Figure 4b and 4c about here]

Since the size of wealth holdings and the composition of that wealth in terms of the types of assets held differs for individuals with different characteristics (as discussed above), simulated wealth losses will vary with individual characteristics as well. Table 3 describes these patterns.

[Table 3 about here]

Perhaps unsurprisingly, wealth losses are largest – both absolutely and as a fraction of total wealth – among those in the highest quintile of total wealth, and for those with the highest education. Wealth losses are larger (again both absolutely and as a fraction of total wealth) for those still working than for the retired (average losses of 3.4% versus average losses of 2.4%). Losses to FTSE exposed wealth in particular are higher at lower ages, reflecting in large part that a smaller fraction of DC pension wealth has been annuitized at younger ages. Table A1, in the appendix, summarizes these patterns in a multivariate way,

using mean and median regression. Wealth losses are found to be greater for those with higher wealth, those in couples and those still working.

Table 4 repeats this exercise but with the peak-to-trough changes shown in Figure 4c. Relative to Table 3, the simulated wealth change are all larger, but the patterns by individual characteristics are the same.

[Table 4 about here]

Reported wealth changes

We now consider the wealth changes reported by ELSA respondents (that is, the difference in their reported wealth levels and composition between wave 3 and wave 4. Figures 5a and 5b display cumulative distribution of changes to total wealth as well as housing wealth, FTSE exposed wealth and `safe' wealth. Figure 5a is based on the full sample of individuals that responded to both wave 3 and wave 4, while Figure 5b focuses on those ELSA respondents whose wave 4 interview was in the latter half of the field work period (that is, January to July 2009). These Figures correspond to Figures 4a and 4b for simulated wealth (there are of course no data on reported wealth between peak and trough, since few individuals' interview dates coincided with the peak and trough of the FTSE All Share index).

[Figures 5a and 5b about here]

Figures 5a and 5b differ from Figures 4a and 4b in a number of important respects. First, they reveal changes in `safe' wealth. This would include, for example, the accumulation of DB pension wealth over time for those still working and drawing down of DB pension wealth for those in retirement, the accumulation or decumulation of savings held in current or savings accounts, and the annuitisation of DC pension wealth (at which point the individual would cease having a DC fund classified as a 'FTSE exposed asset' and instead have a stream of pension income classified as a 'safe asset').

The second striking aspect of Figures 5a and 5b is that the changes in reported wealth are much more disperse than the simulated changes. For example, around 6% of the sample have simulated wealth loss of more than 10% of total wealth (Figure 4a), but for nearly one quarter of the sample their report wealth displayed a loss of this magnitude (Figure 5a). There are also many more increases in reported wealth of 5% or more than there are simulated gains of this magnitude. Note that the greater dispersion of changes in reported total wealth is not entirely, or even largely, driven by the fact that there are changes in `safe' wealth. There is greater dispersion in the change in all categories of wealth.

Table 5 describes how changes in reported wealth vary with observed respondent characteristics, in the same way that Table 3 did for the simulated wealth changes. The largest difference is that losses in housing and FTSE-exposed wealth are entirely offset by accumulations of `safe' assets, which increased by increased by nearly £17,000, equivalent to 3.2% of gross wealth, for the sample as a whole. These gains are largest for those in the 50-59 age group and those still working, presumably because some of these individuals are still accumulating in DB pensions. For most groups, total wealth actually rose on average between wave 3 and wave 4. It is important to note that this does not mean that these groups did not experience a negative wealth shock. The financial crisis may have meant that wealth rose by less than they had anticipated.

The patterns of changes in reported wealth by characteristics are much less sharp than those in Table 3.Tables A2 and A3, in the appendix, summarize these patterns in a multivariate way, using mean and median regression respectively. There is still some evidence that losses (gains) in reported wealth were greater (smaller) among individuals with higher wealth, but few other characteristics are consistently correlated with changes in reported wealth. Older individuals (aged 70 and over) and those no longer working tended to

have greater declines on average in their reported 'safe' wealth, which could be an indication that these individuals are decumulating their wealth to fund their retirement.

[Table 5 about here]

It is worth emphasizing that neither the simulated wealth changes nor the changes in reported wealth are a fully accurate measure of the wealth shocks experienced by ELSA panel members through the financial crisis. The simulated wealth changes will differ from the true shock because of heterogeneity in returns stemming from fine differences in holdings. This is of course a kind of measurement error. Changes in reported wealth, on the other hand, will contain not just the shock but also planned wealth changes, responses to the shocks, and reporting error. Taken together, however, these two measures provide useful indications of the likely wealth shocks experienced by older individuals in England through the Financial Crisis. Moreover, we can use one measure as an instrument for the other, as we do in the next section.

5. The Effect of Wealth Shocks on Consumption and Expectations

We now use the wealth shocks just documented to estimate the effects of wealth on household consumption expenditure and on individual expectations. As described in Section 2, we use an instrumental variables strategy, in which we instrument reported wealth shocks with simulated ones. Reported wealth shocks will reflect active saving and investment decisions, made in part in response to financial crisis, and will also contain measurement error. Variation in the size of simulated wealth shocks comes from the composition of pre-crisis portfolios and the effectively random timing of interviews.

Consumption Expenditure

We begin, in Table 6, with the effects of changes in wealth on changes in annual consumption expenditure. Each column in Table 6 corresponds to a different measure of real

annual expenditure, reflecting the different expenditure items recorded in the survey. These are expenditure on food in, food out, fuel, clothes and finally, in the fifth column, the sum of these four. Expenditures are measured in real pounds per annum. Each column reports results from two different regressions. The top panel (above the dotted line) reports the results of a regression of changes in real expenditure (in these five categories) on changes in total real wealth (as in equation 1). The lower panel (below the dotted line) reports the results of regressions in which the different components of total real wealth (housing wealth, pension wealth, and non-housing, non-pension wealth) enter separately and hence can have differing effects on expenditures (as in equation 2). In each regression the relative price of the good (or basket of goods) being modelled is included as an additional regressor, as are a number of additional individual characteristics. (The coefficients on the latter are not reported in Table 6 for brevity, but are available on request).

To check the relevance of simulated wealth changes as an instrument for reported wealth changes, we ran first stage regressions of reported wealth changes on simulated wealth changes and the relative prices of the different expenditure goods (which are the only other variables in the empirical models.) Full results are available on request but in every case the estimated co-efficient on simulated wealth changes was positive and significant at at least the 5% level. For example, in a regression of reported wealth changes on simulated wealth changes and the relative price of food in (the relevant first stage regression for the results in the top left corner of Table 6), simulated wealth changes have a t-statistic of 5.02. Simulated wealth is a strong predictor of reported wealth changes and weak instruments are not an issue in this analysis.

The top panel of Table 6 shows a statistically significant effect of changes in total real wealth on the sum of real spending on food in, food out, fuel and clothes. Effects on clothing and fuel are significant at the 10 but not 5 percent level, and the effect on fuel has an

unexpected sign. Expenditure on food in and food out show effects of the expected sign, but these effects are not significantly different from zero. Overall, these effects are small. The estimate for the sum of real spending on food in, food out, fuel and clothes suggests that an extra £100 wealth increases annual spending on these four items by less than £1. Given that these four goods comprise about a third of spending for these households, our estimate suggests a marginal propensity to spend on all goods and services which is towards the lower end of the range suggested by the prior literature.

The bottom panel of Table 6 demonstrates the effects of allowing the marginal propensity to spend to differ by category of wealth. None of the coefficients are individually significant.

[Table 6 about here]

Table 7 repeats exactly the same exercise, but splitting the data between those aged 50 to 69, and those aged 70 and over. Throughout, the results generally echo those in Table 6, though only the effect on total spending among the younger group is statistically significant at the 5 percent level and of the expected sign.

[Table 7 about here]

Expectations

Given the modest impact of wealth shocks on current consumption expenditure found in the previous section, we turn now to the expectations data collected in ELSA on intended bequests and expected future financial security. These are alternative margins on which an individual could adjust to the wealth shocks in order to satisfy their inter-temporal budget constraint.

We begin our analysis of these margins with Figures 6 and 7, which present the cumulative distribution of two expectation questions in ELSA waves 3 (2006–07) and wave 4 (2008–09). Figure 6 shows the cumulative distribution of responses to a question asking the

expected chance of leaving a bequest of greater than £150,000. The figure shows, for example, that the median respondent in wave 3 thought they had an 80% chance of leaving a bequest of at least this size. The most striking aspect of the Figure is how similar the wave 3 and wave 4 distributions are. The cumulative fractions believing their chance was 50 per cent or less is indistinguishable, and the same is true for 40, 30 or 20 per cent. The very top of the empirical cumulative distribution in wave 4 is shifted to the left, relative to wave 3, indicating a small decrease in the number of people *very* certain they would leave a bequest of £150,000 or more.

