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Article (Accepted version) (Refereed)

Access to Long Term Care After a Wealth Shock: Evidence from the Housing Bubble and Burst

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Acknowledgements: We would like to thank Karen N Eggleston, Tom Davidoff, Peter Alders, David Grabowski and Joseph Newhouse for comments and suggestions to preliminary versions of the study, and the participants to the NBER Aging Summer Institute July 2013 including Gopi Shah Goda, Kathleen McGarry, Tony Webb, David Wise and Michael Hurd and the participants to the financing Longevity workshop April 24-25th at Stanford University. Joan Costa-Font is grateful for the financial support offered by the Commonwealth Fund (Harkness) Fellowship.

Abstract

Home equity is the primary self-funding mechanism for long term services and supports (LTSS). Using data from the relevant waves of the Health and Retirement Study, we exploit the exogenous variation resulting from the value of housing assets during the Great Recession to examine the effect of housing wealth on use of home health, unpaid help and nursing home care by older adults. Consistent with the idea that individuals consume part of their housing equity during an emergency, we find evidence of a significant increase in the use of paid home health care, nursing home and unpaid informal care. The intensity of unpaid care, however, was not affected. We conduct a placebo test on individuals who do not own property; their use of LTSS was not affected by the housing wealth changes. Taken together, the findings suggest that a housing wealth shock exerts a positive and significant effect on the uptake of home health and nursing home entry and some effect on the probability of unpaid care, but no significant effect on the intensity of unpaid care.

Keywords: long term care, housing equity, housing bubble, informal care, home health care, nursing home care.

JEL No. I18, J14

1. Introduction

One key social policy question facing most western societies is how best to fund long term services and supports (LTSS) in aging populations. About half of adults that reach the age of 65 can expect to use some long term services and supports before they die (Favreault and Dey, 2015). Among those who will use LTSS, the expected present discounted value of the services they would use is estimated at $133,700 in 2015 dollars. Roughly 5% of men and 12% of women age 65 and over will incur costs for LTSS of more than $250,000 in present discounted 2015 dollars before they die (Favreault and Dey, 2015). In the United States, private insurance for LTSS is limited and pays for only about 10% of LTSS expenditures. Public insurance, specifically Medicaid, accounts for about 35% of LTSS spending. As a result, about half of all spending for LTSS is paid for out-of-pocket by service users and their families. Housing assets play an important role and thus serve as a "self-insurance" mechanism. However, to date evidence of the effect of housing wealth shocks on LTSS use is limited.

Housing assets have historically been the main source of non-pension wealth of Americans (Venti and Wise, 1991). This is especially the case for older adults: 72% of Americans 65 years of age and older are homeowners, and most continue to be homeowners at older ages (ASPE, 2016). The median per capita net value (after accounting for debt) of housing assets of older adults is about $80,000 in 2015 dollars. That amounts to 67% of the median per capita net worth of adults over the age of 65. Because housing wealth is the largest source of savings that can be used to pay for unexpected health shocks that involve LTSS, we seek to understand how a housing wealth shock affects individual long-term care decisions.

Given housing wealth's key role in people's precautionary savings, one would expect changes in household housing wealth to influence the capacity to self-fund LTSS. Establishing the causal links between housing wealth and use of LTSS is complicated, however. Unobservable factors that drive housing wealth accumulation may also affect the demand for LTSS later in life (Garber, 1989). Indeed, most individuals save 'generically' for their retirement years, a time when they may expect to have to pay more for medical services as well as LTSS[1]. The latter implicitly assumes that housing wealth influences decisions regarding LTSS. Given the variation across the United States in how much housing prices have grown over the past four decades – years when people currently aged 65 and older might have first bought homes – differences in housing wealth may have a significant impact on how elderly Americans are able to pay for LTSS in the next decade or two. In particular, such differences may affect federal and state expenditures for Medicaid. Thus, there are significant public policy implications if a change in housing assets is found to have a causal effect on the demand for different types of LTCSS. The purpose of this paper is to determine if such a causal effect exists.

In this paper, we focus on housing wealth shocks created by the Great Recession's induced movements in housing prices in the United States. Our identification strategy relies on observing changes in patterns of use of LTSS in response to housing wealth shocks created exogenously by the Great Recession (2006-2010). We observe the variation in housing values starting with the real estate boom that began in the first quarter of 1998, through to the beginning of the housing bubble burst in the first quarter of 2006, and then during the bust (or post-boom) period extending through 2012 (Cohen *et al*, 2012). Housing prices peaked in early 2006 after a

[1] A recent and connected paper finds that state variations in Medicaid Medically Needy program eligibility criteria affects co-residence decisions (Mommaerts, 2018).

decade of price increases, and at the end of that year there was a sudden, unexpected and historic drop in average prices of 18.9%. Home prices continued to fall significantly into 2009, after which prices exhibited more moderate reductions until 2012, when prices began to climb again.[2] Changes in housing prices were heterogeneous across the country: housing prices tended to recover and increase much faster in metropolitan areas on the East and West coasts compared to the middle of the nation (Cohen et al., 2012).[3,4] Thus, there is considerable variation in the magnitude of housing price changes across both geography and time. However, while local housing price changes are exogenous to individual households, they are in part driven by local economic conditions that may affect individual health in ways other than through home equity effects. We account for this by incorporating locality and time fixed effects into our econometric model. As a robustness check, we estimate the impact of local housing price changes on both the wealth and use of LTSS by *renters* who experienced the same housing market conditions as owners but without experiencing the direct wealth gains or losses.

We confirm in our data the effect of a significant housing wealth expansion from 1994 to 2006. After that we find a housing wealth reduction that is on average a 20-25% drop in net value until 2010. The large and for the most part unexpected changes in housing prices are posited to have an influence on consumers' decisions regarding the use of LTSS. The analysis shows responses to housing wealth changes in nursing home use as well as formal home health and the likelihood of informal care use.

[2] See Figure A1 in the Appendix
[3] For example, prices in Boston during the boom increased by 121% and during the bust dropped by 15%, whilst in LA they increased by 231% during the boom and dropped by 40% during the burst. In contrast in Detroit, the price changes were more balanced: prices increased during the boom by 46% and then declined by 44% during the bust.
[4] The two main indexes that are regarded as reliable are the Standard & Poor's (S&P)/Case-Shiller house price index and the Federal Housing Finance Agency (FHFA) Purchase-Only. However, although variation is larger in the former, the two indexes are remarkably similar in the timing of the changes. Overall, metropolitan areas with the larger booms tended to have larger busts.

The structure of the paper is as follows. The next section provides background information about housing wealth among older Americans, followed by a section describing the data and our empirical strategy. Section four reports results and a final section contains some concluding observations.

2. Background

Housing wealth is a a major source of savings that is frequently used to finance LTSS for older adults. Recent research estimates that the median adult has sufficient housing wealth to purchase a little more than one-half year of nursing home care, 208 days (ASPE, 2016). In assessing how changes in housing wealth may affect patterns of using LTSS, it is important to understand how and when housing wealth is used by older adults, the role of housing wealth in the total net worth of older adults, and the demand for LTSS. We briefly review what is known about older adults' wealth and use of LTSS.

Housing at old ages. One of the most striking trends in US housing markets has been the sustained increase in the homeownership rate for those 65 years and older that is attributed to a rise in Social Security benefits (Engelhardt, 2008). There is a strong desire among older adults to age in place (Venti and Wise,1990), and in turn a correlation between income and homeownership for this group. Borrowing against housing wealth is used to smooth consumption, although evidence indicates that this happens primarily among people at very old ages. Walker (2004) shows that housing sales by older people in single-person households are mostly driven by poor health rather than age.

Housing wealth effects. Housing equity has a very important influence on the income of older Europeans (Doling and Elsinga, 2012), and has been found to reduce the amount people save (Doling & Horsewood, 2008). Venti and Wise (1991) reported that approximately 80 per cent of the wealth of older households in the USA was held in the form of housing equity. More recent data from the US Census Bureau (2015) displayed in Figure A2 (straight line) shows the average American over age 65 holds about 77-86% of his or her net worth in the form of housing equity.

