

Housing Wealth Management at Retirement ^{*}

John Heilbron [†]

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Abstract

This paper estimates the effect of retirement on the liquidation of housing assets. I use programmatic Social Security eligibility thresholds to instrument for retirement and find that retirement makes a household ~12% more likely to issue any new mortgage debt and ~3% more likely to extract equity from a home within the following two years. Retirement-induced housing wealth liquidation increases liquid balances to a greater extent than does ordinary housing wealth liquidation; this evidence is consistent with retirement-induced refinancing being a pro-active planning decision rather than a response to adverse expense shocks. Evidence on specific household motives for liquidating housing wealth is mixed.

Keywords: Household Finance, Household Saving, Intertemporal Household Choice

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[†]University of Chicago, Booth School of Business

1 Introduction

American households (HHs) tend to have inadequate savings to finance consumption in retirement. The median net worth of HHs ages 51-56 in 2004 was only \$152k. Moreover, retirement consumption is financed out of private pensions, housing equity, and social security (SS) entitlements; were it not for SS benefits, 39% rather than 9% of elderly HHs would have lived in poverty as of 2017 Sommer (2019). This may be due to misperceptions about working ability in retirement as well as myopia plays a dominant role in HH retirement-saving decision-making (Thaler and Benartzi, 2004).

Ensuring adequate financing for retirement consumption is becoming both more important and more difficult as the baby-boomer generation ages. It is projected that by 2035, the number of Americans 65 or older will rise to 79m from 49m (Sommer, 2019) and that one in three households (HHs) will be headed by someone sixty-five or older (Joint Center for Housing Studies of Harvard University, 2014). Unless modifications to the program are made, SS will have to begin drawing down assets to pay promised benefits in the year 2020. If SS funds were to be depleted, benefits would be cut by 20% (Sommer, 2019).

Housing equity comprises a significant fraction of American HH's retirement savings. Among HHs ages 70-75, ~80% own a home and 1/3-1/4 of retired HH wealth is in housing (Davidoff, 2009). To understand how HHs finance their retirement consumption requires understanding how they spend out of their housing wealth. Although there has been some work on how HHs spend out of their housing wealth during retirement, to the best of my knowledge there is no work on how HHs tap into their housing wealth at the beginning of retirement.

This paper documents that retirement from the labor force prompts HHs to liquidate housing wealth. By using SS eligibility thresholds as an instrument for retirement, I show that exiting the labor force prompts 12% of HHs to issue originate first mortgage debt and 3% of HHs to extract equity from their home within two years. I document this effect in the Survey of Consumer Finances and corroborate the results in the Health and Retirement Study.

I show further that liquidation of housing wealth at retirement is associated with a rise in liquid balances that is larger than liquidation not prompted by retirement. This suggests that housing wealth liquidation at the retirement threshold is qualitatively different from liquidation at other points in the life-cycle. The regression results are consistent with ordinary liquidation being prompted by adverse expense shocks and retirement liquidation being pro-active, i.e. anticipating the need for liquid assets.

I consider a variety of reasons that HHs may have for liquidating or borrowing against

their housing wealth at retirement. In particular, I consider that they may be moving because they value geography differently, they may be smoothing consumption, they may have relaxed credit constraints at the threshold, and they may be consolidating debt to simplify their finances. The evidence is mixed and multiple channels may be operative.

1.1 Literature

There is a vast literature on the effects of Social Security in the United States. Among the outcome variable considered are private savings (Feldstein, 1974), retirement (Mastrobuoni, 2009), labor supply (Liebman et al., 2009), and mortality (Fitzpatrick and Moore, 2018). I add a different outcome variable to this literature: the timing of new mortgage debt acquisition is driven by Social Security program parameters, both as households move and consume out of home equity.

The literature on the uses of housing wealth in retirement emphasizes that, though it is a significant component of household wealth, households tend not to consume out of it. Nakajima and Telyukova (2011) finds that renters in retirement tend to run down their wealth more quickly than do homeowners. Poterba et al. (2011) documents shocks to family structure, like divorce and death, as an important correlate of reduction in housing equity. Fisher et al. (2007) finds that older Americans are increasingly mortgage free to age 80. Davidoff (2009) suggests that housing wealth may be used as a hedge against longevity risk. These trends may be true on average but we document that at the retirement threshold, households increasingly borrow against their homes.

The literature describes several determinants of refinancing. HHs may take advantage of falling interest rates (Quigley, 1987). Structural changes in the mortgage market over time may make it less costly to access wealth in homes (Bennett et al., 2001). The effects documented in this paper are most similar to Hurst and Stafford (2004), which notes that households refinance to smooth consumption in periods where they suffer a large drop in income. The drops in income studied there, however, are not necessarily anticipated, whereas social-security induced retirement creates predictable drops in income.

A strand of the retirement finance literature investigates the “retirement consumption puzzle”. Early work suggested that the drop in household consumption expenditure at retirement might deviate from the predictions of the permanent-income hypothesis (Bernheim, 1987; Banks et al., 1998). More recent work documents that it is a drop in consumption expenditure rather than consumption itself, and that this drop can be attributed to bargain shopping induced by reduced opportunity cost of time at retirement (Aguiar and Hurst, 2005, 2007). Very recent work attempts to resurrect non-rational explanations of retirement

savings by identifying a drop in consumption expenditure as well as a rise in savings balances at retirement (Olafsson and Pagel, 2018).

Taken together, this literature debates whether a drop in consumption expenditure at retirement is evidence that households save too little relative to the permanent-income hypothesis, a rational benchmark. By contrast, this paper documents that households make predictable and expensive divestment decisions at the retirement threshold. This raises the possibility, which I consider briefly in closing, that households are storing too much of their retirement savings in housing relative to a rational benchmark.

1.2 Institutional Background

Social Security is an insurance program founded in 1935 and run by the Social Security Administration (SSA), a federal agency. The program taxes earnings of working individuals to fund benefit payments, most prominently in the form of annuity distributions to retirees. The program operates on a pay-as-you-go basis, so that current payments are used to fund current benefit payments.

The amount of a worker benefit is a function of the worker's earnings over his or her lifetime. In particular, a worker's 35 highest annual earnings (after index adjustments, including zeros for years of non-employment, and truncated at maximum taxable earnings) are averaged to compute the worker's average indexed monthly earnings (AIME). The worker's primary insurance amount (PIA) is then computed as a progressive transformation of the AIME. The worker benefit amount is then a function of the worker's PIA, depending on when the recipient chooses to receive the benefit. (Liebman et al., 2009)

The worker receives the full PIA if they claim at the full retirement age (FRA). The FRA is a program parameter that is 65 for individuals born in 1937 or before, rises 2 months for every year born thereafter until it reaches 66 for individuals born between 1943 and 1954, then rising 2 months for every year again until it reaches 67 for individuals born in or after 1960. (Social Security Administration)

Workers need not claim their SS benefits at the FRA. They may claim benefits as early as age 62. For each year before the full retirement age, they receive a permanent reduction of 6.66% in the benefit amount, pro-rated by month. Alternately, workers may delay their claim. For each year of delay up to the age of 70, they receive a permanent increase of 5% in the benefit amount, pro-rated by month.

In addition to worker benefits, SS also offers benefits to spouses and survivors. Spouses may claim a benefit equal to the greater of their own worker benefit and 50pp of their spouse's benefit. Widowed spouses may claim a benefit equal to the greater of their own

worker benefit and 100pp of their spouse’s benefit. Widowed spouses may claim as soon as age 60.

2 Data and Empirical Strategy

2.1 Data

This paper uses data from the Survey of Consumer Finances (SCF), the Health and Retirement Study (HRS), and TransUnion (TU) consumer credit records. Below, I describe each dataset and the samples I construct for the analyses conducted in this paper.

2.1.1 SCF

The SCF is a pooled survey of a random sample of American households. It contains information on demographics, finances, and financial institutional affiliation. The survey has been administered every three years since 1983. The SCF assigns the designation of HH head to the male in a different-sex couple and older partner in a same-sex couple, a convention I adopt for convenience purposes. The interviews contain information on the birth year of the HH head, the year the HH head entered retirement, and the last year at which the HH issued mortgage debt at the time of interview.

I construct a “full sample” from the SCF by pooling the 1992-2016 cross sections. Summary statistics for the HHs (after adjusting for multiple imputates) in the “full sample” are presented in Table 1. These statistics confirm that the sample is roughly representative of all HHs in the United States. An odd feature that bears more scrutiny is the fact that many HH heads appear to claim SS outside the permissible ages. This may be a result of misreporting or imputation error by the survey administrators.

I construct a “retirement sample” from the SCF by subsetting the “full sample” on those HHs who have claimed SS benefits and are retired. Only with this information can I construct the distance of latest mortgage issuance to SS benefit claim dates. Summary statistics for the “retirement sample” are reported in Table 2. These confirm that the sample is representative of older Americans. Of the 7.0k HHs meeting the criteria, 21% report a date of most recent first mortgage origination and 4% report a date of most recent equity extraction.