[Figure 6 about here]

Figure 7 shows the cumulative distribution of responses to the question asking the expected chance of having inadequate resources at some time in the future. Figure 7 shows, for example, that the median respondent in wave 3 thought they had about a 30 per cent chance of having inadequate resources in the future.

Note that this question is about a negative event (inadequate resources) whereas the bequest question is framed in the opposite way (the expected chance of having enough resources for a moderately large bequest). Thus wealth shocks should be expected to move the distribution of responses to this question in the opposite direction. Just as in Figure 6, the most important feature of the Figure is how similar the wave 3 and wave 4 distributions are. There is some shift (now to the right) in the wave 4 distribution, indicating increased chances of inadequate resources, but the shift is very small. The shift is entirely below the median. Thus there is a small decrease in the number of people who thought it quite unlikely that they would have inadequate resources in the future.

[Figure 7 about here]

These figures show changes in the distributions, but these need not reflect the distribution of individual changes. The latter is captured in Figure 8. This figure shows that

there are slightly more respondents who reported increased expected chances of having inadequate resources by 6 to 25, 25 to 50 and 50 to 100 per cent than there are respondents who reported decreased expected chances of corresponding magnitudes. Conversely, there are slightly fewer respondents who reported increased expected chances of leaving a moderate bequest by 6 to 25, 25 to 50 and 50 to 100 per cent than there are respondents who reported decreased expected chances of corresponding magnitudes.

[Figure 8 about here]

Together, Figures 6, 7 and 8 show that the wealth shocks associated with the financial crisis affected expectations in the direction we would expect. It resulted in fewer people who were very certain that they would leave a moderately large bequest, and expected chances of inadequate financial resources in the future rose slightly, on balance. However, the effects were small.

To explore these effects further, we now report results from regression analysis (described in section 3). Recall the dependent variable is the change in expected chance (of leaving a moderately large bequest, or of inadequate financial resources in the future), running from -100 to +100. The explanatory variables are the reported change in wealth, expressed in £0,000s, and instrumented using changes in simulated wealth.

Table 8 reports estimates of the effect of *nominal* wealth changes on the expected chance of leaving a moderately large bequest. We use nominal wealth here (whereas we used real wealth in the expenditure regressions above and the expectation of future inadequacy regressions below) because the question about bequest expectations is couched in nominal terms (the expected chance of a bequest of £150,000). As before, each column reports the estimated coefficient from two linear IV regressions: one with just total wealth as a dependent variable (as in equation 3) and one with the components of wealth entered independently (as in equation 4).

There are three things to note. First, that there is an economically small but statistically significant effect of wealth shocks on the mean expected chance of leaving a bequest greater than £150,000. Second, that when wealth is broken down into its components, only housing wealth has a statistically significant effect on bequest expectation. Finally that these effects are larger for the group aged 70 and over. Thus the shocks to housing wealth associated with the financial crisis appear to have reduced expectations, at least among those aged 70 and over, of leaving a moderately large bequest.

[Table 8 about here]

Table 9 reports estimates of the effect of *real* wealth on the expected chance of having inadequate resources in the future. We revert to real wealth here because the outcome in question (adequate resources) is not quantitative but presumably depends (as expenditure does) on real wealth.

These Tables show that we find no statistically significant effect of wealth shocks on the expectation of having inadequate resources in the future. It is important to note that this is not because the effects are imprecisely estimated. Rather it is because they are very small. One way to see this is by calculating the minimum effects we would be able to detect given our sample. The minimum detectable effect is the effect size that would lead to a given probability of rejecting a false null of zero (that is power), given a chosen size of a test and the standard errors of our estimates. For a given level of power and significance the minimum detectable effect can be computed directly from the standard error in our sample. As an example, if we set power equal to 80%, and consider a one-sided test with a 5% significance level, the minimum detectable effect is 2.49 times the standard error. If we consider the full-sample effect of total real net wealth on the expected chance of having inadequate resources (top-left corner of Table 9), the standard error of the estimate is 0.152 so that the minimum detectable effect would be 0.38. Recall that the dependent variable, a change in expected

chance, runs from -100 to +100, so that 0.38 is less than one half of one percentage point. Or to put this another way, if the true effect of a wealth shock of £10,000 on the mean expected chance of inadequate resources was 0.38 percentage points or larger, we would have at least an 80% chance of rejecting the false null of no positive effect. This is very precise.

6. Conclusions

The financial year 2008–09 was associated with large falls in asset prices. This potentially resulted in a large shock to individuals' wealth holdings, particularly affecting those close to retirement who have accumulated large amounts of wealth but have relatively little of their working lives left during which to react.

We use data from the English Longitudinal Study of Ageing, a panel survey of the population aged 50 and over in England, from before and during the financial crisis to simulate the impact of the financial crisis on the wealth holdings of older individuals. We then consider three margins on which an individual could adjust to these wealth changes, by estimating the effect of these wealth losses on individuals' current consumption, their expectations of the likely inadequacy of resources in future and their expectations of leaving a bequest. The effect of these wealth losses on another potential margin of adjustment, the planned retirement age is investigated in Crawford (2011), which found that in general individuals did not respond by delaying their planned retirement. The effect on individuals' health is a subject of our ongoing research.

On the eve of the crisis, older individuals in England held about 40% of their wealth in housing and a further 10% in investments and DC pensions, and were therefore relatively exposed to the following asset price fluctuations. Despite this, based on holdings of assets in 2006–07 and the price changes that occurred over the following two years, we simulate that the median individual lost one percent of their total wealth between their wave 3 and wave 4 interview, and that only around 6% of the sample would have lost more than 10% of their

total wealth. However for many individuals, a recovery in asset prices was underway before their wave 4 interview. Simulating the wealth losses experienced between the peak and the trough of the FTSE All Share Index (May 2007 to March 2009) we find that the median loss is about 8%, while 38% of individuals have a simulated wealth loss of 10% or more. Simulated wealth losses are largest among those in the highest wealth quintile, those with high levels of education and those still in work.

Changes in reported wealth are much more disperse than simulated changes: 24% of individuals had declines in their reported wealth of more than 10%, while nearly 40% saw an increase in their reported wealth of more than 5%. The differences are due to underlying saving/dissaving behaviour, greater heterogeneity in returns, individual responses to the financial crisis and measurement error.

With regard to how older households respond to wealth shocks, we found effects of wealth shocks on spending, particularly for an aggregate of food in, food out, clothing and fuel. Together our estimates suggest a marginal propensity to spend out of wealth shocks on all goods and services which is towards the lower end of the range suggested by the prior literature.

Interestingly, expectations of leaving a moderately large bequest seem to be affected by shocks to housing wealth, suggesting that older people in England expect to bequeath their housing wealth. This is consistent with mental accounts but may also be reconciled with fully rational models in which bequests are partly unintended and housing is a good hedge against end of life risks.

Overall, we find only modest effects of the wealth shocks, but a number of things are worth bearing in mind when interpreting these findings. First, some of the outcomes we examined are inherently nonlinear because they are changes in (rounded) probabilities of binary events occurring (having inadequate resources, leaving a bequest of certain size). So

the fact that wealth shocks of the size that occurred in 2008 do not affect these much does not mean that larger shocks would also have no effect on these, or that wealth shocks of this size would not have an affect on other outcomes (leaving a larger bequest, for example). In addition, the cut-off values we can look at in the data (particularly the probability of leaving a bequest of £150,000 or more, but also to some extent the probability of resources being inadequate to meet needs) may not be those that are particularly salient for the majority of households who were most affected by the crisis, since they tended to be in the richer part of the distribution. Evaluating the effects of the wealth shocks at different bequest and adequacy indicators may also, therefore, lead to different effects. A final possibility, that is suggested by the findings of Christelis *et al*. (2011), and which would bear further study, is the possibility that not all households view asset price shocks as fully persistent. If this were the case then, given subsequent macroeconomic events, we might expect to see some further adjustment as the crisis persisted. This is a natural topic to investigate in further research with subsequent waves of ELSA data.