Thus, older adults are often described as being 'income-poor and housing-rich' (Hancock, 1998). Property is generally the last resource liquidated, and the liquidation timing has been shown to depend on people's health.

Changes in wealth have an impact on welfare and consumption at old age (Case et al., 2005 and Campbell and Cocco, 2007), although there are some differences between short and long run effects. More specifically, Case et al. (2005) find that changes in aggregate housing values expand consumption with an elasticity that can be as high as 0.1. However, when long run effects are accounted for, the housing wealth elasticity drops to 0.04 but still remains statistically significant (Carrol et al., 2006). Some studies find differences between financial and non-financial wealth (Bostic et al., 2009) and other studies distinguish between positive and negative wealth shocks (Disney et al., 2020). Finally, one ought to distinguish perfectly anticipated housing price changes from unanticipated ones. The effects of the latter are the focus of this paper.

We focus on housing price shocks that are plausibly orthogonal to individual decision making. This is in part because home ownership has consumption effects, and individuals do not necessarily perceive its investment nature at every point in time. However, in the event of a combined health and wealth shock, then the investment effects might become more salient. Other instances when investment effects kick-in include downsizing effects later in life (Campbell and Cocco, 2007).

A body of research has used variation in economic circumstances to study choices about long-term care and the health of older adults (Davidoff, 2010). Using evidence from the Social Security notch that would differentially affect the income of retirees, Goda et al. (2011) find that a positive permanent income shock reduces the demand for nursing homes and increases demand for paid home care services. Poterba et al. (2011) find that net worth rises with age for healthier households (those in the top three quintiles of initial health status), but does not grow or only slowly increases for less healthy households. The latter finding explains why a preference for selling a home or obtaining a reverse mortgage later in life is mainly determined by health and personal care needs (Costa-Font et al., 2010). Finally, one study found that the UK requirement that people with capital resources contribute to paying for their care is a significant disincentive to institutional admission, whereas institutional use is more common among renters (McCann et al., 2012).

Family Proximity and Informal care. Aging often entails a higher dependence on personal support including care from informal caregivers, who often are the children of the person who needs assistance. Children who expect to provide care to their family members might incorporate

such a caregiving responsibility into their residential choices. Proximity to family members determines availability of informal caregiving, and arguably the economic downturn of 2006-2010 might have improved the welfare gain from living close to family members.

The effects of distance on contact is less obvious, however, and might depend on an individual's socioeconomic circumstances (Greenwell and Bengtson, 1997).[5] Aquilino (1990) finds that marital status influences adult co-residence with parents, and other studies find that the presence of a female sibling in the family explains distance to family and adult co-residence (Michelin and Mulder, 2008). Education and number of children appear to be the strongest correlates of parent-child proximity (Lin and Rogerson, 1995). Hence, we need to control for such covariates in modeling long term care use decisions.

Effects on Health and Disability. A housing wealth shock also can influence long term care decisions by changing the need for long term care. Previous research finds a weak housing wealth and health nexus effect (Meer et al., 2003). Such an effect is due in part to the fact that individuals can adapt their housing to their physical and mental health needs (Heywood, 2004). Observing a home owner's health over the business cycle, and more specifically the recent Great Recession, McInerney et al. (2013) find evidence of a change in health. But the change in health was driven mainly by a change in non-housing wealth, which increased the chances of depressive symptoms and the use of anti-depressants.

[5] Among the potential reasons is the fact that potential caregivers are in the middle of their careers, and most likely caregiving duties for parents might coexist with that of children. Bengtson and Roberts (1991) argue that geographic distance is typically adjusted over time on the basis of changes in needs and resources of both generations.

3. Empirical Implementation

We use the variation in housing prices between 1996 and 2010 as an instrument for evaluating the effect of housing wealth shocks on the use of LTSS. In particular, we focus on the effects at the extensive margin (those using LTSS that previously were not) and at the intensive margin (specifically, whether it influences the intensity in use of nursing home care). We also document the effect that exogenous changes in housing assets exerted on the probability that an individual uses various forms of LTSS. We rely on the Health and Retirement Study (HRS) 3-10 waves, and we use time and state specific housing price changes to identify the effect of housing assets change on use of LTSS. Examining changes in housing wealth during the period 1996 to 2010 is of particular importance given the considerable heterogeneity in the effects of the housing bubble across the United States. Housing price data were obtained from the Federal Housing Finance Agency (FHFA); we were able to match those data to individuals who own a property for a total of 173,480 observations. Thus, the exogenous variation in metropolitan and regional housing prices allows us to exploit exogenous variation in home equity wealth based on an individual's residence.

We have estimated reduced forms and tested for the robustness of the instruments. The results indicate that housing wealth is endogenous and housing price variation performs well as an instrument for changes in housing wealth. We have controlled for individual factors that are likely to impact individuals' caregiving and housing alternatives at older ages. Our models include a time trend and census region fixed effects, as well as individual specific fixed effects

which allow us to control for any time invariant characteristic of the individual that might influence the use of LTCSS. At the same time, we examine the effects of changes in housing prices on renters, who would not experience a direct housing wealth effect.[6]

Data and Sample. The Health and Retirement Study (HRS) is a publicly available longitudinal data set that has been sponsored by the National Institute on Aging. The HRS surveys (waves) have been conducted biannually since 1992, and follow respondents who were born between 1931-1941 and their spouses. A separate sample, AHEAD,[7] was added in 1993; it consists of community-dwelling people born before 1924. Subsequent samples have periodically been added to maintain a basic sample of people 51 years of age and older.[8] Given that long term care can potentially affect all those cohorts, we merge the samples. The latest available cohort comprises the tenth wave; their survey responses pertain to 2010. Given the evidence that the expansion of housing prices occurred after the second wave of the HRS, we concentrated our analyses on waves 3 to 10 (i.e., 1996 to 2010). This choice is based on the quality of the data and it is consistent with previous studies (Goda, 2011, Finklestein and McGarry, 2006). However, unlike previous studies, we do not limit our analysis to a specific age group because we are interested in the effect of a housing wealth shock on use of LTSS. Overall, the survey is rich in socio-economic variables that describe individuals and their households. They include demographics, health status, wealth (housing related and other), income and insurance converge.

[6] They might experience an indirect income effect if owners transferred part of the wealth effect by changing the individuals' rent but we cannot observe that.
[7] AHEAD is an acronym for Assets and Health Dynamics among the Oldest Old.
[8] For more information about the HRS sample, see: http://hrsonline.isr.umich.edu/sitedocs/sampleresponse.pdf.

We were able to obtain restricted access to the HRS data so we could examine changes in housing wealth at the state and metropolitan level. The results show the same effects as when using the unrestricted census region data on residence, largely because the housing bubble fell apart most in specific census regions and the relative declines in housing prices were largely consistent within regions. Thus, focusing on regions provides sufficient variability to obtain a local average treatment effect (LATE), drawing on changes in house prices at the census region level. We use the variation in unemployment rates at the census region level to capture the influence of the economic downturn. Note that while housing prices are a relevant and statistically significant instrument for housing wealth among home owners, it is the disintegration of the housing bubble that allows us to identify unanticipated wealth changes.