2.1.2 HRS

The HRS is a panel survey of a random sample of American households with one member above the age of 50. It asks respondents detailed questions about demographics, life-cycle

events, health status, and finances. The survey has been administered every two years since 1992; a new cohort is added approximately every six years. I use the RAND Longitudinal File 1992-2014 to construct balance sheet and income statement measures for each household. I merge additional information on mortgage debt and housing wealth management from the RAND Fat Files 1992-2014.

I construct a “crude sample” from the SCF by pooling data in every wave from 1992-2014. I subset on HHs that do not change family structure during all available interview periods, i.e. HHs with SUBHH equal to zero. Table 3 presents summary statistics for this sample of HHs, where demographic characteristics are assigned according to the first financial respondent on record. They are representative of older Americans above the age of 50 in the years since 1992. A low proportion have claimed SS benefits in part because many HHs are not yet of claiming age. Some HHs seem to report having claimed before the age of eligibility, but this is potentially an artifact of the fact that HH birth year is constructed according to the first financial respondent in the data but HH benefit claim date is constructed by the earliest claim date for couples.

I construct a “refined sample” from the SCF by again pooling data in every wave from 1992-2014. In the “refined sample”, I aim to include HHs with changing family structure. Post-divorce branches of HHs are included as distinct from each other and from their antecedent pre-divorce HHs. Allowing for HHs with changing family structure increases the count of HHs somewhat, to ~23k, but does not much change the demographic composition of the sample.

2.1.3 TU

The TU data are records of outstanding consumer debt as reported by consumer lenders. TU supplies a 5% random sample of their records to Booth. For a simple analysis of credit scores at the end of the paper, I draw a random sample of 100k consumers from the TU files in the month of June 2012.

2.2 Empirical Strategy

I estimate the causal effect of retirement on HH propensity to originate mortgage debt. Correlations in the timing of retirement and new mortgages may be determined endogenously, though the direction of the bias is unclear ex-ante. In the event of an adverse medical shock, a HH may borrow against their home to pay the medical bills. If the health shock is debilitating, the HH may be forced into retirement at the same time and the OLS estimates will be biased upward; if the health shock is expensive but not debilitating, the HH may continue

to work to help pay the associated bills and the OLS estimates will be biased downward. To address endogeneity concerns, my main specification instruments for retirement with SS eligibility thresholds to isolate the effects of exiting the labor force. Specifically, I run the following IV regression:

$$Y_{it} = \beta_0 + \beta_1 * X_{it} + \beta_2' Z_i + \varepsilon_{it} \quad (1)$$

$$X_{it} = \gamma_0 + \gamma_1 * 1_{it}\{SS\} + \gamma_2' Z_i + \eta_{it} \quad (2)$$

For HH i in year t , the main outcome is an indicator either that the HH originated any new first mortgage, $Y_{it} \equiv 1_{it}\{New\ 1st\}$. I also consider other housing wealth management decisions, such as the purchase or sale of the home, equity extractions, origination of a new second mortgage, and origination of a HELOC. The regressor of interest is an indicator of HH retirement, $X_{it} \equiv 1_{it}\{Retire\}$, defined as retirement of the man in a mixed-sex HH or the older individual in a same-sex HH.¹ Where available in the HRS data, I include FEs, Z_i , for gender, race, education, marital status, number of children, and birth cohort. After instrumenting for SS eligibility, described below, I predict that retirement will induce new mortgage debt origination, $\beta_1 > 0$.

The instrument, $1_{it}\{SS\}$, is an indicator of whether the HH head crosses a significant SS eligibility threshold in that year. Specifically, the indicator takes the value of one in the year the HH head first qualifies for SS benefits, the year they reach the FRA, and the latest year at which they can claim benefits. Unless widowed, a possibility we ignore, individuals first qualify for SS at 62. The FRA is 65 for those born before 1942 and 66 for those born between 1943 and 1959.² Age 70 is the latest an individual can claim the benefits.

My first identifying assumptions is that SS eligibility thresholds are relevant for retirement, $Cov(1_{it}\{Retire\}, 1_{it}\{SS\}) > 0$. It is widely known that SS thresholds, especially qualification for eligibility at 62, are relevant for retirement. I confirm the age distribution of SS claims in Figure 3 and the age distribution of HH head retirement in the SCF data in Figure 4.

The second identifying assumption is that SS eligibility thresholds do not affect mortgage acquisition or equity extraction except through the effects of retirement, $Cov(\varepsilon_{it}, 1_{it}\{SS\}) = 0$. The SS program parameters are plausibly exogenous because they are legislatively determined and outside the control of the HHs considered. In principle, it is possible that exogeneity is violated because SS eligibility is correlated with other institutional affiliations that might drive housing refinance decisions. However, to the best of my knowledge, no

¹This definition is for convenience purposes and follows the SCF designation of the HH head

²It rises to 67 for those born in 1960 onward but there are no such individuals in our sample

other federal program uses age 62 as an eligibility threshold. Moreover, the use of variation in cohort FRA mitigates concerns about changes taking place at age 65, specifically. And the most important contemporaneous change at age 65 is qualification for Medicare; but to the extent that health insurance buffers against the financial effects of adverse health shocks, this should reduce the propensity of HHs to borrow against their home and work against the effects documented in this paper.

To better understand the economics of refinancing at retirement, I analyze the effect of the refinancing decision on changes in HH liquid balances. There are similar endogeneity concerns, like the possibility that an adverse health shock would prompt HHs to spend down liquid savings and originate mortgage debt to spend out of housing wealth. To identify the effects on liquid balances of those HHs prompted to refinance by retirement, I use a similar IV specification.

In this latter case, for each HH i in period t , the outcome is a measure of the change in HH liquid balances, $Y_{it} \equiv \Delta Sav_{it}$. The regressor of interest is an indicator that the HH extracted equity, $X_{it} \equiv 1_{it}\{Extract\}$. I also consider sale of the home and origination of second mortgages. Again I include demographic FEs, Z_i . And I predict that after instrumenting for SS eligibility, refinancing will induce a rise in savings balances, $\beta_1 > 0$.

3 Results I: Retirement and New Mortgage Debt

I find evidence that retirement induces HHs to take on new mortgage debt, both to finance new home purchases and against current housing. Retirement makes a HH 2-12% more likely to issue any new first mortgage and 2.6-8.5% more likely to extract equity from the home. I begin by documenting a spike in mortgage origination activity at the same time that HHs claim SS benefits in both SCF and HRS data. Then I use SS eligibility thresholds to construct an instrument for retirement and estimate a causal effect of retirement. I include robustness checks for different regression specifications in the appendix.

3.1 Event Study

I use the SCF “retirement sample” to conduct an event study of housing wealth management at the time HHs first claim SS benefits. In the SCF data, I select HHs in which the HH head reports having claimed SS benefits. Then I compute the time, relative to their claim of SS benefits, at which they report last having originated mortgage debt, $t_i^{M.Debt} - t_i^{SS}$. I count the frequency of new mortgage debt origination by years from SS claims. I report these counts for first mortgages, second mortgages, and other home loans; I decompose first

mortgage originations into new home purchases, equity extractions, and rate refinances.

The results are reported in Figure 1. In each panel, there are more new mortgage originations in the year the HH head first claimed SS benefits relative to the two adjacent years. New first mortgages are the most common type of reported loan, but the increase in mortgage debt origination at the SS claim date relative to adjacent years is ~25%-33% for all categories. Many of the first mortgage originations appear to finance the purchase of new homes, but ~20% are equity extractions.

I confirm these results in the HRS “refined sample”. For comparability with the SCF, I assign a HH head as being the first reported financial respondent if male and their partner if female. Then I assign each HH the SS claim date, t^{SS} , of the HH head. Next, I merge data from the RAND Fat Files 1992-2014 to this sample. I compute the time, relative to the claim of SS benefits, at which HHs report having taken some action, A , to manage their housing wealth, $t_i^A - t_i^{SS}$. I count the frequency of housing wealth management decisions by years from SS claims. I report counts of home purchases, sales, equity extractions, second mortgage originations, and HELOC originations.³

The results are reported in Figure 2. Again, in each panel, there is an uptick of housing wealth management in the same year that the HH head first claimed SS benefits relative to the adjacent years. Home purchases, analogous to first mortgage origination for new housing purchases in the SCF, still comprise ~20% of debt issuance at the SS threshold. Borrowing against existing housing in the form of equity extractions, second mortgage originations, and HELOC originations account for more of the housing wealth management decisions at the threshold, though these measures may suffer from imputation error. Again, in all the categories, actions in the year of SS claims increase by ~10-50% relative to adjacent years.

The HRS results address concerns about selection in the SCF due to the fact that only the most recent issuance of mortgage debt at the time of interview is reported. Because the HRS is a panel, repeated issuances of debt can be observed. There may, however, still be attrition from the sample in years more distant from SS claims, as HHs are not yet eligible or may become deceased. For this reason, we focus specifically on the spike at the SS claim date relative to adjacent years.

³Since the 1996 wave, HHs have been asked about the timing of home purchases and sales. I impute equity extractions as a first mortgage balance that has increased since the previous wave and no purchase or sale of housing in the interim. I impute second mortgage originations as a positive second mortgage balance in a wave subsequent to one with no second mortgage balance and no purchase or sale of housing in the interim. I impute a HELOC origination as the presence of a HELOC in a wave subsequent to one with no reported HELOC. I cannot date these latter actions, so I assign the second interview date as a noisy approximation, $t_i^A \approx t_i^{Int}$.