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Tables and Figures

Figure 1: Change in FTSE All-share index

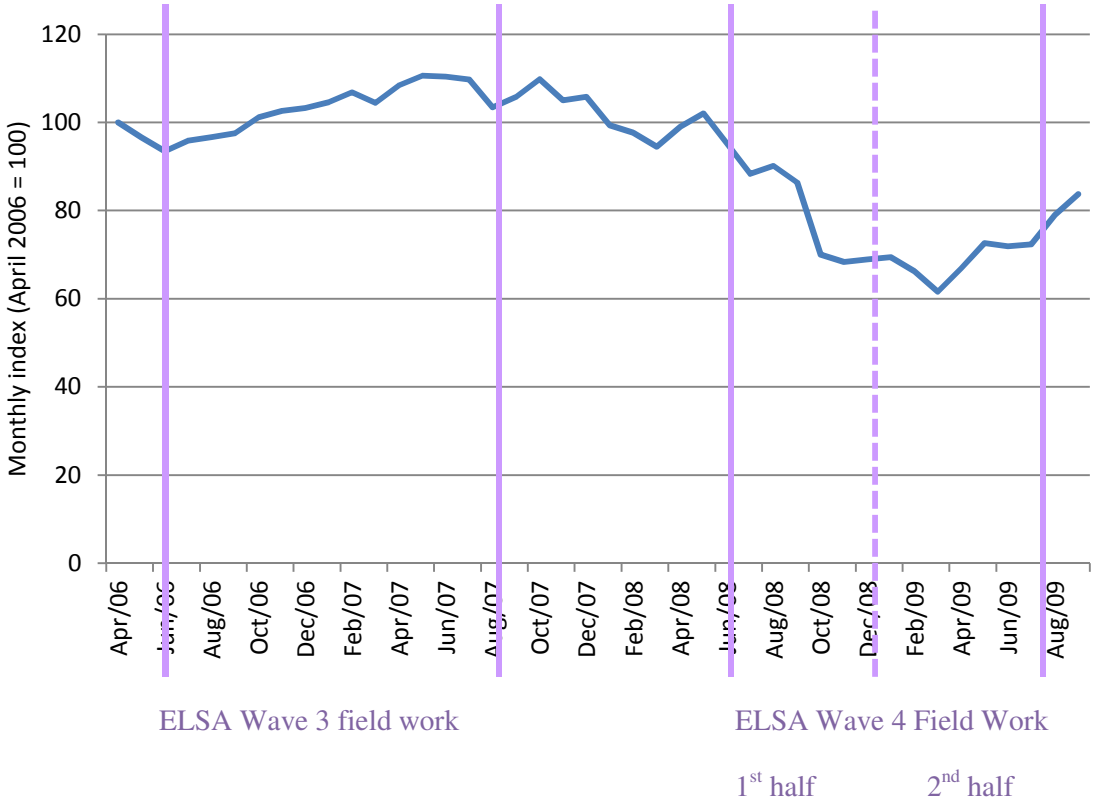


Figure 2: Change in regional house price indices

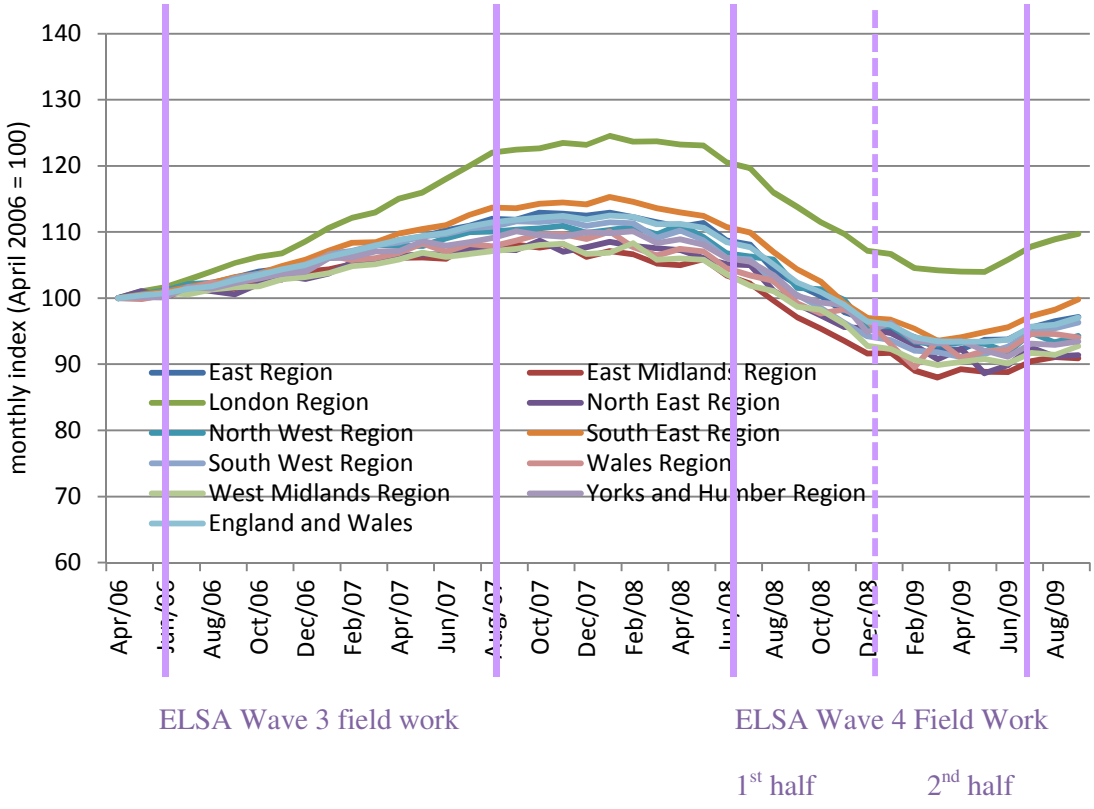


Figure 3: Distribution of individual level index changes for the ELSA sample

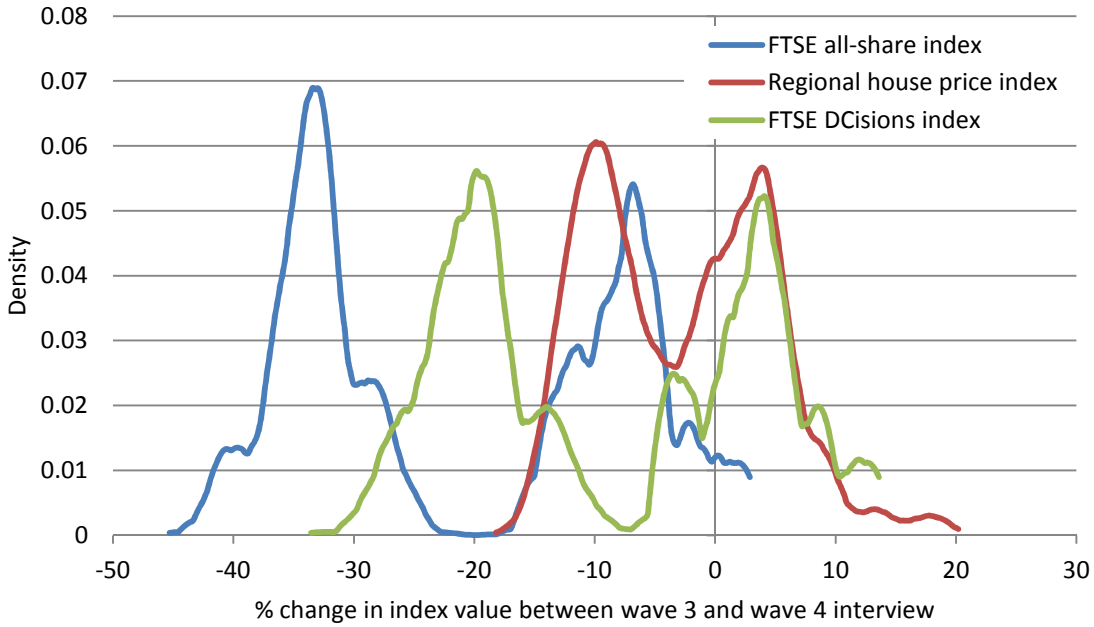


Table 1: Average wealth holdings among the ELSA sample

Wave 3 (2006–07)

	Mean £	**% gross wealth**
Total gross wealth	581,399	
FTSE exposed wealth	60,478	10.4
of which:		
Investments	38,188	6.6
DC pension wealth	22,290	3.8
Housing wealth	234,142	40.3
of which:		
Primary housing wealth	211,711	36.4
Other housing wealth	22,431	3.9
'Safe' wealth	286,780	49.3
of which:		
State pension wealth	113,546	19.5
Private pension wealth	113,205	19.5
Savings	31,361	5.4
Physical wealth	28,668	4.9
Debts	11,750	2.0
of which:		
Mortgage debts	9,917	1.7
Non mortgage debts	1,833	0.3
Total net wealth	569,649	

Note: Sample is those observed in both wave 3 and wave 4.