The analysis sample includes 172,572 observations and the dependent variables mostly refer to the external margin of long term care utilization. We measure the use of nursing home, home health care, and informal care with a set of binary indicators. For some variables, we examine the internal margin, too, when available (informal care). Table A1 in the Appendix provides basic data about the sample. The table shows that 1.8% of the sample lives in a nursing home and 6.2% received home health care in the past 12 months. Using additional information from the HRS, we measure informal care support by identifying individuals who received help with activities of daily living (ADL). About 10% of the sample receives informal care, and we could identify the number of monthly hours of informal care an individual received, estimated at 14.26 (0.45), which is consistent with Norton and Von Houtven (2004). The table summarizes the average net worth (net total assets), and net total housing assets. In addition, we report the descriptive statistics of the housing price index (HPI) employed for the period from FHFA. This

is a broad measure of the movement of single-family house prices indexed to 100 in the initial period. The HPI serves as a timely, accurate indicator of housing price trends at various geographic levels,[9] and is designed to capture changes in the value of single-family houses in the U.S. as a whole, and in smaller areas. The HPI is published by the Federal Housing Finance Agency (FHFA) using data provided by Fannie Mae and Freddie Mac. Finally, means tests on the equality of characteristics between renters and home owners suggest no statistically significant differences in marital status and family composition, but some differences in age composition were observed (renters are more likely to be over 75 and homeowners are more likely to fall in the 65-75 age groups).

Empirical Strategy. With the data from the HRS, we estimated an instrumental variable model to estimate the impact of variation in an individual's wealth stemming from changes in housing prices on use of LTSS after controlling for region, individual fixed effects and regional unemployment rate. Given that changes in housing prices did not affect individuals who were not homeowners, we also examined the estimated effects for those who were renting a property before and after 2007-8 (interpreted as one control group not affected by a decline in property prices). More specifically, we conducted two "placebo tests". First, we estimated the effect of housing prices on the wealth of elderly Americans. Second, we estimated the LATE effect of house prices on total assets on the use of different types of long term care for renters (non-property owners). In addition, we compared the changes in housing and total wealth of those who were already receiving LTSS to those who obtained such services after the downturn. Since we control for fixed effects for each region and each year, the effect of the economic change is

[9] It also provides an analytical tool that is useful for estimating changes in the rates of mortgage defaults, prepayments and housing affordability in specific geographic areas.

identified. Additional robustness checks include analyses of specific subgroups of the population such as single people. We address the problem of the existence of within geographic-year correlation across observations, as well as serial correlation within provinces across time. Finally, we find no significant variation in home ownership before 2006.

[Insert Figure 1 and 2 about here]

A number of key features in the economic environment play a crucial role in our identification strategy. First, Figure 1 shows the trends in the wealth of older Americans with and without accounting for an individual's second house. Figure 2 contains the evolution of housing prices as reported by FHFA and as expected, we find a comparable trend. Hence, trends in housing assets measures at the HRS evolve along the lines of the changes in house prices.

However, housing assets vary by age groups, as shown in Figures 3 and 4. Figure 3 indicates that there is a slight difference in the trends in housing assets for the younger groups but the trends are comparable irrespective of the age group. As expected, there was an expansion in housing assets through 2006 followed by a sharp decline in 2008 and beyond. Similar and more homogeneous trends are observed for total assets (including housing) in Figure 4. Hence, we can conclude that changes in housing prices are indeed correlated with changes in individuals' assets. Figure A2 reports differences in trends for total assets by age group among those without housing assets.

[Insert Figure 3 and 4 about here]

Drawing on the longitudinal variation in housing prices that is orthogonal to an individual's choices, we employ an instrumental variable strategy capturing the effect of house prices as a source of variation in assets to examine the impact of housing wealth on decisions regarding LTSS. Our basic estimating equation is an instrumentals variables equation using panel controls and both individual and regional specific fixed effects of the following form:

$$LTCSS_{itg} = \boldsymbol{\gamma_t} + \boldsymbol{\mu_g} + \boldsymbol{X_{itg}} \cdot \boldsymbol{\delta} + \boldsymbol{\varphi} \widehat{\boldsymbol{ASSETS}}_{it} + \boldsymbol{\vartheta_g} + \boldsymbol{\mu_i} + \boldsymbol{\varepsilon_{itg}} \quad \textbf{(1)}$$

$$ASSETS_{it} = \boldsymbol{a_t} + \boldsymbol{b_g} + \boldsymbol{Z_{itg}} \cdot \boldsymbol{\varphi} + \boldsymbol{c}(House\ \ Price_{gt}) + \boldsymbol{u_{itg}}$$

LTSS refers to home health care, nursing home care and informal care use by an individual i in a group g and year t; γ_t denotes a set of time dummies (survey waves), X_{itg} and Z_{itg} are vectors of covariates that act as controls (age, gender, marital status, disability, mental health) which are exogenous (especially time variant ones), ϑ_g captures regional specific fixed effects and μ_i refers to individual specific fixed effects (see Table A1 for variable definition and descriptions). Our sample consists of individuals who own a home, so they were affected by the housing bubble burst. In addition, the estimates include a time trend to capture the effect of time variation on the use of LTSS. We estimate different specifications using OLS, probit and a pooled instrumental variable estimate but we show the most complete estimates in the text.[10] We focused on different specifications using our different dependent variables, namely use of home health care, use of informal care, and nursing home care at the external margin.

[10] We can estimate the main effects using linear probability models, but estimates using nonlinear models such as 2SRI (Terza *et al* 2008) deliver comparable estimates.

One potential source of concern is that the housing price index is highly correlated with other macroeconomic conditions such as the unemployment rate. The unemployment rate is correlated not only with wealth but also other variables that could affect use of long term care services, such as the opportunity cost of time among children and prices of long term care services. Hence, we include in the model a measure of regional unemployment rate to mitigate this source of concern. Based on this we can then interpret findings related to the housing price index as a housing wealth effect. Finally, as we describe below we also consider a number of placebo tests and reduced forms of house prices to confirm that the first stage regressions are indeed suggestive of an experiment as described in the results section.

Preliminary evidence on use of **LTSS**: Figure 5 plots trends over time of use of home health care and nursing home care. Overall, we find hardly any change in rates of nursing home utilization. However, a sharp increase in the rate of home health care use is observable after 2006. When the trends are stratified by age group in Figure 6, we find a small increase after 2006 in the utilization of home health care by individuals ages 75 and over (those most at risk for needing LTSS). Figure 7 displays trends of nursing home care utilization across age groups that suggests that utilization has been higher among peoples 75 and over, but overall the trends are stable during the period examined. Finally, Figure 8 displays trends in informal care for a shorter period where we can obtain reliable data. The trends suggest a relative rise in the use of informal care that becomes stable in the middle of the decade of 2000's at around 40-45%.

[Insert Figure 5 and 6, 7 and 8 about here]

4. Results

Reduced forms. As a way to test for the validity of our instruments, we begin by reporting reduced form estimates that include a time trend as a covariate and housing price indexes (Table A2). The estimates indicate that housing prices do indeed exert a positive effect on informal care, and a negative effect on the likelihood of using both home health and nursing home care. The effect of housing prices in turn suggests that the instrument is associated with the dependent variables. However, whether the effect survives the inclusion of controls is an empirical question resolved below.

Validity of the instruments. Next, we examine the validity of instruments in predicting total housing assets. We find that a change in the housing price index would change total wealth irrespectively of whether it refers to total assets or just housing wealth (Table 1). However, the estimated coefficient is almost two times larger for housing assets than for total assets. The F-tests of the first stage regression takes the values of 78.52 (for total assets) and 72.11 (for housing assets), and the values increase with the inclusion of macroeconomic controls.

One potential concern is that because housing wealth is relatively illiquid and hard to tap into quickly to finance LTSS, a drop in housing prices might cause people to reduce their other assets. Given that it is difficult to separate home equity from other wealth (since prices rise during economic booms, and economic booms occur when prices rise), we first examine in Table A3 (in the appendix) the effect of house price changes on non-housing assets. The results in Table A3 confirm that house prices do not exert an influence on other forms of wealth at the

individual level. Hence, individuals do not seem to react to change in house prices by reducing other forms of wealth.