3.2 IV Evidence

3.2.1 SCF

I formally test for the effect of retirement on origination of new mortgage debt with the instrumental variable strategy described in Section 2.2. Specifically, using the SCF “retirement sample”, I construct a synthetic panel. For each HH, I construct a yearly time series from age 55 to age 75. For each year and for different kinds of mortgage debt, I construct indicators of whether the HH originated new mortgage debt in that or the subsequent year. I construct an indicator of retirement, $1\{Retire\}$, using the reported retirement date in the SCF. Finally, I construct the instrument as an indicator of SS eligibility thresholds.

This IV is presented visually in Figure 4. The uppermost panel plots the first stage for both specifications, the frequencies of retirement by age. The vertical dotted lines depict the ages at which the instrument may take a value of one. This plot demonstrates clearly that SS eligibility satisfies the relevance assumption. In general, the distribution of retirement ages is plausible, centered in the 60s but with tails above and below. The middle and lower panel depict the reduced form regressions. The most common age at which people report having last originated mortgage debt and extracted equity is 62, and there are noteworthy peaks at 66 as well. This consistent with the observed ages of SS claim and the observation of elevated mortgage debt origination frequencies at SS claim. Taken together these figures suggest that retirement is driving the origination of new mortgage debt.

These pictures are consistent with a causal link between retirement and refinancing but raise some selection concerns. In particular, the high refinancing rates observed in the early 60s relative to the 50s and 80s may be driven by attrition but may bias the estimate of SS claims upward. I truncate the sample between the ages of 55 and 75 to address this concern. In the appendix, I demonstrate that results are similar when further truncating between the ages of 59 and 71. I can also flexibly control for age as a way to parametrically address the selection concerns.

The regression results are presented in Table 4. Column (1) demonstrates that SS eligibility thresholds are relevant for retirement and that the instrument is strong, with a significant F-test value of over 1k. In general, the IV estimates are higher than the OLS estimates. This suggests that the endogenous relationship between housing debt and retirement is consistent with the story of working longer and consuming housing wealth to finance adverse expense shocks. Retirement induces a 12.1% increase in the likelihood that HH issues new first mortgage debt within two years. It increases the likelihood that a HH extracts equity by 2.6% and increases the likelihood that the HH adjusts their mortgage rate by 2.0%. I cannot reject the null of no effect on propensity to issue debt to purchase new

housing or propensity to issue a second mortgage.

3.2.2 HRS

I confirm the results of the IV approach with data from the HRS, which helps address potential selection concerns. Using the HRS “refined sample”, I again construct a synthetic panel. For each HH, I construct a monthly time series from two years (the look back period) before their first interview to the date of their last interview. For each month and for different kinds of housing wealth management actions, I construct indicators of whether the HH took the action in a given month. I assign a HH head analogously to the SCF designation, as the financial respondent if male and the spouse if the financial respondent is female in coupled HHs. I construct an indicator of retirement, $1\{Retire\}$, as the earliest reported date of retirement by the HH head. Finally, I construct the instrument as an indicator of SS eligibility thresholds.

The regression results are presented in Table 5. Broadly speaking, these results corroborate the results in the SCF. In column (1), SS eligibility is shown to be relevant for retirement and the F-statistic demonstrates the instrument is strong. That it is somewhat weaker than in the case of the SCF may have to do with the very conservative monthly frequency I use for the HRS data. Again, the IV estimates of the effect of retirement are larger than the OLS estimates. Retirement increases the likelihood of extracting equity from one’s home in the same month by 8.5% and the likelihood of selling a home in the same month by 7.7%. I cannot reject the null for home purchases, new second mortgages, or new HELOCs, but this may have to do with my choice to look at actions contemporaneous with retirement.

The regression results should be interpreted with caution. The synthetic panel consisted of many monthly observations and for computational reasons, I have not yet been able to cluster standard errors. Clustering did not much change the SEs in other other analyses I did with these HRS data, but the statistical significance of the results could be exaggerated.

4 Results II: Retirement, New Mortgage Debt, and Liquid Balances

I study the effects of retirement-induced housing wealth management decisions (i.e. purchase, sale, equity extraction). In the HRS, I find that HH liquid balances increase by ~\$5k on average in the year that they claim SS benefits and that HH mortgage debt increases by about half this amount at the same time. I use SS eligibility thresholds as an instrument for refinancing decisions to look for an effect on liquid balances. Instrumenting for home sale,

equity extraction, and second mortgage origination increases the effect on liquid balances relative to an OLS estimate. Equity extraction yields a ~\$20k increase in liquid balances when induced by social security eligibility.

4.1 Event Study

I use the HRS “crude sample” to conduct an event study of HH balance sheets at the time they claim SS benefits. For each HH, I define the date they first claimed SS benefits, t_i^{SS} using the earlier claim date in the case of couples (i.e. regardless of gender). For any interview in which any member of the HH participated, I record balance sheet and income statement elements, B , and date them by the distance, in years, to the time of the SS claim, $t_i^B = t_i^{Int.} - t_i^{SS}$. I group observations by years from SS claim and compute means and 95% confidence intervals within each bucket.

Figure 5 reports the results. The upper left panel shows SS income spiking precisely after SS claims, evidencing that the HHs have been aligned correctly. The upper right panel depicts total income across the SS claim threshold. HH total income is declining because HHs have retired and SS income does not completely replace these lost earnings. The decline in income (though this, of course, may be accompanied by a decline in consumption) makes the rise in liquid balances, especially a sudden rise, somewhat surprising.

The middle left panel depicts liquid balances across the SS claim threshold. These appear relatively stable before and after, but there is a discrete increase in liquid balances at the time the HHs are first claiming SS.⁴ The middle panel on the right depicts HH total assets. The magnitudes and error bars make it difficult to interpret but there does not appear to be a discontinuous change in wealth. Instead, liquid balances appear to be the result of reorganizing the balance sheet.

The bottom two panels examine HH housing wealth and mortgage debt. In the aggregate, there is limited evidence of HH liquidation of housing wealth. The wealth measure trends smoothly through the SS claim threshold. The mortgage debt appears to increase somewhat in the first year after HHs claim SS benefits. The increase is statistically insignificant but it can account for 50% of the increase in liquid balances. The fact that there is no similar trend reversal in housing wealth could be due to downsizing and equity extraction off-setting each other.

⁴The increase in liquid balances before and after retirement has been documented in Olafsson and Pagel (2018) but they argue this is due to changing consumption patterns. In contrast to their work, this paper offers that balance sheet reorganization is driving changing liquid savings balances. This is supported both by the fact that the liquid balances appear to increase at a specific threshold rather than gradually, a fact their paper does not disentangle.

4.2 IV Evidence

I formally study whether the additional housing wealth management activity taking place at the SS claim threshold contributes to elevated liquid balances by using the IV specification described at the end of section 2.2. Specifically, using the HRS “refined sample”, I construct a panel in interview-wave time. I construct a series, by interview wave, of the change in HH liquid balances from its previous interview, ΔSav_{it} . For each interview period and for different housing wealth management actions, I construct indicators of whether the HH took the action since the previous interview wave.⁵ For each HH, I assign a HH head analogously to the SCF designation, as the financial respondent if male and their spouse if female for coupled HHs; I construct the SS eligibility instrument according to whether the HH head became eligible since the last interview. Finally, to ensure that outliers are not driving the result, I winsorize the top and bottom 5% of ΔSav_{it} in the panel.

The OLS and IV regression results are presented in table 6. Columns (1), (4), and (7) show that the SS eligibility instrument is much weaker but still somewhat relevant. It may be weakened because interviews are far apart making it difficult to pinpoint in interview-wave time when a HH crosses an eligibility threshold. It appears strong still in the case of equity extraction. The IV estimates are larger than the OLS estimates, in the case of home sales and equity extractions, significantly so. This is consistent with adverse shocks prompting HHs to spend down liquid balances and borrow against or sell their houses to spend out of housing wealth as well. Instrumenting identifies the effect on liquid balances of the additional margin of houses refinancing at retirement. These are \$60k and \$23.1k for housing sales and equity extractions, respectively.

I conclude that the additional housing wealth management activity taking place at the SS claim date can help explain, in part, the simultaneous one-time discontinuous rise in liquid balances.

5 Interpretation

I have documented that retirement causes the issuance of new mortgage debt, but issuance remains a choice that is mediated by the HH. In this section, I conduct an audit of the HH’s decision-making to better understand their economic motives. I consider several potential explanations: HHs may be more motivated to move after retirement, they may need accessible wealth to supplement reduced income and smooth consumption, they may simplify their financial obligations, and they may enjoy better credit after claiming SS benefits.

⁵I consider purchase, sale, equity extraction, second mortgage origination, and HELOC origination and impute these values as described above.