Table 2: Average wealth holdings among the ELSA sample, Wave 3 (2006–07), by characteristics

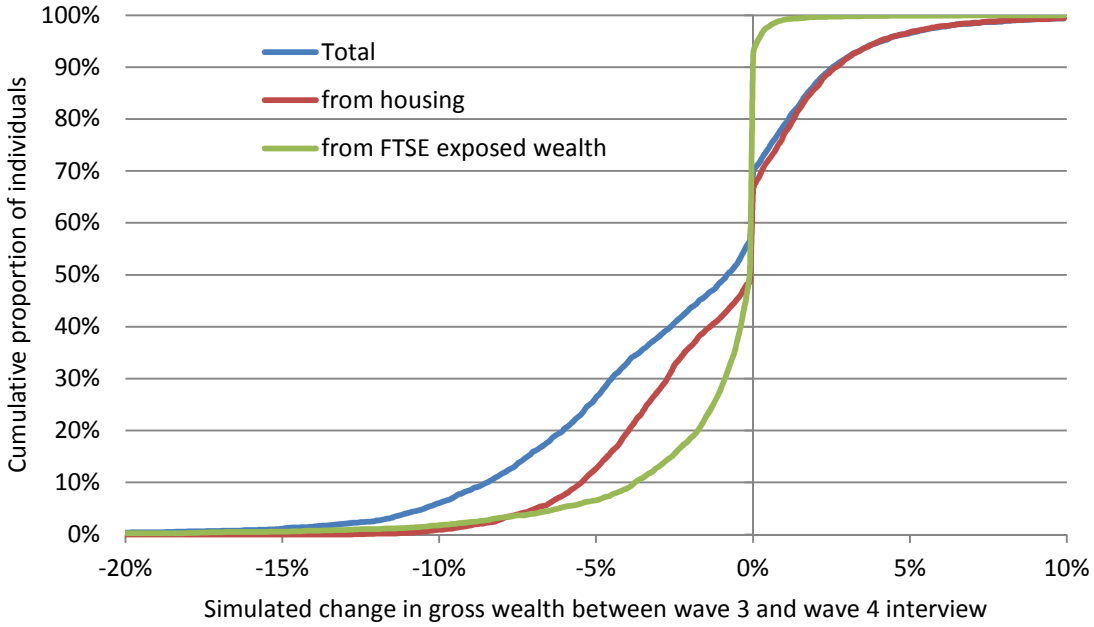
	All	50-59	60-69	70+	low education	mid education	high education
Total gross wealth	£581,399	£700,075	£651,554	£362,487	£340,999	£608,107	£843,709
Proportion of total gross wealth:							
FTSE exposed wealth	10.4	11.5	10.2	8.1	6.7	10.6	12.0
of which:							
Investments	6.6	5.9	6.9	8.0	4.2	6.6	7.7
DC pension wealth	3.8	5.7	3.2	0.1	2.6	4.0	4.3
Housing wealth	40.3	36.5	38.6	51.9	44.3	39.7	38.7
of which:							
Primary housing wealth	36.4	32.5	34.7	48.8	41.6	35.7	34.4
Other housing wealth	3.9	3.9	3.9	3.1	2.7	4.1	4.3
'Safe' wealth	49.3	52.0	51.2	40.0	49.0	49.6	49.3
of which:							
State pension wealth	19.5	20.1	21.6	15.2	26.5	19.7	16.1
Private pension wealth	19.5	20.7	20.1	15.1	14.5	18.0	22.8
Savings	5.4	4.2	6.0	7.6	5.6	5.1	5.4
Physical wealth	4.9	7.0	3.5	2.1	2.3	6.8	5.0
Debts	2.0	3.1	1.2	0.3	1.6	2.2	2.1
of which:							
Mortgage debts	1.7	2.6	1.0	0.2	1.4	1.8	1.8
Non mortgage debts	0.3	0.5	0.2	0.1	0.3	0.4	0.3

Note: Low education is defined as having qualifications less than o-level or equivalent, high education is defined as having qualifications higher than a-level.

Table 2 (Continued): Average wealth holdings among the ELSA sample, Wave 3 (2006–07), by characteristics

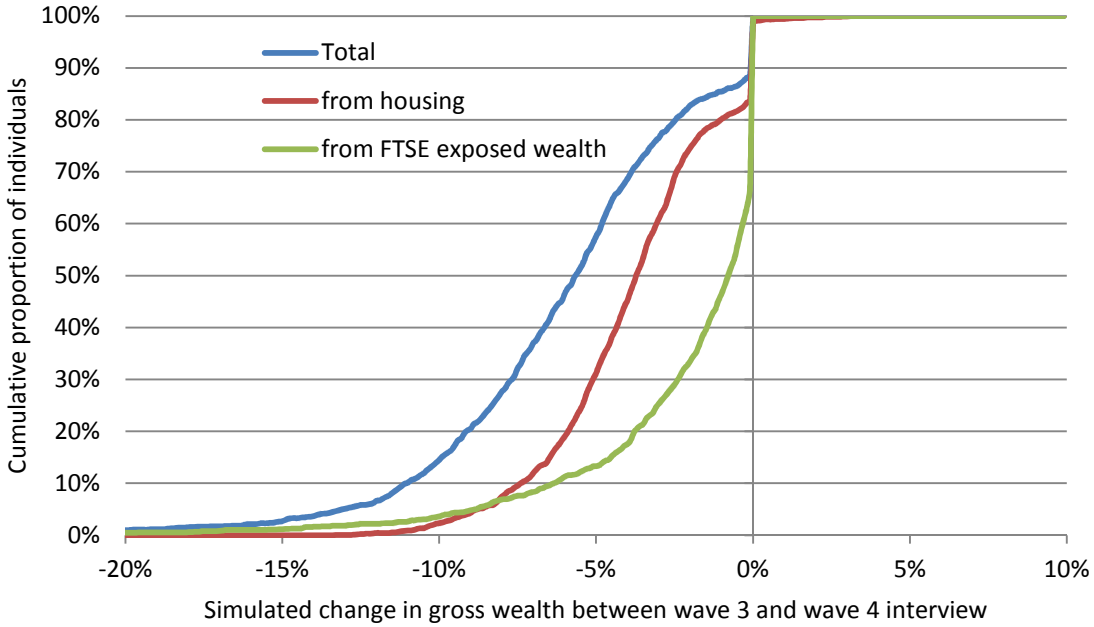
	single man	single woman	couple/ extended	lowest wealth	q2	q3	q4	highest wealth	working	retired	not working or retired
Total gross wealth	£331,316	£259,434	£695,022	£204,337	£339,360	£474,259	£626,751	£1,264,227	£737,839	£478,514	£440,519
Proportion of total gross wealth:											
FTSE exposed wealth	10.8	9.8	10.4	5.8	5.6	6.5	8.2	15.0	11.4	9.0	10.2
of which:											
Investments	6.9	8.3	6.4	1.3	1.5	2.9	4.8	11.0	5.6	8.1	6.1
DC pension wealth	3.9	1.5	4.1	4.5	4.1	3.5	3.4	4.0	5.8	0.9	4.1
Housing wealth	41.5	55.3	38.7	16.6	37.2	41.3	44.3	42.6	37.7	43.5	41.6
of which:											
Primary housing wealth	38.2	52.8	34.7	16.3	36.8	40.4	42.2	35.2	33.6	40.1	37.5
Other housing wealth	3.3	2.5	4.0	0.2	0.4	0.9	2.1	7.3	4.2	3.4	4.1
'Safe' wealth	47.7	34.8	50.8	77.6	57.1	52.3	47.5	42.4	50.8	47.5	48.2
of which:											
State pension wealth	20.5	13.5	20.1	49.3	32.2	24.0	19.1	9.8	19.6	18.3	23.9
Private pension wealth	18.1	12.8	20.2	25.6	21.1	23.4	22.0	15.3	19.9	19.8	15.9
Savings	6.4	7.0	5.2	2.6	3.4	4.3	5.5	6.7	4.4	6.9	5.0
Physical wealth	2.7	1.6	5.4	0.1	0.4	0.6	0.9	10.6	7.0	2.5	3.3
Debts	1.5	2.0	2.1	6.5	3.9	2.1	1.5	1.0	3.1	0.6	1.7
of which:											
Mortgage debts	1.2	1.6	1.7	5.1	3.3	1.7	1.3	0.9	2.7	0.5	1.3
Non mortgage debts	0.3	0.3	0.3	1.4	0.6	0.4	0.2	0.1	0.4	0.1	0.4

Figure 4a: Distribution of simulated wealth changes for the ELSA sample, Wave 3 (2006–07) to Wave 4 (2008–09)