[Insert Table 1 about here]

Home health care. Next we examine the effect of housing wealth changes on the use of home health controlling for regional unemployment rate. We find evidence of a positive housing wealth effect on the likelihood of using home health that is robust to the inclusion of individual fixed effects and to region specific fixed effects (see Table 2). This model provides systematic differences compared to a random effects specification, and controlling for unobservable factors is important for our purposes. Hence, the instrumental variable specification with fixed effects estimates the LATE of total assets and housing assets on home health care use. The coefficient indicates that a one standard deviation change in wealth (total and housing assets) increases the probability of home health care use by about 0.15 percentage points. The effect compares to the effect of 2 activities of daily living (0.14 percentage points) on use of home health care. Importantly, the effect of regional unemployment remains significant irrespectively of the specification, and suggests a 0.03 percentage points increase in the probability of home health care use for every point increase in the unemployment rate.

[Insert Table 2 about here]

Informal care. Our results indicate that wealth exerts a positive effect on the use of informal care at the extensive margin but not at the intensive margin (Tables 3 and 4). The intensive

margin of informal care is measured by the monthly hours of help used by those who receive help with activites of daily living (ADLs). At the extensive margin (see Table 3), both measures of wealth have significant and positive effects on the probability of informal care use. A one standard deviation change in total net assets and housing assets leads to increases of 0.17 and 0.20 percentage points, respectively, in the likelihood of using informal care, representing a 22% change in the probability of informal care use. In contrast, the effect of housing assets on the intensive margin is neither robust nor significant (see Table 4, which reports the model in logarithms).

[Insert Table 3 and 4 about here]

Nursing home. We find a significant and positive effect of total wealth and housing assets on the probability of using nursing home care (Table 5). We posit that the informal care response is due to the possibility that nursing home use reacts to wealth increases. . Estimates were sensitive to the inclusion of individual fixed effects. . Our estimates suggest that a housing downturn like that in the Great Recession (when housing assets declined by 16% on average) would reduce the probability of using nursing home care by one percentage point, representing almost a 30% reduction in the probability of nursing home entry. Regional unemployment rate exert a positive and significant effect on nursing home care use.

Placebo Tests. Tables A4 and A5 in the Appendix display results from two different placebo tests. In Table A4 we show the effect of house prices on the wealth of non-property owners. The

evidence confirms the expectation of no effect of house prices on wealth (total assets) of non-homeowners. Specifically, we consistently find no effect of changes in house prices on wealth of non-homeowners in any of the different sub-periods and the total sample. The results in Table A5 confirm that for non-property owners, the LATE estimates from our instrumental variable strategy, with a series of controls and individual fixed effects, indicate no effect of a change in total assets on use of home health care, nursing home care, and informal care at both its external and internal margins). These placebo tests provide evidence of a potential causal interpretation of our estimates of the effects of a change in home assets on use of LTSS.

[Insert Tables 5 and 6 about here]

Heterogeneity by Gender and by Health and Disability at Old Age. We investigated whether the effect of housing assets is heterogeneous by the gender or the health and disability of the respondent. Table 6 suggests that the effect of a housing shock on use of home health doubled when the respondent is a woman. However, consistent with previous results, we do not find significant differences by gender for other types of LTSS. Similarly, when we tested for the effect of a wealth shock on health and disability at old age, we found no evidence of an effect (as shown in Table A6).

Mechanisms. Hence, there appears to be a direct effect of a change in the value of housing assets on the demand for LTSS. Specifically, a change in housing assets seems to lead to a

greater reliance on informal care services, consistent with a stronger probability of ageing in place.

5. Conclusion

In this article, we exploit the quasi-experimental variation in housing assets resulting from both the timing and strength of the housing price changes caused by the U.S. housing bubble burst after 2006. We view the housing price changes as constituting unanticipated, exogenous housing wealth shocks to families. We use the housing price changes to determine the effect of housing wealth on the use of home health care, informal care (unpaid help), and nursing home care by older adults. The analysis employs an instrumental variable strategy drawing on the effects of both total assets and housing assets and controlling for regional unemployment and individual specific heterogeneity. We find evidence that a housing wealth shock does change long term care choices for homeowners but not for renters. This result confirms that demand for LTSS varies with changes in the household availability of wealth, even relatively illiquid wealth such as housing assets. Our results also suggest that older individuals finance some emergency types of LTSS consumption out of home equity. This effect emerges once we control for individual specific fixed effects, and the unemployment rate at the regional level.

Our results document that changes in housing wealth affect use of home health care, nursing home care, and informal care at the extensive margin but we do not find an effect on the number of hours of informal care (the intensive margin). A more complete analysis would incorporate measurement of the use of assisted living arrangements that are likely to be more sensitive to

wealth than is nursing home use. Unfortunately, information about assisted living arrangements were not available to us.

Overall, we find that the increased use of home health care due to a positive housing wealth shock is equivalent in size to the effect of two ADLs. Further, we find a 3-4% increase in the probability of informal care use after an asset shock, which is consistent with the literature and suggestive of a preference for individuals to age in place (Costa-Font et al., 2009). Furthermore, we find that the bursting of the housing bubble reduced nursing home entry by one percentage point, which is about a 30% reduction in the probability of using nursing home care. We find causal evidence of wealth changes for homeowners and no effect for renters, thereby strengthening our causal inference about the impact of housing wealth on LTSS demand.

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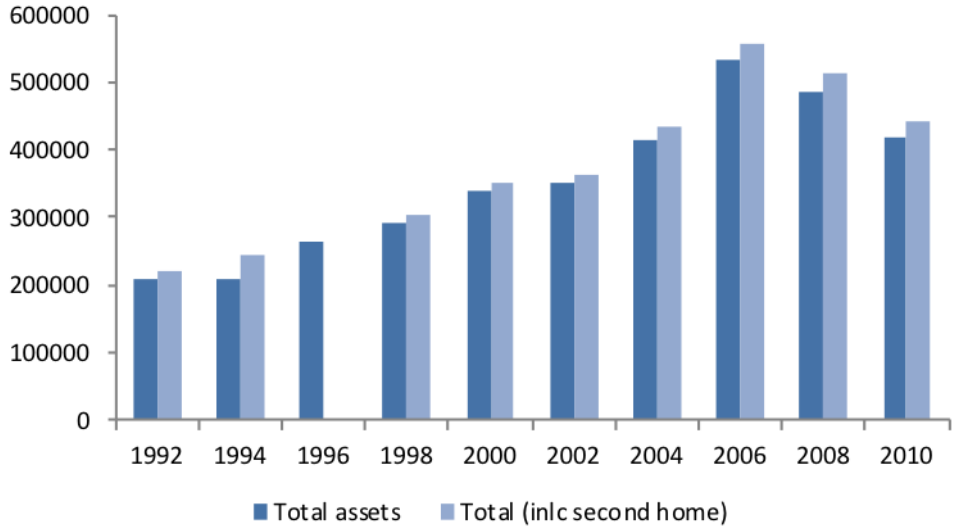
Tables and Figures

Figure 1. Total Housing Assets of Elderly American Households

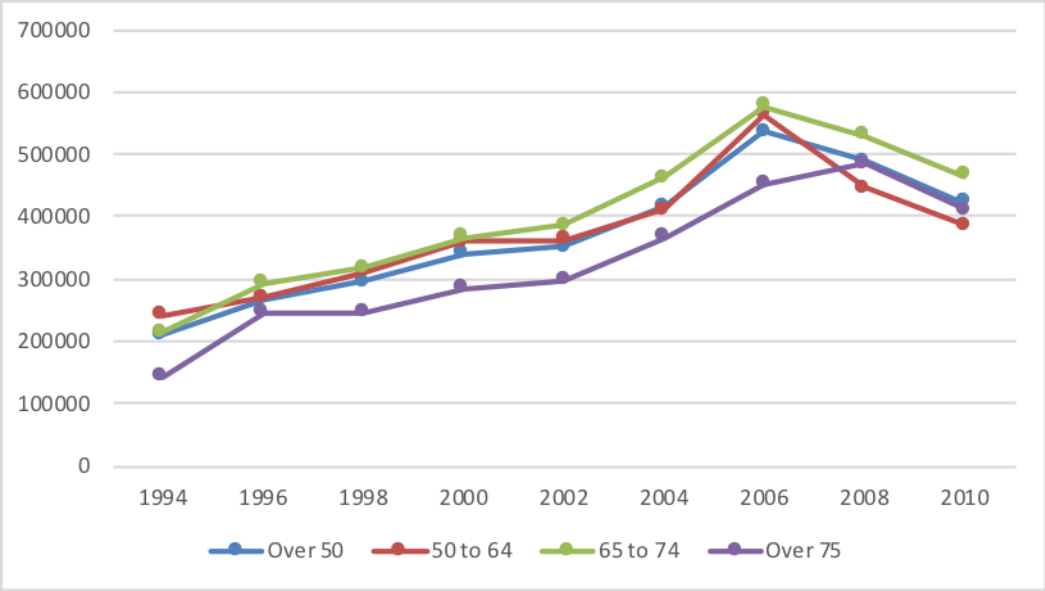


Source: Health and Retirement Study, waves 1 -10.