As evidence, I consider the origination of mortgage debt for current and purchased housing, the effects of refinancing on savings balances, credit scores at SS eligibility thresholds, and survey evidence on the stated purpose of refinancing. The evidence is modest and suggests that more than one explanation may apply, but ultimately inconclusive. It is consistent with the explanation that HHs are moving but this cannot explain all of the mortgage debt originated. It appears inconsistent with expanded credit supply for HHs on SS income. It is plausible both that HHs are consumption smoothing or simplifying their financial obligations, though we document a transfer of wealth to liquid balances that appears to persist and which reduces the power of those explanations on the margin.

5.1 Explanations

Retirement might motivate a HH to originate new mortgage debt for several reasons. In this section, I consider the following:

1. HHs may become less attached to the geographic region of their former residence after retirement. This may be because they substitute away from working and toward leisure activities or because, even if they wanted to re-enter the labor force, they do not benefit more by being close to a former employer. HHs may pay off their former mortgage and take on a new one in order to finance the purchase of a new house in a different region.
2. It is possible that HHs face credit constraints in borrowing against their homes, in particular if prospective lenders consider their future income to be too risky. SS benefits are guaranteed by the government, however, and lenders might be more willing to lend because of this. The rise in additional borrowing against current housing might be explained by an extension of credit to HHs who would have borrowed earlier if they could have.
3. Households retiring from the labor force may be required to consider their finances as the source and amount of their income changes, as they begin to tap into their pension wealth, and as they budget for retirement and plan to unwind their estate. This required degree of scrutiny may reduce the marginal effort required to simplify finances by, say, consolidating or paying off debt. Borrowing more against current housing may be a way of doing this.
4. Income at retirement falls predictably because SS benefits do not completely replace lost employment income. The PIH predicts that a HH faced with a predictable loss in income will have saved wealth and then begin to consume out of it. Liquidating housing assets might be an instance of such consumption smoothing.

5.2 Evidence

5.2.1 Current vs. Acquired Housing

To the extent that HHs value geography differently after retirement, they will issue debt against newly acquired housing rather than lever their current housing assets. In both the SCF and HRS, it is possible to observe purchases of new housing separately from issuance of additional debt against current housing. The spikes in the upper right panel of figure 1 and the upper left panel of figure 2 both suggest that new purchases contribute to the debt issuance at retirement. I cannot reject the null that retirement does not induce home purchases in both the SCF and HRS regression analysis, but the HRS is very conservatively estimated.

Even if moving accounts for some of the issuance of new mortgage debt, it cannot account for all of it. In particular, equity extractions appear to spike at retirement. This means explanations which rely on HHs changing their housing consumption decision are incomplete. Among those who do not move but borrow more heavily, housing is being exploited as a purely financial asset. To understand their motives, it is necessary to understand what they do with the liquidated funds.

5.2.2 Refinancing and Liquid Balances

In section 4, I document that the additional margin of sales and equity extraction taking place at retirement increases liquid balances. The fact that the sign of association between extractions and changes in liquid balances changes after instrumenting is noteworthy. It suggests that the housing wealth management activity taking place at the threshold is proactive and not a response to expense shocks.

In principle, if all of the extracted dollars wind up permanently in liquid balances, this is inconsistent with stories of debt consolidation and consumption smoothing. So the fact that some dollars are deposited in liquid balances tempers the extent of those explanations. Of course, it is not clear that everything extracted is deposited there or that liquid balances aren't used for consumption at a later date. The fact that liquid balances appear relatively stable after the SS claim date in figure 5 suggests that these transfers are not being systematically consumed (even at a later date). If precautionary liquid balances became more valuable in retirement, this might help explain the persistence of the increase.

5.2.3 Credit Scores

I use the random sample from the TU dataset to analyze how credit scores change at SS eligibility thresholds. I subset the sample to retain individuals whose birth date and Vantage3

score is available. I bucket by age in years and compute average Vantage3 scores. Figure 7 plots this average as well as the SS program thresholds. There are no discontinuous increases in the Vantage3 credit score at any of the SS program thresholds, so if credit becomes more available, it does not appear to be happening through a credit score. Credit may become available to SS recipients through channels other than the credit score, but this suggests that refinancing activity is not driven by credit constrained individuals realizing additional credit supply.

5.2.4 Stated Purpose of Extraction

The SCF asks HHs who report extracting equity from their home their reason for doing so. Figure 6 plots counts of equity extractions by years from SS claim according to HHs stated purpose. The quantities of HHs are low so the results should be interpreted with caution. What is notable is that the spike in extractions contemporaneous with claiming SS benefits persists in several of the subgroups, including investment purposes.

Equity extractions for the purpose of non-housing consumption do not tick up in the year of SS claim. This suggests that perhaps consumption smoothing is not the motive. There is, however, an uptick in HHs that report extracting equity to invest in their homes. The future flow of housing services enjoyed might reasonably count toward consumption. It is worth noting, though, that many of these investments, anecdotally, are undertaken to allow HHs to age in place. These sorts of investments, then, represent age-differentiated consumption goods that are not captured by the simple single-good PIH model.

There is a notable increase in HHs who cite debts and gifts as their reasoning for extracting equity when claiming SS benefits. Paying off debts would be consistent with a debt consolidation story but gifts would not be and it is not possible to decompose this measure further.

6 Robustness

6.1 Retirement and New Mortgage Debt

Table 7 estimates the effect of retirement on new mortgage debt instrumenting with SS eligibility using the SCF data. The age bounds are larger, 50 to 85, but it includes a flexible age control to account for the sampling bias that creates a hump-shaped distribution of new mortgage debt. The results are robust to this alternative specification. Table 8 repeats the exercise with equity extraction rates specifically.

Table 9 estimates the effect of retirement on various kinds of new mortgage debt instrumenting with SS eligibility using the SCF data. The age bounds are even tighter, 59 to 71. The results for all mortgage debt and equity extractions remain robust to this very conservative specification.

6.2 New Mortgage Debt and Liquid Balances

Table 10 estimates the effect of various housing wealth management decisions on changes in liquid balances instrumenting with SS eligibility using the HRS data. Instead of winsorizing at 5%, this specification winsorizes at 1%. The magnitudes and significances of the estimates increases.

Table 11 presents summary statistics for the sample of HHs from HRS “refined sample” that are observable in the waves before and after they claim SS benefits. This subsample is used in a correlational study of changes in HH liquid balances and different housing wealth management actions. I run an OLS specification with FEs for demographics and a running variable of pre-period liquid balances and report the results in table 12. On average, in the period the HHs claim SS benefits, equity extractions and second mortgages are associated with liquid balance reductions. This motivates the IV approach.

Figure 8 plots average changes in savings balances for HHs who refinance by the distance to their SS claim, i.e. $E^i[\Delta Sav_{it} \mid 1_{it}\{Extract\} = 1]$ and $E^i[\Delta Sav_{it} \mid 1_{it}\{New\ 2nd\} = 1]$. It provides suggestive evidence that equity extraction and 2nd mortgage originations have different effects on savings balances at the retirement threshold. HHs that refinance at the same time as they claim SS benefits tend to have larger rises in liquid balances. For equity extractions, changes in liquid balances of refinancing HHs are statistically distinguishable from zero in the year of SS claims and most often not distinguishable elsewhere.

7 Discussion

I have documented that retirement prompts HHs to issue new mortgage debt, both to finance the purchase of new homes and to borrow against current housing. I have further documented that this retirement-induced refinancing appears to increase the liquid balances of HHs and can help explain the discontinuous increase in liquid balances around the time HHs claim SS benefits despite no corresponding discontinuous increase in total assets.

The fact that housing sales and equity extraction prompt larger increases in liquid balances at this threshold suggests that these housing wealth management decisions have a different character than other occasions on which HHs liquidate housing wealth. One char-

acterization consistent with the data are that ordinarily housing sales and equity extractions are reactive, in the sense that HHs liquidate in response to an adverse expense shock; at retirement, liquidation is pro-active, in the sense that HHs may not have an immediate need for the funds but plan for future needs.

Further evidence on the motives for refinancing at the retirement threshold is somewhat inconclusive. HHs may be moving in response to changing valuation of geography, but this cannot explain all of the financial activity. It does not appear to be the case that credit constraints are relaxed at the threshold. HHs may be smoothing consumption or consolidating debt, but the fact that some extracted funds appear to be stored as liquid balances and the fact that liquid balances appear to remain high and stable after SS claims limits these margins.

Conceptually, what is oddest about the HH decision to extract equity is that the drop in income at retirement is predictable and refinancing a home is expensive, on the order of \$2-5k. It would seem in the interest of HHs to borrow more money when purchasing a home or select a mortgage contract that pays down more slowly. Investing the funds elsewhere would allow HHs to access them at retirement without incurring transaction costs associated with refinancing. This would constitute a rational improvement in cases where the HH changes only financing and not consumption of housing at retirement.

There are several reasons why the proposed financing changes may not, in fact, be optimal in this case. There may be a wedge between borrowing and lending rates due to financial frictions. HHs may already be up against binding leverage constraints when borrowing. And housing liquidations may be driven by shocks to home values considered at the retirement threshold rather than predictable wealth. The extent of equity extractions due to retirement is slim in my estimates. That said, predictable and expensive divestment may be a useful approach for rejecting a rational benchmark in other settings. I leave this as a line of inquiry for future research.