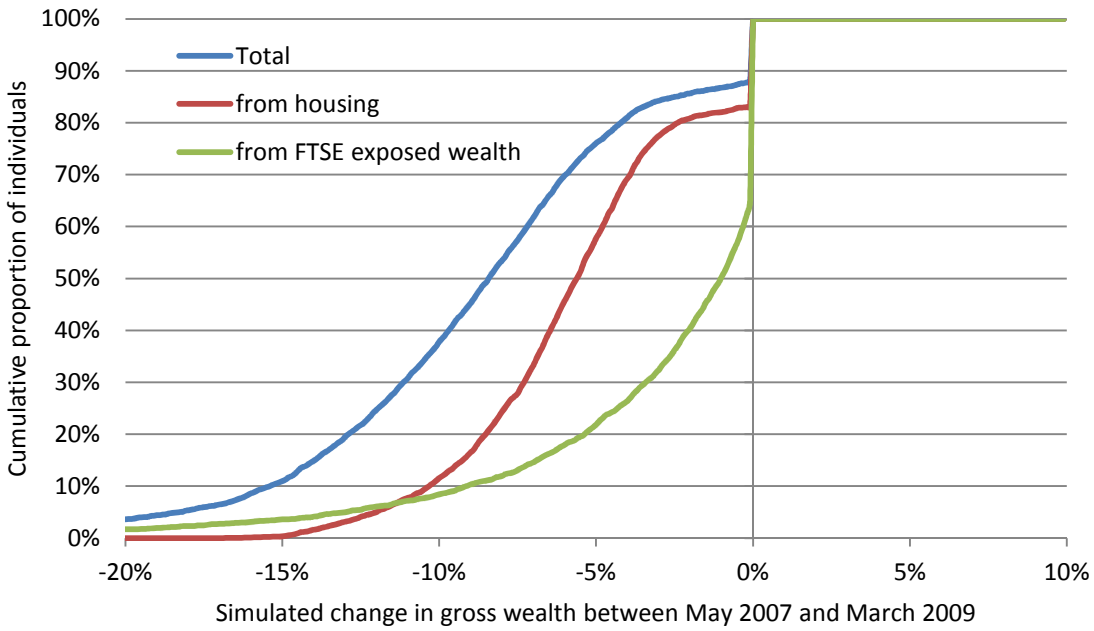
Note: 'Safe' wealth is assumed not to change between wave 3 and wave 4, so 100% of the sample have 0% change in 'safe' wealth.

Figure 4b: Distribution of simulated wealth changes (wave 3 to wave 4) ELSA sample interviewed in 2nd half of wave 4 (Jan. – July 2009)



Note: 'Safe' wealth is assumed not to change between wave 3 and wave 4, so 100% of the sample have 0% change in 'safe' wealth.

Figure 4c: Distribution of simulated peak to trough wealth changes for the ELSA sample (May 2007 to March 2009)



Note: Peak is taken to be May 2007, trough is taken to be March 2009 (which corresponds to the peak and trough of the FTSE all-share index). 'Safe' wealth is assumed not to change between wave 3 and wave 4, so 100% of the sample have 0% change in 'safe' wealth.

Table 3: Mean simulated wealth changes for the ELSA sample, Wave 3 (2006–07) to Wave 4 (2008–09), by characteristics

	£			% gross wealth		
	Total	FTSE exposed	Housing	Total	FTSE exposed	Housing
All	-£17,458	-£10,584	-£6,876	-3.0%	-1.8%	-1.2%
50-59	-£22,758	-£13,463	-£9,263	-3.3%	-1.9%	-1.3%
60-69	-£18,863	-£11,873	-£6,975	-2.9%	-1.8%	-1.1%
70+	-£9,137	-£5,797	-£3,378	-2.5%	-1.6%	-0.9%
Low education	-£7,637	-£3,906	-£3,791	-2.2%	-1.1%	-1.1%
Mid education	-£18,742	-£11,493	-£7,330	-3.1%	-1.9%	-1.2%
High education	-£28,077	-£17,731	-£10,171	-3.3%	-2.1%	-1.2%
Least wealth	-£2,257	-£1,354	-£1,014	-1.1%	-0.7%	-0.5%
q2	-£6,744	-£2,659	-£4,067	-2.0%	-0.8%	-1.2%
q3	-£9,625	-£4,380	-£5,219	-2.0%	-0.9%	-1.1%
q4	-£18,628	-£9,098	-£9,539	-3.0%	-1.5%	-1.5%
Wealthiest	-£50,498	-£35,482	-£14,653	-4.0%	-2.8%	-1.2%
Single man	-£7,656	-£5,602	-£2,091	-2.3%	-1.7%	-0.6%
Single woman	-£6,448	-£4,007	-£2,452	-2.5%	-1.5%	-0.9%
Couple/extended	-£21,510	-£12,890	-£8,606	-3.1%	-1.9%	-1.2%
Working	-£25,359	-£14,857	-£10,403	-3.4%	-2.0%	-1.4%
Not working, retired	-£11,565	-£7,821	-£3,805	-2.4%	-1.6%	-0.8%
Not working, not retired	-£12,768	-£6,570	-£6,300	-2.9%	-1.5%	-1.4%

Note: Mean £ loss is mean of individual level losses. % of gross wealth is that mean loss divided by mean wealth. Low education is defined as having qualifications less than o-level or equivalent, high education is defined as having qualifications higher than a-level.

Table 4: Mean simulated 'peak to trough' wealth changes for ELSA sample, (May 2007 to March 2009) by characteristics

	£			% gross wealth		
	Total	FTSE exposed	Housing	Total	FTSE exposed	Housing
All	-£59,992	-£26,666	-£33,359	-10.3%	-4.6%	-5.7%
50-59	-£70,765	-£34,321	-£36,284	-10.1%	-4.9%	-5.2%
60-69	-£65,306	-£29,517	-£35,805	-10.0%	-4.5%	-5.5%
70+	-£41,230	-£14,493	-£26,960	-11.4%	-4.0%	-7.4%
Low education	-£31,788	-£10,117	-£21,778	-9.3%	-3.0%	-6.4%
Mid education	-£62,694	-£28,473	-£34,421	-10.3%	-4.7%	-5.7%
High education	-£91,308	-£44,748	-£46,257	-10.8%	-5.3%	-5.5%
Least wealth	-£9,400	-£4,607	-£5,007	-4.6%	-2.3%	-2.5%
q2	-£26,019	-£7,466	-£18,500	-7.7%	-2.2%	-5.5%
q3	-£41,185	-£12,854	-£28,227	-8.7%	-2.7%	-6.0%
q4	-£62,339	-£22,317	-£40,083	-9.9%	-3.6%	-6.4%
Wealthiest	-£162,465	-£86,217	-£75,585	-12.9%	-6.8%	-6.0%
Single man	-£35,415	-£15,858	-£19,562	-10.7%	-4.8%	-5.9%
Single woman	-£32,668	-£12,254	-£20,404	-12.6%	-4.7%	-7.9%
Couple/extended	-£70,079	-£31,706	-£38,398	-10.1%	-4.6%	-5.5%
Working	-£75,117	-£35,377	-£39,624	-10.2%	-4.8%	-5.4%
Not working, retired	-£50,280	-£20,685	-£29,727	-10.5%	-4.3%	-6.2%
Not working, not retired	-£45,622	-£19,695	-£26,061	-10.4%	-4.5%	-5.9%

Note: Peak is taken to be May 2007, trough is taken to be March 2009 (which corresponds to the peak and trough of the FTSE all-share index). Mean £ loss is mean of individual level losses. % of gross wealth is that mean loss divided by mean wealth. Low education is defined as having qualifications less than o-level or equivalent, high education is defined as having qualifications higher than a-level.