Figure 2. Evolution of average house prices (FHFA Index)

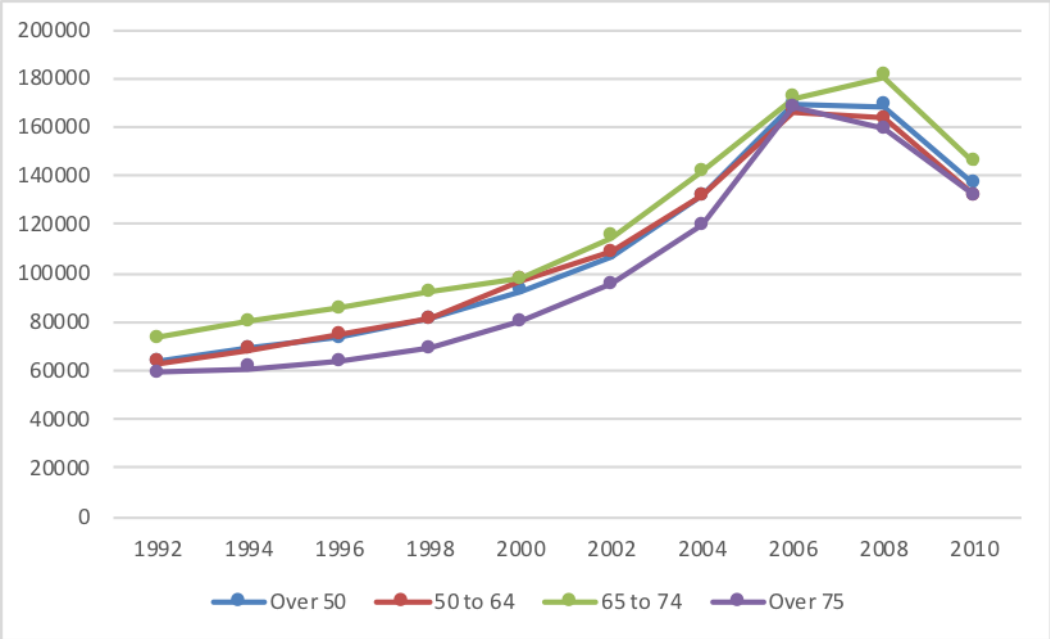
Source: FHFA, 2013.

Figure 3. Evolution of Total Assets by age groups



Source: Health and Retirement Study, waves 2 -10.

Figure 4. Evolution of Total Housing Assets by age groups

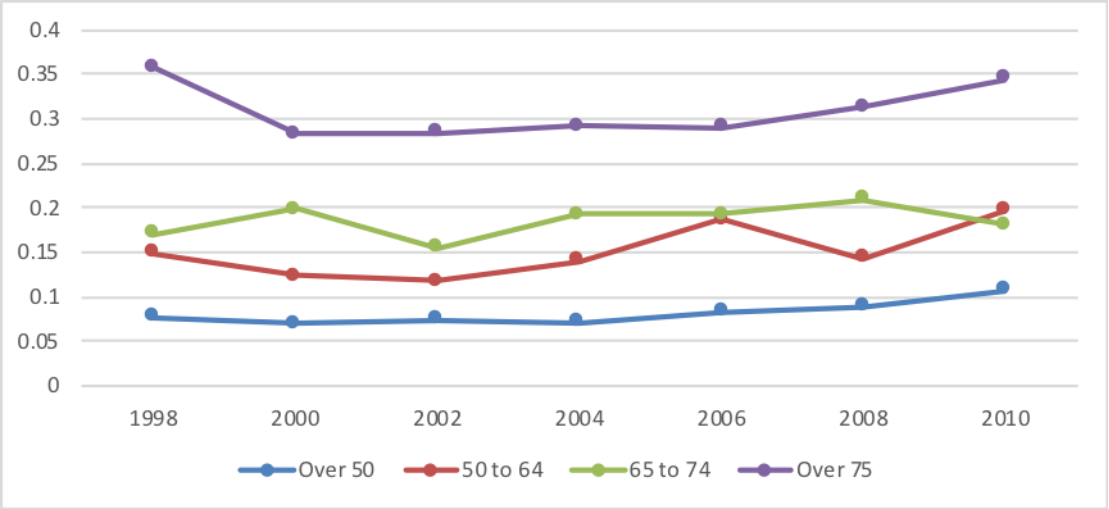


Source: Health and Retirement Study, waves 2 -10.

Figure 5. Use of LTSS – Home health care (HHResp) and Nursing Home (NHResp)

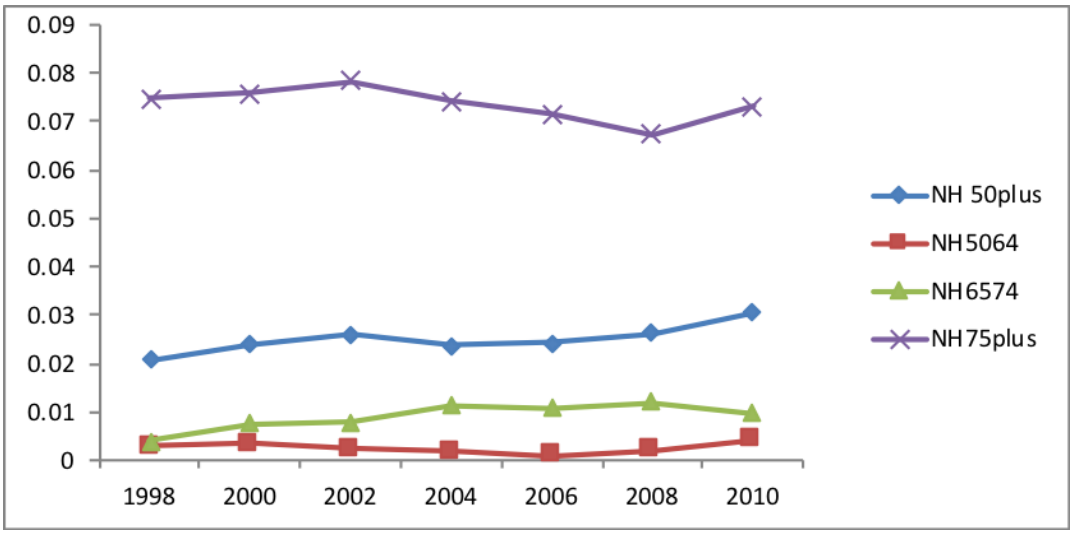
Source: Health and Retirement Study, waves 3 -10.