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Tables

Table 1: SCF Full Sample Summary Statistics

Statistic	N	Mean	Std.	q25	q50	q75
D.O. Interview	45k	2003.9	7.8	1998	2004	2010
Age (Interview)	45k	51.0	16.2	39	50	63
1{Married}	45k	0.6	0.5	0	1	1
1{Homeowner}	45k	0.7	0.5	0	1	1
Income (\$)	45k	641.6k	4.7m	25.0k	55.0k	140.0k
Liq. Assets (\$)	45k	191.2k	1.8m	900	5.6k	33.0k
Checking (\$)	45k	78.3k	0.8m	500	2.2k	11.1k
1{Dir. Dep.}	41k	0.7	0.5	0	1	1
# Accounts	45k	2.1	1.2	1	2	3
Age (SS Claim)	10k	63.2	15.1	53	67	72

Table 2: SCF Retirement Sample Summary Statistics

Statistic	N	Mean	St. Dev.	q25	q50	q75
D.O. Interview	7.0k	2006	8	1998	2007	2013
Age (Interview)	7.0k	73	8	67	72	79
1{Married}	7.0k	0.5	0.5	0	1	1
1{Homeowner}	7.0k	0.8	0.4	1	1	1
# Accounts	7.0k	2.0	1.1	1	2	3
1{Dir. Deposit}	6.3k	0.9	0.3	1.0	1.0	1.0
Income (\$/Yr.)	7.0k	303k	2.1m	18k	35k	80k
D.O. SS Claim	7.0k	1996	11	1989	1996	2004
Age (New 1st)	1.5k	63	9	58	64	69
Age (Extract)	307	65	9	60	64	70
Age (Retire)	7.0k	63	6	59	62	66
D.O. Birth	7.0k	1932	11	1924	1932	1941

Table 3: HRS Crude Sample Summary Statistics

Statistic	N	Mean	St. Dev.	q25	q50	q75
D.O.Birth	22490	1936	15.34	1925	1937	1950
# Children	21761	2.69	2.14	1.00	2.00	4.00
1{Hispanic}	22466	0.11	0.31	0.00	0.00	0.00
1{Black}	22490	0.20	0.40	0.00	0.00	0.00
1{HS Graduate}	22490	0.72	0.45	0.00	1.00	1.00
1{College Grad}	22490	0.18	0.38	0.00	0.00	0.00
1{Married}	22490	0.55	0.50	0.00	1.00	1.00
1{Catholic}	22490	0.27	0.44	0.00	0.00	1.00
1{Protestant}	22490	0.61	0.49	0.00	1.00	1.00
1{Jewish}	22490	0.02	0.14	0.00	0.00	0.00
1{Claimed SS}	22490	0.51	0.50	0.00	1.00	1.00
Age (SS Claim)	11475	58.89	7.74	56.17	61.92	63.08

Table 4: Housing Wealth Management at Retirement (SCF)

	<i>Dependent variable:</i>										
	1{Retire}	1{New 1st}		1{Buy}		1{Extract}		1{Rate}		1{New 2nd}	
	<i>Stage 1</i>	<i>OLS</i>	<i>IV</i>	<i>OLS</i>	<i>IV</i>	<i>OLS</i>	<i>IV</i>	<i>OLS</i>	<i>IV</i>	<i>OLS</i>	<i>IV</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1{Retire}		0.013*** (0.003)	0.121*** (0.035)	0.006*** (0.001)	0.014 (0.013)	0.001 (0.001)	0.026** (0.011)	0.003* (0.001)	0.020* (0.012)	0.00003 (0.0003)	0.002 (0.004)
1{SS}	0.040*** (0.003)										
1	0.03*** (0.001)	0.02*** (0.002)	0.01*** (0.001)	0.00*** (0.0002)	0.00*** (0.0004)	0.00*** (0.0003)	0.00** (0.0004)	0.00*** (0.0005)	0.00*** (0.001)	0.00*** (0.0001)	0.00** (0.0002)
N	199k	199k	199k	199k	199k	199k	199k	199k	199k	199k	199k
R ²	0.006	0.0004	-0.024	0.0004	-0.002	0.00003	-0.010	0.0001	-0.002	0.00000	-0.001
Adj. R ²	0.006	0.0004	-0.024	0.0004	-0.002	0.00003	-0.010	0.0001	-0.002	-0.00000	-0.001
F Stat.	1,184***	73.0***		73.5***		6.1**		13.5***		0.02	

Note:

*p<0.1; **p<0.05; ***p<0.01
SEs computed with SCF bootstrap weights, adjusted for SCF multiple
implicates, and clustered by person and year. Age between 55 and 75.

Table 5: Housing Wealth Management at Retirement (HRS)

<i>Dependent variable:</i>											
	1{Retire}	1{Sell}		1{Buy}		1{Extract}		1{New 2nd}		1{New HELOC}	
	<i>Stage 1</i>	<i>OLS</i>	<i>IV</i>	<i>OLS</i>	<i>IV</i>	<i>OLS</i>	<i>IV</i>	<i>OLS</i>	<i>IV</i>	<i>OLS</i>	<i>IV</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1{Retire}		0.003*** (0.0004)	0.077*** (0.025)	0.004*** (0.0005)	0.016 (0.029)	0.001*** (0.001)	0.085** (0.033)	0.0004 (0.0004)	0.026 (0.023)	−0.0004 (0.0005)	0.024 (0.030)
1{SS}	0.009*** (0.0004)										
1	0.0001 (0.005)	0.001 (0.003)	0.001 (0.003)	0.001 (0.003)	0.001 (0.003)	−0.001 (0.004)	−0.001 (0.004)	−0.0001 (0.003)	−0.0001 (0.003)	−0.0001 (0.003)	−0.0001 (0.003)
N	2.423m	2.423m	2.423m	2.423m	2.423m	2.423m	2.423m	2.423m	2.423m	2.423m	2.423m
R ²	0.0012	0.0005	0.0004	0.0004	0.0004	0.0007	0.0007	0.0004	0.0004	0.0004	0.0004
Adj. R ²	0.0011	0.0004	0.0004	0.0004	0.0003	0.0007	0.0007	0.0003	0.0003	0.0003	0.0003
F Stat.	24.0	9.7	9.3	8.8	8.0	14.9	14.8	7.8	7.8	7.3	7.3

*Note:**p<0.1; **p<0.05; ***p<0.01
SEs not clustered.

Table 6: Housing Wealth Management and Liquid Balances at Retirement

	<i>Dependent variable:</i>								
	1{Sell}	ΔSav_{it}		1{Extract}	ΔSav_{it}		1{New 2nd}	ΔSav_{it}	
	<i>1st Stage</i>	<i>OLS</i>	<i>IV</i>	<i>1st Stage</i>	<i>OLS</i>	<i>IV</i>	<i>1st Stage</i>	<i>OLS</i>	<i>IV</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1{Sell}		3.4k*** (472)	60.6k* (32.3k)						
1{Extract}					-103 (180)	23.1k* (12.4k)			
1{New 2nd}								-872*** (280)	140k (137k)
1{SS}	0.004*** (0.001)			0.011*** (0.002)			0.002 (0.002)		
1	-1.1k (1.3k)	-0.003 (0.004)	-923 (1.4k)	-0.031 (0.020)	-1.2k (1.3k)	-496 (1.7k)	-0.007 (0.006)	-1.1k (1.3k)	-138 (2.1k)
Demo FEs	x	x	x	x	x	x	x	x	x
Clustered SEs	x	x	x	x	x	x	x	x	x
N	93,572	94,510	93,572	92,259	93,190	92,259	93,018	93,949	93,018
R ²	0.006	0.004	-0.285	0.035	0.003	-0.161	0.013	0.003	-2.836
Adj. R ²	0.004	0.002	-0.287	0.034	0.001	-0.163	0.012	0.001	-2.842
F Stat.	3.928***	2.466***		24.824***	1.776***		9.116***	1.869***	

Note:

*p<0.1; **p<0.05; ***p<0.01
Data winsorized by ΔSav_{it} at 5pp level.