Figure 5a: Distribution of reported wealth changes for ELSA sample, Wave 3 (2006–07) to Wave 4 (2008–09)

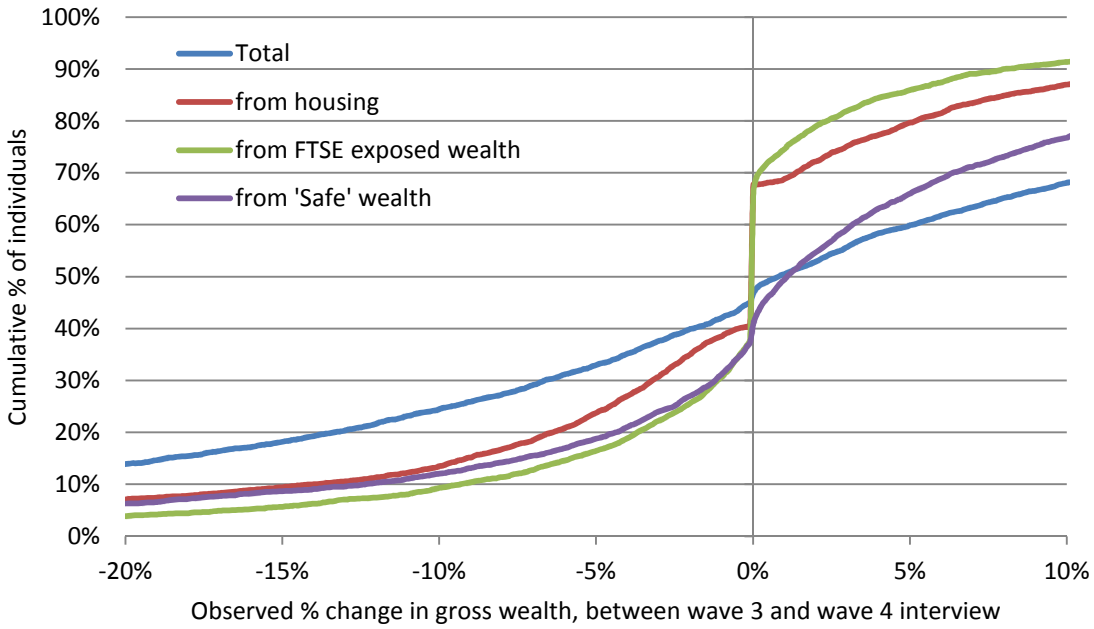


Figure 5b: Distribution of reported wealth changes for ELSA sample (wave 3 to wave 4), ELSA sample interviewed in 2nd half of wave 4 (Jan. – July 2009)

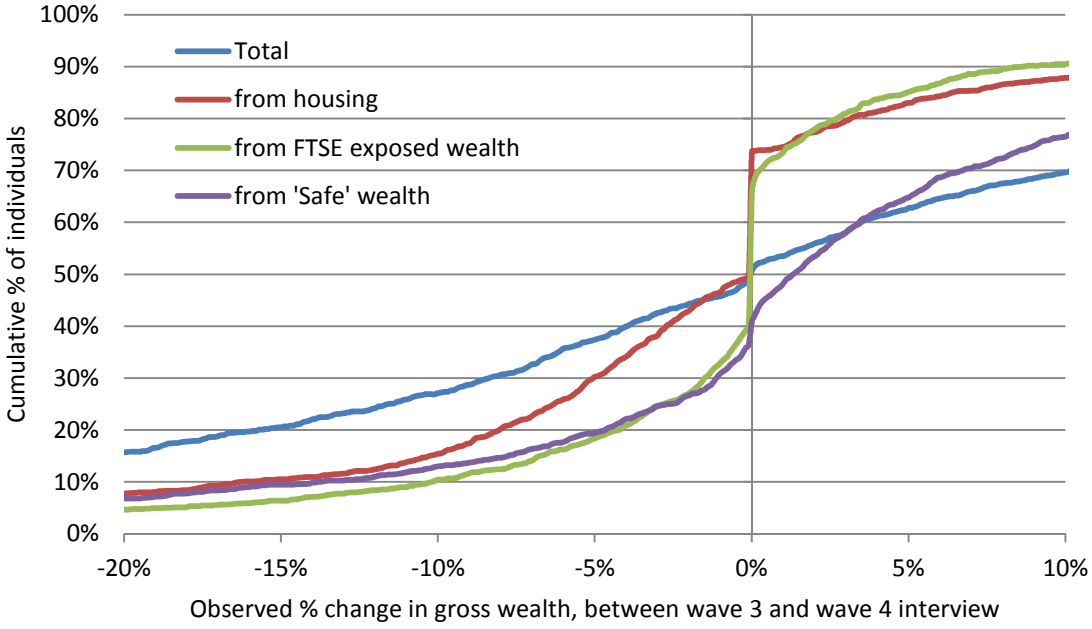


Table 5: Mean reported wealth changes for the ELSA sample, Wave 3 (2006–07) to Wave 4 (2008–09), by characteristics

	£				% gross wealth			
	Total	FTSE exposed	Housing	'Safe'	Total	FTSE exposed	Housing	'Safe'
All	£10,401	-£1,924	-£4,499	£16,824	1.9%	-0.4%	-0.8%	3.1%
50-59	£26,242	£3,377	-£2,134	£24,998	4.2%	0.5%	-0.3%	4.0%
60-69	£3,417	-£6,169	-£6,615	£16,201	0.6%	-1.0%	-1.1%	2.6%
70+	-£997	-£4,330	-£3,760	£7,092	-0.3%	-1.2%	-1.1%	2.0%
Low education	£1,991	-£2,269	-£3,794	£8,054	0.6%	-0.7%	-1.1%	2.4%
Mid education	£10,333	-£1,785	-£5,192	£17,310	1.9%	-0.3%	-0.9%	3.1%
High education	£20,754	-£1,620	-£4,779	£27,152	2.7%	-0.2%	-0.6%	3.5%
Least wealth	£27,805	£1,346	£15,609	£10,850	14.2%	0.7%	8.0%	5.5%
q2	£23,084	£4,657	£1,349	£17,078	6.8%	1.4%	0.4%	5.0%
q3	£16,908	-£1,231	-£4,161	£22,301	3.6%	-0.3%	-0.9%	4.7%
q4	£12,655	£3,007	-£12,052	£21,699	2.0%	0.5%	-1.9%	3.5%
Wealthiest	-£31,623	-£18,617	-£24,865	£11,859	-2.9%	-1.7%	-2.3%	1.1%
Single man	-£1,424	-£2,805	-£5,561	£6,942	-0.4%	-0.9%	-1.7%	2.1%
Single woman	£5,921	-£1,477	-£1,212	£8,610	2.4%	-0.6%	-0.5%	3.5%
Couple/extended	£13,028	-£1,936	-£5,244	£20,208	2.0%	-0.3%	-0.8%	3.2%
Working	£22,824	£1,778	-£4,483	£25,529	3.5%	0.3%	-0.7%	3.9%
Not working, retired	£797	-£5,191	-£4,956	£10,944	0.2%	-1.1%	-1.1%	2.4%
Not working, not retired	£5,403	-£1,996	-£2,947	£10,346	1.3%	-0.5%	-0.7%	2.5%

Note: Mean £ loss is mean of individual level losses. % of gross wealth is that mean loss divided by mean wealth. Excludes those who increased or decreased their total wealth by £1 million or more. Low education is defined as having qualifications less than o-level or equivalent, high education is defined as having qualifications higher than a-level.

Table 6: Wealth Effects on Annual Consumption

Change in:	Food in, real £/annum	Food out, real £/annum	Fuel , real £/annum	Clothes, real £/annum	Total, real £/annum
Total net wealth (£100s), Real	0.102	0.055	-0.090*	0.734*	0.703***
	0.104	0.052	0.050	0.422	0.265
price of (...) /RPI	35.129***	-16.455***	3.567*	-1.107	21.894
	7.785	5.691	1.875	19.773	16.882
Net housing wealth (£100s), Real	0.029	0.001	-0.025	0.218	0.125
	0.049	0.021	0.023	0.206	0.123
Pension wealth (£100s), Real	0.314	0.153	-0.082	0.536	1.883
	0.304	0.157	0.145	0.626	1.149
Net non-pension non-housing wealth (£100s) , Real	0.031	-0.013	-0.089	1.174	0.504
	0.216	0.095	0.092	1.075	0.622
price of (...) /RPI	32.011***	-19.245***	4.047**	-4.532	-0.329
	9.024	6.845	1.858	21.885	23.473
Sample size	0.102	0.055	-0.090*	0.734*	0.703***

Notes: Additional controls (coefficients not reported) include: age bands, education, change in number of people and change in number of earners. Sample is restricted to those observed in waves 2, 3 and 4 of ELSA and who reported a wealth change between waves 3 and 4 of less than £1 million. "RPI" is the retail price index (April 2006=100). Real expenditures and wealth are adjusted by the RPI. "Price of (...)" indicates the specific price index of food in, food out, fuel, clothes, and a price index of a weighted basket of these 4 goods (all indexed April 2006 = 100). ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively. Standard Errors are heteroscedasticity robust and clustered at the household level.