Figure 6 Use of LTSS - User of Home Health Care by Age group



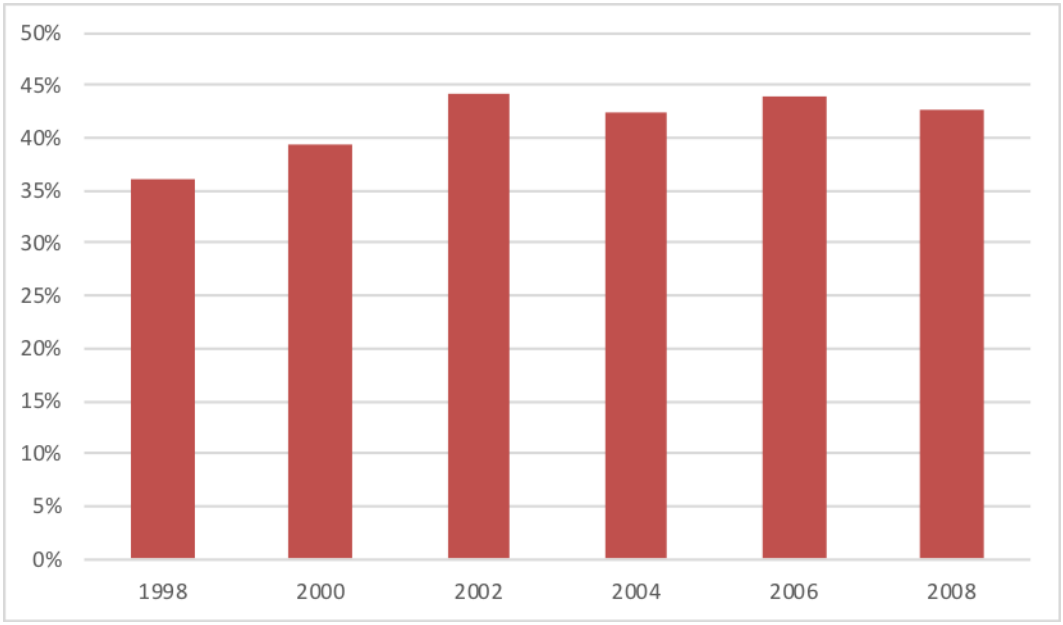
Source: Health and Retirement Study, waves 3 -10.

Figure 7 Use of LTSS - Individuals residing in nursing home by Age group



Source: Health and Retirement Study, waves 3 -10.

Figure 8. Informal Care Trends (HRS)



Source: Health and Retirement Study, waves 3 -9.

Table 1. House Price effects on Total and Housing Assets (in logs)

	(1) Total Assets	(2) Total Assets	(3) Housing	(4) Housing

VARIABLES			Assets	Assets
Housing Price	0.0016***	0.0011***	0.0024***	0.0020***
	(0.000)	(0.000)	(0.000)	(0.000)
Controls	No	Yes	No	Yes
Constant	10.9604***	11.7227***	8.5579***	10.7026***
	(0.027)	(0.049)	(0.043)	(0.090)
Observations	153,323	103,387	156,809	104,439
F-Test	78.52	633.96	72.11	639.16
Adjusted R^2	0.001	0.018	0.001	0.018

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1
Controls: age, gender, health and disability, place of birth, marital status, household size.

Table 2. Housing Wealth Effects on Home Health Care Use.

	OLS	OLS	IV	IV	IV	IV
Total Assets (logs)	-0.0034***		0.0710**		0.051*	
	(0.000659)		(0.0287)		(0.028)	
Housing Assets (logs)		-0.0029***		0.0511**		0.034*
		(0.000798)		(0.0205)		(0.019)
Unemployment	-0.0023***	-0.0021***	-0.0014	-0.0035***	-0.0016*	-0.0031***
	(0.000717)	(0.000719)	(0.000907)	(0.000818)	(0.000953)	(0.000805)
Controls	Yes	Yes	No	No	Yes	Yes
Trend	Yes	Yes	Yes	Yes	Yes	Yes
Regional Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Individual Fixed Effects	No	No	Yes	Yes	Yes	Yes
Observations	113,412	113,148	123,169	122,884	113,412	113,148

Number of Households	24,296	24,300	25,187	25,200	24,296	24,300
R^2 (Overall)					0.021	0.0321

Note: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1
Controls: age, gender, health and disability, place of birth, marital status, household size .

Table 3. Housing Wealth Effects on Informal Care – Extensive Margin.

	OLS	OLS	IV	IV	IV	IV
Total Assets (log)	0.00461***		0.0437	0.0589**		
	(0.000700)		(0.0279)	(0.0282)		
Housing Assets (log)		0.00396***			0.0328	0.0413**
		(0.000832)			(0.0201)	(0.0194)
Unemployment	0.00500***	0.00469***	0.00376***	0.00399***	0.00256***	0.00224***
	(0.000704)	(0.000705)	(0.000868)	(0.000931)	(0.000795)	(0.000784)
Controls	Yes	Yes	No	Yes	No	Yes
Trend	Yes	Yes	Yes	Yes	Yes	Yes
Regional Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Individual Fixed Effects	No	No	Yes	Yes	Yes	Yes
Observations	113,624	113,360	123,783	113,624	123,503	113,360
Number of Households	24,327	24,331	25,255	24,327	25,269	24,331
R^2 (Overall)					0.006	0.013

Note: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1
Controls: age, gender, health and disability, place of birth, marital status, household size.

Table 4. Housing Wealth Effects on (log) Informal Care – Intensive Margin (log-log)

	OLS	OLS	IV	IV	IV	IV
	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	OLS	OLS	IV	IV	IV	IV
Total Assets (logs)	-0.00690**	-0.0422***	3.528***	1.877*		
	(0.00273)	(0.00344)	(1.297)	(1.137)		
Housing Assets (logs)					2.915	3.746
					(4.8130	(3.697
Unemployment	-0.0322	0.0048	0.084	0.0519	-0.15	-0.237
	(0.013	(0.0047)	(0.0303)	(0.0312)	(0.271)	0.223)
Controls	Yes	Yes	No	Yes	No	Yes
Trend	Yes	Yes	Yes	Yes	Yes	Yes

Regional Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Individual Fixed Effects	No	No	Yes	Yes	Yes	Yes
Observations	28,141	30,914	30,914	28,141	30,836	28,065
Number of Households	16,919	17,867	17,867	16,919	17,867	16,912
R^2 (Overall)					0.0844	0.131

Note: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1
Controls: age, gender, health and disability, place of birth, marital status, household size .

.

Table 5. Effect of Assets on Nursing Home Care

VARIABLES	OLS	OLS	IV	IV	IV	IV
Total Assets	-0.00428***		0.0502***		0.0382**	
	(0.000387)		(0.0174)		(0.0155)	
Housing Assets		-0.00427***		0.0381***		0.0272**
		(0.000474)		(0.0124)		(0.0106)
Unemployment	0.000399	0.000427	0.00314***	0.00173***	0.00242***	0.00135***
	(0.000428)	(0.000430)	(0.000542)	(0.000489)	(0.000512)	(0.000430)
Controls	Yes	Yes	No	No	Yes	Yes
Trend	Yes	Yes	Yes	Yes	Yes	Yes
Regional Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Individual Fixed Effects	No	No	Yes	Yes	Yes	Yes
Observations	123,640	123,361	123,640	123,361	113,554	113,290
Number of Households	25,227	25,241	25,227	25,241	24,314	24,318
R^2 (Overall)					0.016	0.012

Note: Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1
Controls: age, gender, health and disability, place of birth, marital status, household size .