Figures

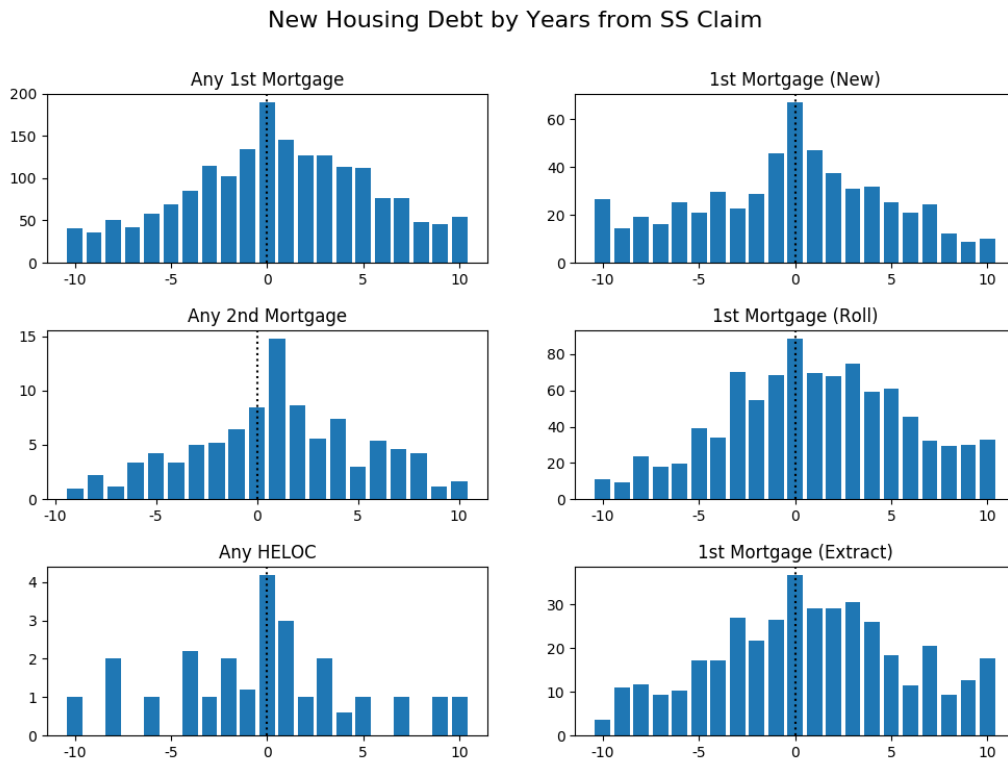


Figure 1: The above are counts of when HHs take out mortgage debt relative to the year they claim SS benefits. They are derived from the SCF 1992-2016 and are adjusted for multiple implicates. New mortgage obligations spike in the year or year after HHs claim SS benefits. Some is the result of new home purchases, but some is the result of borrowing against existing housing, especially 2nd mortgages and equity extractions.

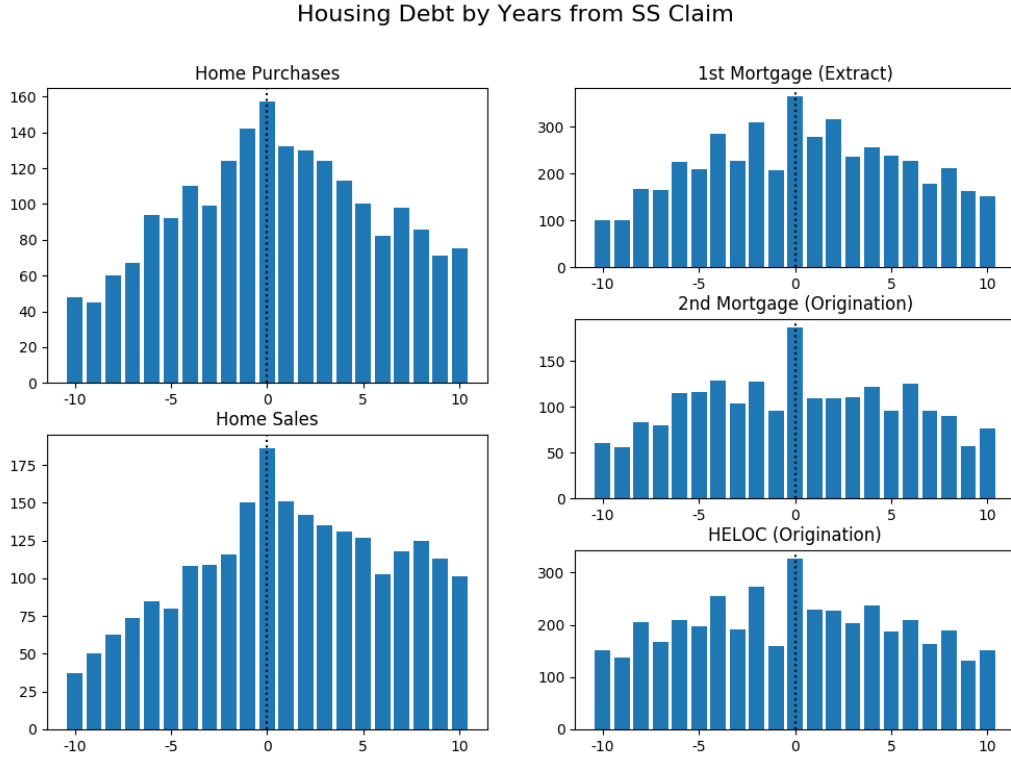


Figure 2: The above are counts of housing wealth management decisions by HHs relative to the year in which they first claim SS benefits. They are derived from the HRS 1992-2014 RAND Fat Files. HHs increase their purchase and sale of homes, but also take out significantly more debt against their homes in SS claim years. The role of additional debt on already owned homes is more prominent in the HRS than in the SCF.

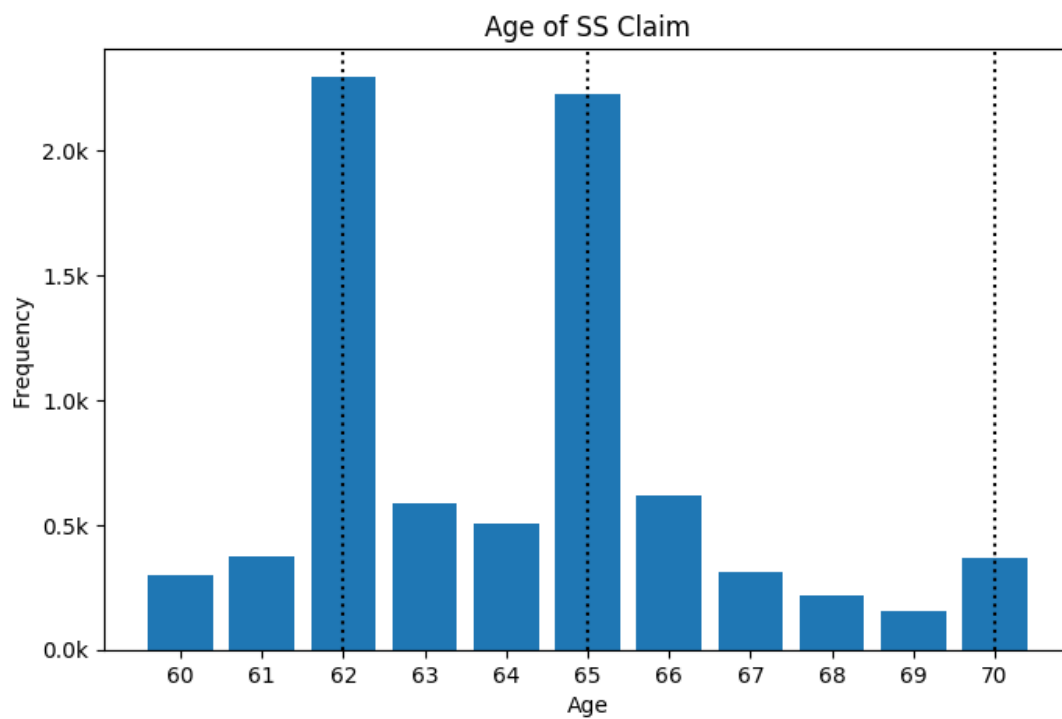


Figure 3: The above are counts of social security claim ages in the SCF 1992-2016 data and adjusted for implicates. These data are roughly consistent with aggregate measures of when social security is claimed.

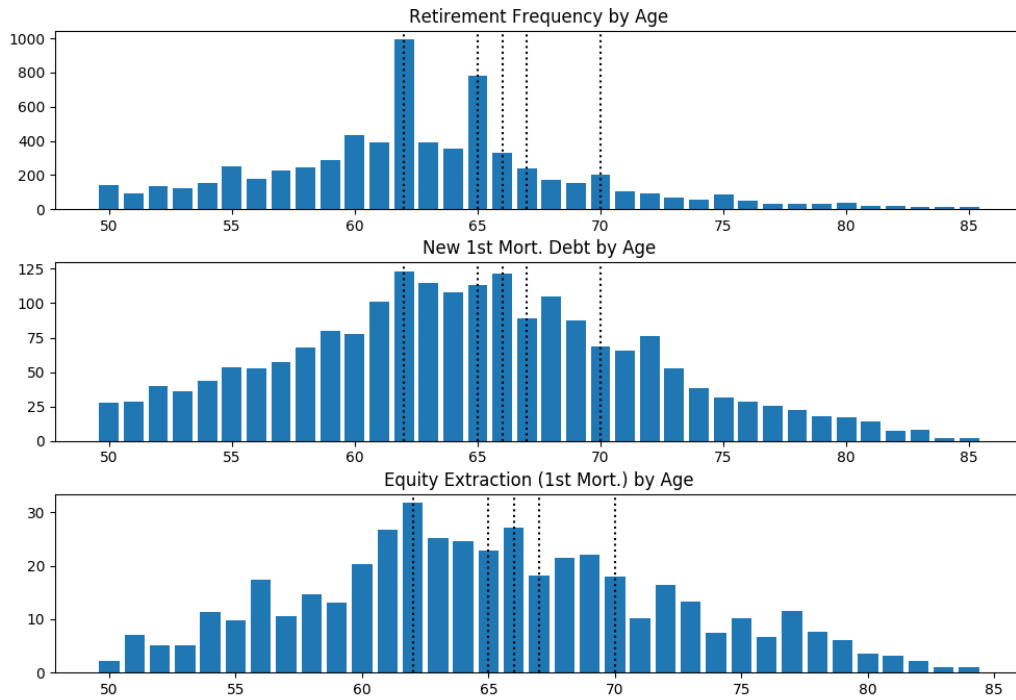


Figure 4: The above are counts of retirement and new mortgage obligations by age in the SCF 1992-2016 data and adjusted for implicates. These graphics depict the IV specification visually. The instrument is approximated by the dashed vertical lines denoting the ages in which the instrument applies. The uppermost panel represents the first stage and shows that retirement is induced by social security eligibility. The middle and lower panels represent the reduced form for all mortgage debt and equity extraction.