Table 7: Wealth effects on Annual Consumption by Age

Panel (A) Those aged under 70

Change in:	Food in, real £/annum	Food out, real £/annum	Fuel , real £/annum	Clothes, real £/annum	Total, real £/annum
Total net wealth (£100s), Real	0.056	0.055	-0.052	0.820	0.716**
	0.114	0.058	0.050	0.518	0.285
price of (...) /RPI	40.672***	-21.101***	3.137	9.294	18.722
	10.115	7.957	2.369	29.101	22.861
Net housing wealth (£100s), Real	0.012	-0.015	-0.007	0.240	0.080
	0.062	0.028	0.023	0.333	0.136
Pension wealth (£100s), Real	0.269	0.126	-0.107	0.465	1.622*
	0.278	0.152	0.140	0.573	0.953
Net non-pension non-housing wealth (£100s) , Real	-0.061	-0.067	0.006	1.607	0.513
	0.309	0.139	0.114	2.081	0.818
price of (...) /RPI	38.063***	-23.311***	3.514	8.111	-0.337
	10.946	8.912	2.374	39.794	28.237
Sample size	3534	3558	3317	3549	3255

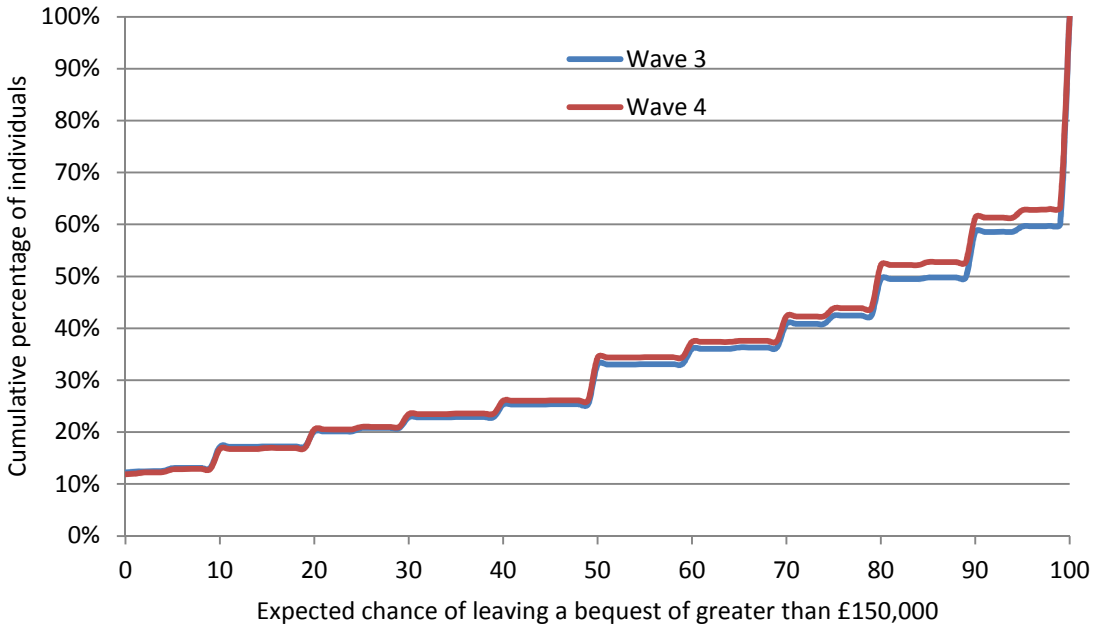
Panel (B) Those aged 70 and over

Change in:	Food in, real £/annum	Food out, real £/annum	Fuel , real £/annum	Clothes, real £/annum	Total, real £/annum
Total net wealth (£100s), Real	0.347	0.059	-0.241**	0.365	0.634
	0.284	0.099	0.123	0.374	0.659
price of (...) /RPI	30.024**	-7.533	3.831	-19.476	26.738
	13.124	7.016	2.812	16.637	22.115
Net housing wealth (£100s), Real	0.082	0.026	-0.090	0.067	0.209
	0.092	0.061	0.071	0.276	0.206
Pension wealth (£100s), Real	-0.509	-0.924	-0.656	-2.813	-3.537
	2.007	2.212	1.444	8.372	6.117
Net non-pension non-housing wealth (£100s) , Real	0.277	0.061	-0.334*	0.242	0.412
	0.265	0.16	0.197	0.747	0.655
price of (...) /RPI	32.56	6.498	6.274	-33.26	56.102
	22.521	31.432	5.147	41.519	62.776
Sample size	2072	2121	1838	2125	1781

Notes: As Table 6.

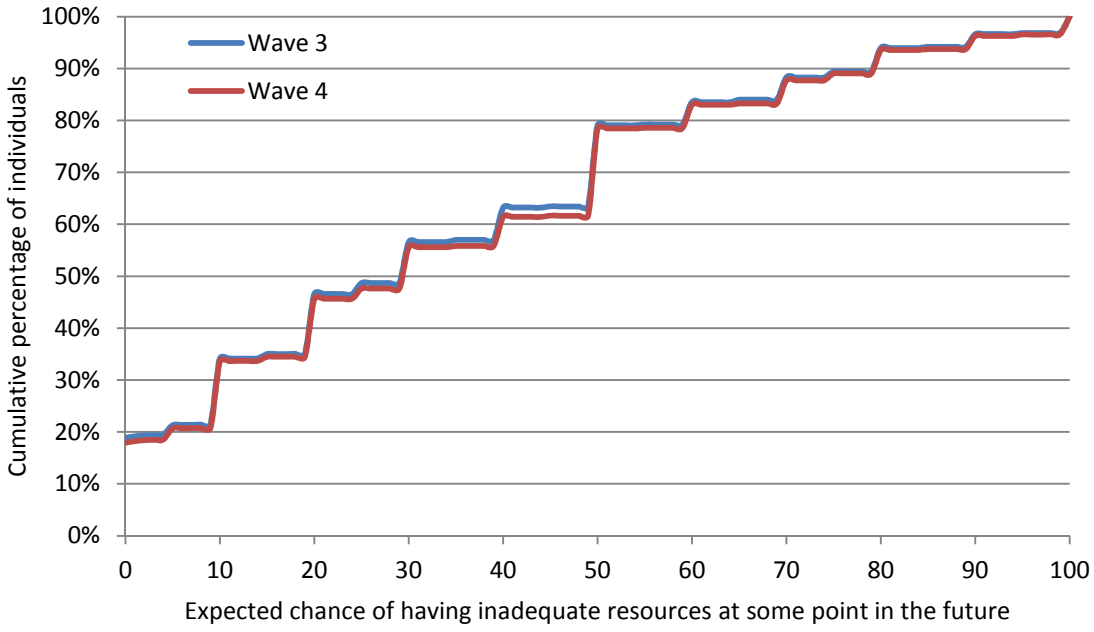
Figure 6: Distribution of the expected chance of leaving a bequest >£150k

Wave 3 (2006–07) and Wave 4 (2008–09)



Note: Sample restricted to those interviewed in both wave 3 and wave 4.

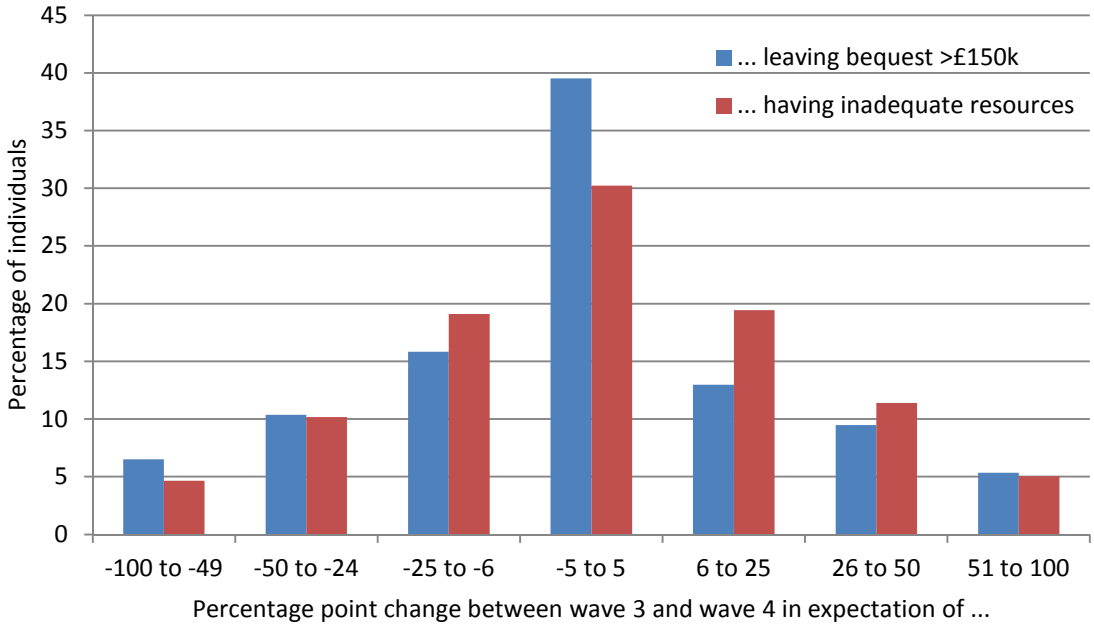
Figure 7: Distribution of the expected chance of having inadequate resources in future
Wave 3 (2006–07) and Wave 4 (2008–09)



Note: Sample restricted to those interviewed in both wave 3 and wave 4.