Table 6. Gender Heterogeneity

Sub-samples	Home Health Care	Nursing Home	Hours Informal Care	Informal Care
Housing Assets	0.0642**	0.0341*	5.54	-0.438***
	(0.0308)	(0.0192)	(7.50)	(0.0562)
Observations	67,829	68,132	15,831	68,215
Number of Households	13,805	13,833		13,849

Appendix

Table A1. Descriptive Statistics

	N	Mean (s.e)	Definition
Dependent Variables			
Nursing Home	126652	0.0180	Respondent lives in Nursing Home
Informal Care	170075	0.0999	Respondent received informal care – extensive margin
Informal Care -Hours	34048	14.260 (0.456)	Respondent monthly hours of informal care – intensive margin
Home Health	155694	0.0620	Respondent receives home health is last 12 months
Assets and House Prices and Economic controls			
House Prices Index	156997	152.9 (0.1)	FHFA Index- Census Divisions
Assets Total	157059	363,156 (3149)	Total household Assets
Housing Assets	157059	110,601 (969)	Total household housing Assets
Unemployment	158,756	5.278 (0.002)	Unemployment Rate by – Census Region
Demographic Controls			
Married	298550	0.3479	Respondent is married
Gender	298541	0.4370	Respondent is Male
Number Children	170149	3.1986 (0.005)	Number of ever born children

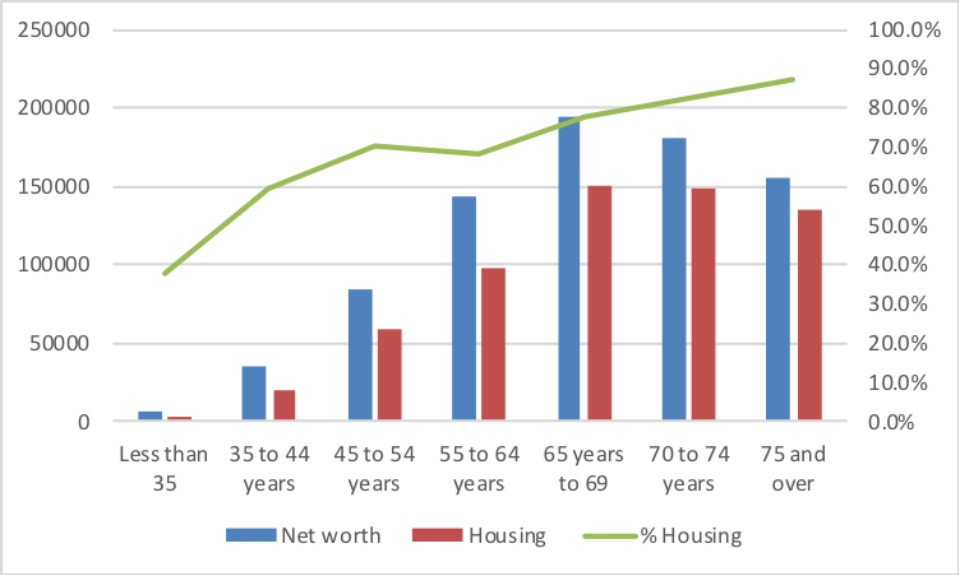
Age	157057	65.92 (0.028)	Respondents age
Spouse Age	109043	63.70 (0.03)	Spouse's age
Respondents and Spouse Health and Disability			
Spouse Disability	298550	0.650	Spouse has 2 ADL's or more
Disability	298550	0.4346	Respondents has 2 ADL's or more
Mental Health	145017	1.3254 (0.005)	Respondents Mental Health (CESD score)
Spouse Mental Health	97146	1.0989 (0.005)	Spouse Mental Health (CESD score_
BMI	154994	27.12 (0.014)	Respondent Body Mass Index (BMI)
Spouse BMI	104482	27.31 (0.016)	Spouse Body Mass Index (BMI)

Table A2. Reduced forms on informal care, home health care and nursing home

VARIABLES	(1) Informal Care	(2) Home Health Care r	(3) Living Nursing Home
Housing Price	0.000215**	-4.72e-05***	-4.57e-05***
	(0.000105)	(1.53e-05)	(1.01e-05)
Trend	0.0211***	0.00530***	0.00130***
	(0.00214)	(0.000263)	(0.000213)
Constant	0.240***	0.0499***	0.0222***
	(0.0201)	(0.00255)	(0.00195)
Observations	12,468	156,642	128,657
R^2 (Overall)	0.008	0.003	0.000

Note: Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1

Figure A2. Housing Assets (amount and %) and Net Worth of Americans



Source: US Census Bureau, 2015.

Table A3. Effects of house prices on non-housing assets (logs)

VARIABLES	(1) Non-housing assets (logs)	(2) Non-housing assets (logs
House price Index	0.000263	-0.000336
	(0.000202)	(0.000489)
	(0.0312)	(0.124)
Controls	Yes	Yes
Observations	149,490	149,489
R^2 (Overall)	0.000	0.274

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Controls include age, gender, health and disability, place of birth, marital status, household size.

Table A4 Placebo Effects I (Effect of House Prices on Assets of Non-Property Owners)

VARIABLES	(1) Total Assets (logs)	(2) Housing Assets (logs)	(3) Total Assets (logs)	(4) Housing Assets (logs)
	Full Period	[2006-10]	Full Period	[2006-10]
Housing Price	-0.000455	-0.00144	-0.00221	-0.00154
	(0.00151)	(0.00170)	(0.00215)	(0.00442)
Constant	7.810***	7.935***	-1.738**	-7.294***
	(0.240)	(0.298)	(0.870)	(2.802)
Location - FE	No	No	Yes	Yes
Observations	13,018	2,487	5,456	853
R^2 (Overall)	0.001	0.001	0.262	0.297

Note: Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1 Controls include age, gender, health and disability, place of birth, marital status, household size.

Table A5. Table A4 Placebo Effects II (IV Estimates on LTC Services for Non-Property Owners)

VARIABLES	(1) Home Health Care	(2) Nursing Home	(3) Informal Care	(4) Hours Informal Care
Assets Total				
	-0.0798	-0.103	0.102	0.003
	(0.0833)	(0.110)	(0.104)	(0.1390)
Controls + unemployment	Yes	Yes	Yes	Yes
Trends	0.00386	0.00436**	-0.0177***	-2.790
Observations	24,554	24,929	24,955	24,955
Number of Households	8,749	8,836	8,845	8,845

Note: Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1 Controls include age, gender, health and disability, place of birth, marital status, household size.

Table A6. Effect of Assets on Disability and Health (Two stage residual inclusion)

/ARIABLES	ADL	Obesity	CESD	ADL	Obesity	CESD
		2006-2010			1998-2010	
Housing Assets logs)	0.0590	-0.225**	0.275	0.139	-0.287	0.977
	(0.0619)	(0.112)	(0.287)	(0.106)	(0.184)	(0.774)
Controls						
Constant	0.784***	0.424***	4.098***	0.629***	0.329***	2.775***
	(0.0918)	(0.141)	(0.332)	(0.0444)	(0.0705)	(0.255)
Observations	14,506	14,509	13,779	78,061	78,104	73,453
R-squared						

Notes: Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1
Controls: age, gender, health and disability, place of birth, marital status, household size regional employment rate.

Appendix B (Not for publication)

Table B1. Table 2 with Full set of controls

	OLS	OLS	IV	IV	IV	IV
	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	rhomcar	rhomcar	rhomcar	rhomcar	rhomcar	rhomcar
Total Assets	-0.00339***		0.0710**		0.0507*	
	(0.000659)		(0.0287)		(0.0288)	
Housing Assets		-0.00292***		0.0511**		0.0339*
		(0.000798)		(0.0205)		(0.0198)
rcesd	0.00640***	0.00656***			0.00503***	0.00481***
	(0.000406)	(0.000405)			(0.000609)	(0.000538)
radlw	0.0847***	0.0848***			0.0710***	0.0698***
	(0.00154)	(0.00154)			(0.00222)	(0.00202)
rbmi	-0.000855***	-0.000790***			-0.00668***	-0.00658***
	(0.000167)	(0.000167)			(0.000370)	(0.000363)