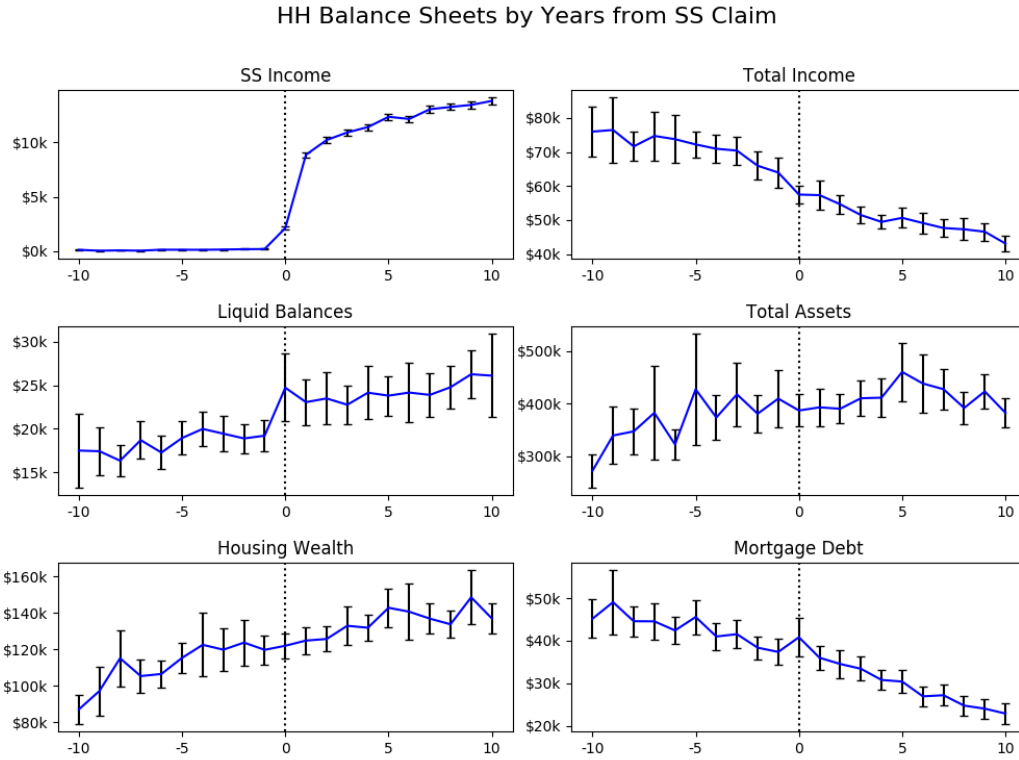


Figure 5: The above are average income statement and balance sheet items of HRS HHs with unchanging family structure, at least one member claiming SS benefits from 2002-2014, and responding in a given interview. Means and 95pp confidence intervals of observations are reported, dated by distance of the interview to the SS claim date, and binned by years. Liquid balances (savings, checking, and money market mutual funds) increase discontinuously at the SS claim date despite falling total income. There is statistically inconclusive but suggestive evidence that increasing mortgage debt may be driving this.

First Mortgage Equity Extractions by Years from SS Claim

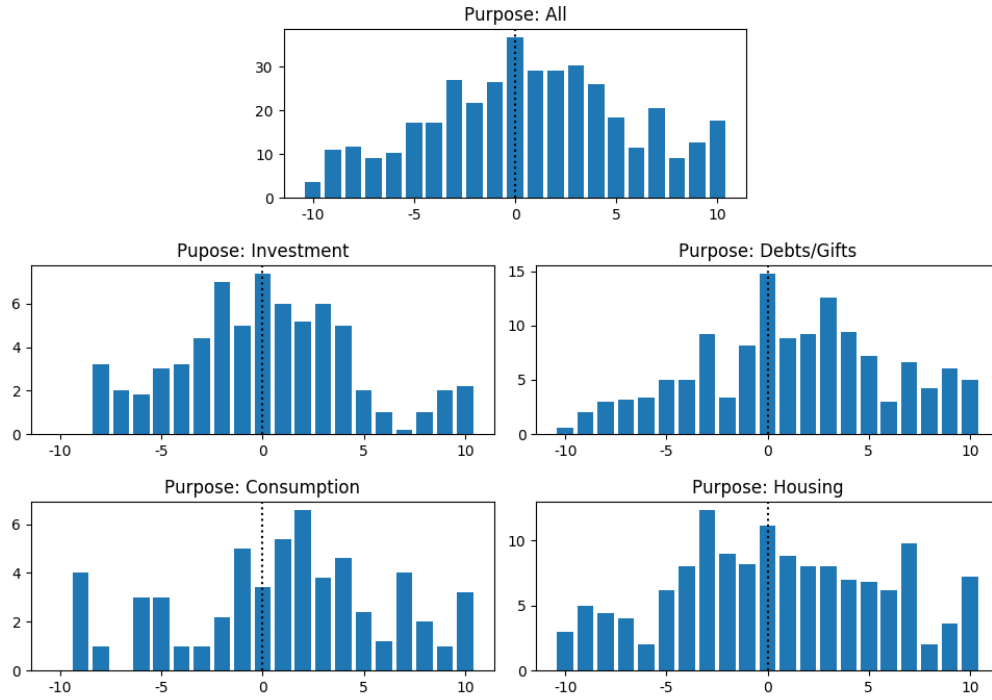


Figure 6: The above are counts of when HHs extract equity from their homes for different purposes relative to the year they claim SS benefits. They are derived from the SCF 1992-2016 and are adjusted for multiple imputates. HHs appear to be paying off outstanding debts and investing especially in their homes.

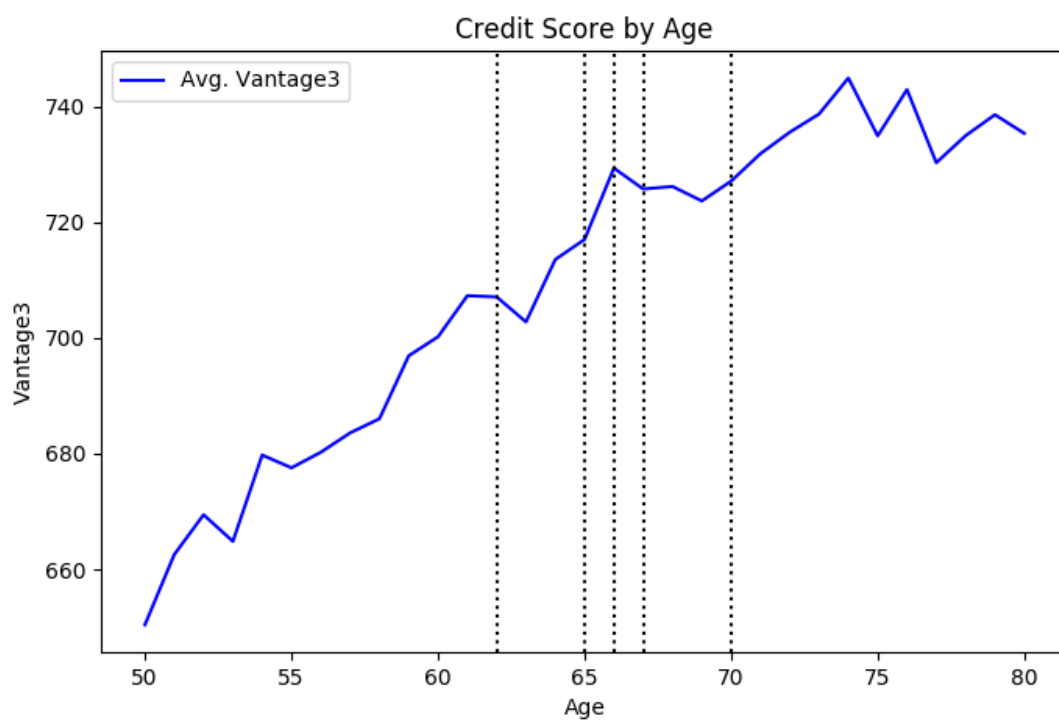


Figure 7: The above is a plot of average Vantage3 credit scores by age for a random sample of 100k individuals in June 2012. Various SS eligibility thresholds are plotted. There does not appear to be any discontinuous increase in credit score over these thresholds. This suggests that retirement refinancing induced by SS eligibility is not the result of changing credit supply.