Figure 8: Distribution of individual changes in expectations

Wave 3 (2006–07) to Wave 4 (2008–09)



Note: Sample restricted to those interviewed in both wave 3 and wave 4.

Table 8: Effect of changes in wealth on the expected chance of leaving a bequest of greater than £150,000

Nominal change in (£10,000s):	All	Aged 50-69	Aged 70+
Total net wealth	0.439**	0.296	0.780*
	(0.205)	(0.192)	(0.456)
Net housing wealth	0.226***	0.143*	0.387**
	(0.075)	(0.078)	(0.158)
Pension wealth	0.931	0.754*	-0.757
	(0.501)	(0.455)	(1.480)
Net non-pension non-housing wealth	0.109	-0.109	0.352
	(0.245)	(0.307)	(0.424)

Notes: Sample is restricted to those observed in waves 2, 3 and 4 of ELSA and who reported a wealth change between waves 3 and 4 of less than £1 million. Sample sizes: N=4,511 for all, N= 2,982 for aged 50-69 and N=1,529 for aged 70+. Regression is linear IV. Dependent variable: change in expectation [-100,100]. ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively. Standard Errors are heteroscedasticity robust and clustered at the household level.

Table 9: Effect of changes in wealth on the expected chance of having inadequate resources at some point in future

Real change in (£10,000s):	All	Aged 50-69	Aged 70+
Total net wealth	-0.143	-0.046	-0.324
	(0.152)	(0.142)	(0.466)
Net housing wealth	-0.016	0.047	-0.642
	(0.067)	(0.093)	(1.949)
Pension wealth	-0.465	-0.514	-14.533
	(0.463)	(0.402)	(59.09)
Net non-pension non-housing wealth	0.177	0.417	-1.502
	(0.270)	(0.462)	(5.18)

Notes: Sample is restricted to those observed in waves 2, 3 and 4 of ELSA and who reported a wealth change between waves 3 and 4 of less than £1 million. Sample sizes: N=5,569 for all, N=3,515 for aged 50-69 and<70 and N=2,054. Regression is linear IV. Dependent variable: change in expectation [-100,100]. ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively. Standard Errors are heteroscedasticity robust and clustered at the household level.

Appendix

Table A1: Mean and median regression of simulated wealth changes on characteristics

	mean simulated wealth change (£10,000s)			median simulated wealth change (£10,000s)		
	Total	**FTSE**	**Housing**	**Total**	**FTSE**	**Housing**
60-69	0.096	0.067	0.054	0.171	0.019	0.026
	0.193	0.134	0.094	0.138	0.033	0.103
70+	0.343	0.245	0.123	0.171	0.027	0.026
	0.230	0.160	0.112	0.165	0.040	0.123
low education	0.157	0.161	-0.006	0.000	0.011	0.000
	0.176	0.123	0.086	0.126	0.031	0.094
high education	-0.174	-0.091	-0.075	-0.151	-0.022	-0.022
	0.177	0.124	0.086	0.127	0.031	0.095
Lowest wealth	0.612***	0.212	0.393***	0.451***	0.034	0.225*
	0.217	0.151	0.106	0.155	0.038	0.116
q2	0.230	0.129	0.101	0.215	0.021	0.136
	0.214	0.150	0.104	0.153	0.037	0.114
q4	-0.895***	-0.460***	-0.441***	-1.035***	-0.212***	-0.692***
	0.214	0.149	0.104	0.153	0.037	0.114
Highest wealth	-4.011***	-3.051***	-0.930***	-2.091***	-0.915***	-0.761***
	0.218	0.152	0.106	0.156	0.038	0.117
Single woman	-0.131	-0.013	-0.111	0.000	0.002	0.000
	0.278	0.194	0.135	0.198	0.048	0.148
Couple/extended	-1.236***	-0.671***	-0.559***	-0.236	-0.030	-0.090
	0.245	0.171	0.120	0.175	0.043	0.131
Retired	0.773***	0.306**	0.441***	0.292**	0.035	0.173
	0.205	0.142	0.100	0.146	0.035	0.109
Not working, not retired	0.475**	0.329**	0.125	0.274*	0.043	0.173
	0.226	0.158	0.110	0.161	0.039	0.121
Constant	-0.574*	-0.247	-0.332**	-0.678***	-0.077	-0.335**

Notes: Sample size, N=7,033. Simulated wealth changes are from wave 3 (2006–07) to wave 4 (2008–09). Baseline group is single working men, aged 50-59, with medium education and who are in the middle wealth quintile. Standard errors for median regressions generated via bootstrapping with 2000 repetitions. ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

Table A2: Mean Regression of reported wealth changes on characteristics

	mean observed wealth change (£10,000s)			
	Total	**FTSE**	**Housing**	**'Safe'**
60-69	-1.223**	-0.689**	0.001	-0.535
	0.574	0.339	0.367	0.424
70+	-1.369**	-0.53	0.196	-1.035**
	0.681	0.402	0.435	0.503
low education	-1.103**	-0.087	-0.484	-0.532
	0.521	0.308	0.333	0.385
high education	2.092***	0.370	0.673**	1.049***
	0.527	0.311	0.337	0.389
Lowest wealth	1.832***	0.377	2.213***	-0.759
	0.637	0.376	0.407	0.470
q2	1.033	0.659*	0.677*	-0.303
	0.630	0.372	0.402	0.465
q4	-0.611	0.423	-0.887**	-0.147
	0.630	0.372	0.403	0.465
Highest wealth	-5.507***	-1.801***	-2.337***	-1.369***
	0.653	0.386	0.417	0.482
Single woman	0.875	0.142	0.389	0.344
	0.819	0.484	0.523	0.604
Couple/extended	0.580	-0.158	-0.159	0.896*
	0.723	0.427	0.462	0.534
Retired	-0.757	-0.298	-0.099	-0.359
	0.606	0.358	0.387	0.447
Not working, not retired	-1.271*	-0.309	-0.274	-0.687
	0.671	0.397	0.429	0.496
Constant	2.097**	0.400	-0.387	2.084***

Notes: Sample size N=6,955. Reported wealth changes are from wave 3 (2006–07) to wave 4 (2008–09). Baseline group is single working men, aged 50-59, with medium education and who are in the middle wealth quintile. Standard errors for median regressions generated via bootstrapping with 2000 repetitions. ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

Table A3: Median Regression of reported wealth changes on characteristics

	median observed wealth change (£10,000s)			
	Total	**FTSE**	**Housing**	**'Safe'**
60-69	-0.467	0.000	0.000	-0.178
	0.327	0.034	0.114	0.158
70+	-0.277	0.000	0.000	-0.234
	0.388	0.041	0.136	0.188
low education	-0.109	0.000	0.000	-0.042
	0.297	0.031	0.104	0.144
high education	1.179***	0.000	0.000	0.354**
	0.300	0.031	0.105	0.145
Lowest wealth	0.467	0.000	0.000	-0.11
	0.363	0.038	0.127	0.176
q2	0.304	0.000	0.000	-0.104
	0.359	0.037	0.126	0.174
q4	-0.233	0.000	-0.500***	0.179
	0.359	0.037	0.126	0.174
Highest wealth	-4.485***	-0.415***	-0.500***	0.270
	0.372	0.039	0.130	0.180
Single woman	0.227	0.000	0.000	0.002
	0.466	0.049	0.163	0.226
Couple/extended	0.119	0.000	0.000	0.181
	0.412	0.043	0.144	0.200
Retired	-1.294***	0.000	0.000	-0.662***
	0.345	0.036	0.121	0.167
Not working, not retired	-1.488***	0.000	0.000	-0.843***
	0.383	0.040	0.134	0.185
Constant	1.206**	0.000	0.000	0.993***

Notes: Sample size N=6,955. Reported wealth changes are from wave 3 (2006–07) to wave 4 (2008–09). Baseline group is single working men, aged 50-59, with medium education and who are in the middle wealth quintile. Standard errors for median regressions generated via bootstrapping with 2000 repetitions. ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.