rmstat	0.00187***	0.00196***			0.00388***	0.00277***
	(0.000418)	(0.000417)			(0.00117)	(0.000780)
rfinr	0.00239	0.00262			-0.00409	-0.00420
	(0.00201)	(0.00202)			(0.00450)	(0.00448)
rfamr	-0.00429*	-0.00450*			-0.00707	-0.00597
	(0.00244)	(0.00245)			(0.00459)	(0.00445)
ragey_b	0.00301***	0.00300***			0.00931***	0.00913***
	(9.22e-05)	(9.23e-05)			(0.00201)	(0.00200)
gender	0.00641***	0.00722***				
	(0.00238)	(0.00238)				
wave	0.00158***	0.00155***	0.00602**	0.00667***	-0.0141***	-0.0128***
	(0.000292)	(0.000298)	(0.00251)	(0.00224)	(0.00509)	(0.00477)
unem	-0.00229***	-0.00214***	-0.00148	-0.00351***	-0.00165*	-0.00314***
	(0.000717)	(0.000719)	(0.000907)	(0.000818)	(0.000953)	(0.000805)
2.rcendiv	-0.00767	-0.00724				
	(0.00535)	(0.00536)				
3.rcendiv	-0.00646	-0.00695				
	(0.00506)	(0.00508)				
4.rcendiv	-0.0154***	-0.0159***				
	(0.00543)	(0.00546)				
5.rcendiv	-0.00739	-0.00728				
	(0.00491)	(0.00494)				
6.rcendiv	-0.0181***	-0.0181***				
	(0.00591)	(0.00594)				
7.rcendiv	-0.00736	-0.00708				
	(0.00541)	(0.00545)				
8.rcendiv	-0.0130**	-0.0129**				
	(0.00593)	(0.00595)				
9.rcendiv	-0.0137**	-0.0136**				
	(0.00537)	(0.00538)				
Constant	-0.0997***	-0.112***	-0.827**	-0.537**	-0.936**	-0.690***
	(0.0133)	(0.0138)	(0.338)	(0.220)	(0.370)	(0.250)
Observations	113,412	113,148	123,169	122,884	113,412	113,148
Number of households	24,296	24,300	25,187	25,200	24,296	24,300

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table B2. Table 3 with Full set of controls

VARIABLES	(1) informal2	(2) informal2	(3) informal2	(4) informal2	(5) informal2	(6) informal2	(7) informal2	(8) informal2
lhatota	0.00461***		0.00430***		0.0437	0.0589**		
	(0.000700)		(0.000687)		(0.0279)	(0.0282)		
lhatoth		0.00396***		0.00309***			0.0328	0.0413**
		(0.000832)		(0.000827)			(0.0201)	(0.0194)
rcesd	-0.00319***	-0.00339***				-0.00252***		-0.00294***
	(0.000412)	(0.000410)				(0.000598)		(0.000526)
radlw	-0.0217***	-0.0217***				-0.0242***		-0.0247***
	(0.00155)	(0.00154)				(0.00219)		(0.00197)
rbmi	0.00296***	0.00287***				0.00776***		0.00781***
	(0.000182)	(0.000182)				(0.000362)		(0.000354)
rmstat	0.00246***	0.00243***				0.00300***		0.00204***
	(0.000444)	(0.000442)				(0.00115)		(0.000763)
rfinr	-0.00190	-0.00243				-0.000386		-0.00174
	(0.00	(0.00220)				(0.00438)		(0.00436)

	220)							
	-0.0163***	-0.0164***				-0.0218***		-0.0204***
rfamr								
	(0.00261)	(0.00261)				(0.00449)		(0.00433)
	-0.00240***	-0.00242***				-0.0134***		-0.0132***
ragey_b								
	(0.000102)	(0.000102)				(0.00197)		(0.00195)
	0.0333***	0.0328***						
gender								
	(0.00263)	(0.00262)						
	-0.0104***	-0.0104***	-0.0148***	-0.0147***	-0.0256***		-0.0255***	
wave						0.00197		0.00231
	(0.000302)	(0.000308)	(0.000272)	(0.000280)	(0.00243)	(0.00500)	(0.00219)	(0.00466)
	0.00500***	0.00469***	0.00750***	0.00732***	0.00376***	0.00399***	0.00256***	0.00224***
unem								
	(0.000704)	(0.000705)	(0.000714)	(0.000715)	(0.000868)	(0.000931)	(0.000795)	(0.000784)
	-0.00573							
2.rcendiv		-0.00545	-0.00661	-0.00700				
	(0.00597)	(0.00596)	(0.00605)	(0.00605)				
	0.00313							
3.rcendiv		0.00401	0.00638	0.00640				
	(0.00566)	(0.00567)	(0.00575)	(0.00576)				
	0.0204***	0.0216***	0.0242***	0.0249***				
4.rcendiv								
	(0.00612)	(0.00613)	(0.00623)	(0.00624)				
	-0.000517							
5.rcendiv		-0.000269	-0.000596	-0.00121				
	(0.00	(0.00548)	(0.00556)	(0.00557)				

	548)							
	0.002							
6.rcendiv	75	0.00338	0.00107	0.000559				
	(0.00							
	662)	(0.00662)	(0.00670)	(0.00671)				
	0.007							
7.rcendiv	99	0.00835	0.00606	0.00524				
	(0.00							
	606)	(0.00607)	(0.00613)	(0.00615)				
	0.016		0.0189**	0.0181**				
8.rcendiv	0**	0.0161**	*	*				
	(0.00							
	662)	(0.00662)	(0.00673)	(0.00674)				
	0.004							
9.rcendiv	38	0.00526	0.00154	0.00190				
	(0.00							
	598)	(0.00598)	(0.00608)	(0.00607)				
	0.943							
Constant	***	0.961***	0.911***	0.929***	0.530	0.893**	0.694***	1.136***
	(0.01							
	43)	(0.0147)	(0.0103)	(0.0111)	(0.328)	(0.363)	(0.215)	(0.245)
	113,6							
Observations	24	113,360	123,783	123,503	123,783	113,624	123,503	113,360
Number of	24,32							
households	7	24,331	25,255	25,269	25,255	24,327	25,269	24,331

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table B3. Table 5 with Full set of controls

	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	rnrshom	rnrshom	rnrshom	rnrshom	rnrshom	rnrshom
	-					
lhatota	0.00428***		0.0502***		0.0382**	
	(0.000387)		(0.0174)		(0.0155)	
		-				
lhatoth		0.00427***		0.0381***		0.0272**
		(0.000474)		(0.0124)		(0.0106)
rcesd					0.00196***	0.00176***
					(0.000329)	(0.000288)

radlw					0.0378***	0.0371***
					(0.00120)	(0.00108)
					-	-
rbmi					0.00329***	0.00326***
					(0.000199)	(0.000194)
rmstat					0.00346***	0.00276***
					(0.000632)	(0.000418)
rfinr					-0.00351	-0.00425*
					(0.00241)	(0.00239)
rfamr					-0.00407	-0.00301
					(0.00248)	(0.00237)
ragey_b					0.00607***	0.00597***
					(0.00108)	(0.00107)
gender						
wave	0.00490***	0.00495***	0.00242	0.00266**	-0.0118***	-0.0111***
	(0.000161)	(0.000166)	(0.00152)	(0.00135)	(0.00275)	(0.00256)
unem	0.000399	0.000427	0.00314***	0.00173***	0.00242***	0.00135***
	(0.000428)	(0.000430)	(0.000542)	(0.000489)	(0.000512)	(0.000430)
2.rcendiv	-0.00773**	-0.00785**				
	(0.00329)	(0.00330)				
	-					
3.rcendiv	0.00949***	-0.0102***				
	(0.00312)	(0.00313)				
4.rcendiv	-0.0109***	-0.0122***				
	(0.00336)	(0.00338)				
5.rcendiv	-0.0114***	-0.0118***				
	(0.00302)	(0.00304)				
6.rcendiv	-0.0140***	-0.0142***				
	(0.00363)	(0.00365)				
7.rcendiv	-0.0136***	-0.0138***				
	(0.00332)	(0.00335)				
8.rcendiv	-0.0106***	-0.0113***				
	(0.00366)	(0.00367)				
9.rcendiv	-0.00811**	-0.00834**				
	(0.00331)	(0.00332)				
o.gender					-	-
Constant	0.0546***	0.0512***	-0.620***	-0.435***	-0.726***	-0.561***
	(0.00581)	(0.00635)	(0.205)	(0.132)	(0.200)	(0.134)

Observations	123,640	123,361	123,640	123,361	113,554	113,290
Number of Households	25,227	25,241	25,227	25,241	24,314	24,318

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1