A Additional Plots and Robustness

Table 7: Predictable New Mortgage Debt

	<i>Dependent variable:</i>					
	1{M. Debt}	1{Retire}	1{M. Debt}	1{M. Debt}	1{Retire}	1{M. Debt}
	<i>OLS</i>	<i>1st Stage</i>	<i>IV</i>	<i>OLS</i>	<i>1st Stage</i>	<i>IV</i>
	(1)	(2)	(3)	(4)	(5)	(6)
1{Retire}	0.012*** (0.002)		0.089*** (0.023)	0.011*** (0.002)		0.041* (0.022)
1{SS Threshold}		0.048*** (0.003)			0.038*** (0.003)	
1	0.006*** (0.001)	0.020*** (0.001)	0.004*** (0.0005)	0.009*** (0.001)	0.031*** (0.001)	0.008*** (0.001)
Age				x	x	x
Age ²				x	x	x
Observations	315,547	315,547	315,547	315,547	315,547	315,547
R ²	0.001	0.008	−0.022	0.002	0.014	−0.002
Adjusted R ²	0.001	0.008	−0.022	0.002	0.014	−0.002
F Statistic	177.4***	2,545.0***		175.6***	1,476.3***	

Note:

*p<0.1; **p<0.05; ***p<0.01

SEs computed with SCF bootstrap weights, adjusted for SCF multiple
implicates, and clustered by person and year.

Table 8: Predictable Equity Extraction

	<i>Dependent variable:</i>					
	1{Extract} <i>OLS</i>	1{Retire} <i>1st Stage</i>	1{Extract} <i>IV</i>	1{Extract} <i>OLS</i>	1{Retire} <i>1st Stage</i>	1{Extract} <i>IV</i>
	(1)	(2)	(3)	(4)	(5)	(6)
1{Retire}	0.002** (0.001)		0.030*** (0.010)	0.001 (0.001)		0.022* (0.012)
1{SS Threshold}		0.048*** (0.003)			0.038*** (0.003)	
1	0.001*** (0.0002)	0.020*** (0.001)	0.001*** (0.0002)	0.002*** (0.0003)	0.031*** (0.001)	0.001*** (0.0005)
Age				x	x	x
Age ²				x	x	x
Observations	315,547	315,547	315,547	315,547	315,547	315,547
R ²	0.00004	0.008	−0.013	0.0003	0.014	−0.006
Adjusted R ²	0.00004	0.008	−0.013	0.0003	0.014	−0.006
F Statistic	14.2***	2,545.0***		34.6***	1,476.3***	

Note:

*p<0.1; **p<0.05; ***p<0.01

SEs computed with SCF bootstrap weights, adjusted for SCF multiple
implicates, and clustered by person and year.

Refi in 2 yrs; Several types; 59-71

Table 9: Predictable New Mortgage Debt

	<i>Dependent variable:</i>										
	Ret1nd	M1Debt1nd		M1New1nd		M1Ext1nd		M1Ref1nd		M2Debt1nd	
	<i>Stage 1</i>	<i>OLS</i>	<i>IV</i>	<i>OLS</i>	<i>IV</i>	<i>OLS</i>	<i>IV</i>	<i>OLS</i>	<i>IV</i>	<i>OLS</i>	<i>IV</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Ret1nd		0.012*** (0.003)	0.070** (0.035)	0.006*** (0.002)	0.007 (0.016)	0.001 (0.001)	0.025* (0.014)	0.001 (0.001)	-0.001 (0.014)	-0.0004 (0.0003)	-0.002 (0.005)
SSThresh1nd	0.031*** (0.003)										
Constant	0.037*** (0.001)	0.018*** (0.002)	0.016*** (0.002)	0.003*** (0.0003)	0.003*** (0.001)	0.002*** (0.0003)	0.001* (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.001*** (0.0001)	0.001** (0.0003)
Observations	124,596	124,596	124,596	124,544	124,544	124,596	124,596	124,596	124,596	124,596	124,596
R ²	0.004	0.0003	-0.008	0.001	-0.0002	0.00003	-0.010	0.00002	-0.0002	0.00001	-0.00000
Adjusted R ²	0.004	0.0003	-0.008	0.001	-0.0002	0.00002	-0.010	0.00001	-0.0002	-0.00000	-0.00001
Residual Std. Error	32.067	21.334	21.421	8.424	8.427	7.328	7.364	9.900	9.901	3.743	3.743
F Statistic	509.378***	35.295***		69.215***		3.714*		2.116		0.894	

Note:

SEs computed with SCF bootstrap weights, adjusted for SCF multiple implicates, and clustered by person and year. *p<0.1; **p<0.05; ***p<0.01

Table 10: Housing Wealth Management and Liquid Balances at Retirement

	<i>Dependent variable:</i>								
	ΔSav_{it}	1{Sell}	ΔSav_{it}	ΔSav_{it}	1{Extract}	ΔSav_{it}	ΔSav_{it}	1{New 2nd}	ΔSav_{it}
	<i>OLS</i>	<i>1st Stage</i>	<i>IV</i>	<i>OLS</i>	<i>1st Stage</i>	<i>IV</i>	<i>OLS</i>	<i>1st Stage</i>	<i>IV</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1{Sell}	9.6k*** (1.1k)		289k*** (96.8k)						
1{Extract}				-153 (386)		107k*** (32.1k)			
1{New 2nd}							-1.4k** (612)		695k (604k)
1{SS Threshold}		0.005*** (0.001)			0.012*** (0.002)			0.002 (0.002)	
1	-1.3k (1.3k)	-0.004 (0.004)	-19 (1.8k)	-1.5k (1.3k)	-0.031 (0.019)	2.0k (3.4k)	-1.3k (1.3k)	-0.007 (0.006)	3.8k (6.6k)
Demo FEs	x	x	x	x	x	x	x	x	x
Clustered SEs	x	x	x	x	x	x	x	x	x
Observations	102,868	101,760	101,760	101,474	100,373	100,373	102,280	101,179	101,179
R ²	0.003	0.006	-1.338	0.001	0.035	-0.614	0.001	0.013	-12.308
Adjusted R ²	0.001	0.005	-1.341	-0.0002	0.034	-0.616	-0.0002	0.012	-12.326
F Statistic	2.044***	4.404***		0.814	26.847***		0.862	10.026***	

Note:

*p<0.1; **p<0.05; ***p<0.01
Data winsorized by ΔSav_{it} at 1pp level.

Table 11: SS Claim Threshold Sample Summary Statistics

Statistic	N	Mean	St. Dev.	q25	q50	q75
Wave	6,553	6.9	3.1	4	7	9
D.O. Interview	6,553	2004	6.3	1999	2004	2009
1{Married}	6,535	0.59	0.49	0	1	1
# Yrs. Educ.	6,543	12.70	3.06	12	12	15
1{Hispanic}	6,551	0.01	0.30	0	0	0
1{Black}	6,550	0.177	0.38	0	0	0
# Children	6,478	2.835	1.96	2	3	4
D.O. Birth	6,553	1941	7	1935	1940	1946
1{Home-owner}	5,350	0.79	0.41	1	1	1
D.O. SS Claim	6,553	2003	6.2	1998	2002	2008
$\Delta \text{Savings}_t$ (\$k)	6,553	5.66	100.6	-2.0	0.0	5.0
Savings_t (\$k)	6,553	23.8	102.5	.40	4.0	19.0
Savings_{t-1} (\$k)	6,553	18.2	51.1	.20	4.0	15.0
1{Buy or Sell}	4,461	0.092	0.29	0	0	0
1{Buy}	445	0.27	0.45	0	0	1
1{Sell}	445	0.26	0.44	0	0	1
1{Buy and Sell}	445	0.46	0.50	0	0	1
1{Extract Equ.}	6,441	0.092	0.29	0	0	0
1{New 2nd Mort.}	6,519	0.042	0.20	0	0	0
1{New HELOC}	4,747	0.072	0.26	0	0	0

Table 12: Liquid Balances and Housing Wealth Management at SS Claim Date

	<i>Dependent variable:</i>					
	$\Delta Savings_{it}$					
	(1)	(2)	(3)	(4)	(5)	(6)
1{Buy}	5,431 (9,139)					
1{Sell}		20,248** (9,385)				
1{Buy and Sell}			6,391 (7,172)			
1{Equ. Extract}				-3,038 (4,380)		
1{New 2nd}					-10,338* (6,195)	
1{New HELOC}						-6,477 (6,582)
1	12,785 (73,862)	13,027 (73,837)	13,074 (73,859)	12,268 (74,486)	13,447 (74,033)	-12,012 (122,583)
Demo FEs	x	x	x	x	x	x
Observations	6,446	6,446	6,446	6,335	6,413	4,570
R ²	0	0	0	0	0	0
Adjusted R ²	0	0	0	0	0	0
Residual Std. Error	98,608	98,575	98,605	99,415	98,832	113,559
F Statistic	5***	5***	5***	5***	5***	3***

Note:

*p<0.1; **p<0.05; ***p<0.01

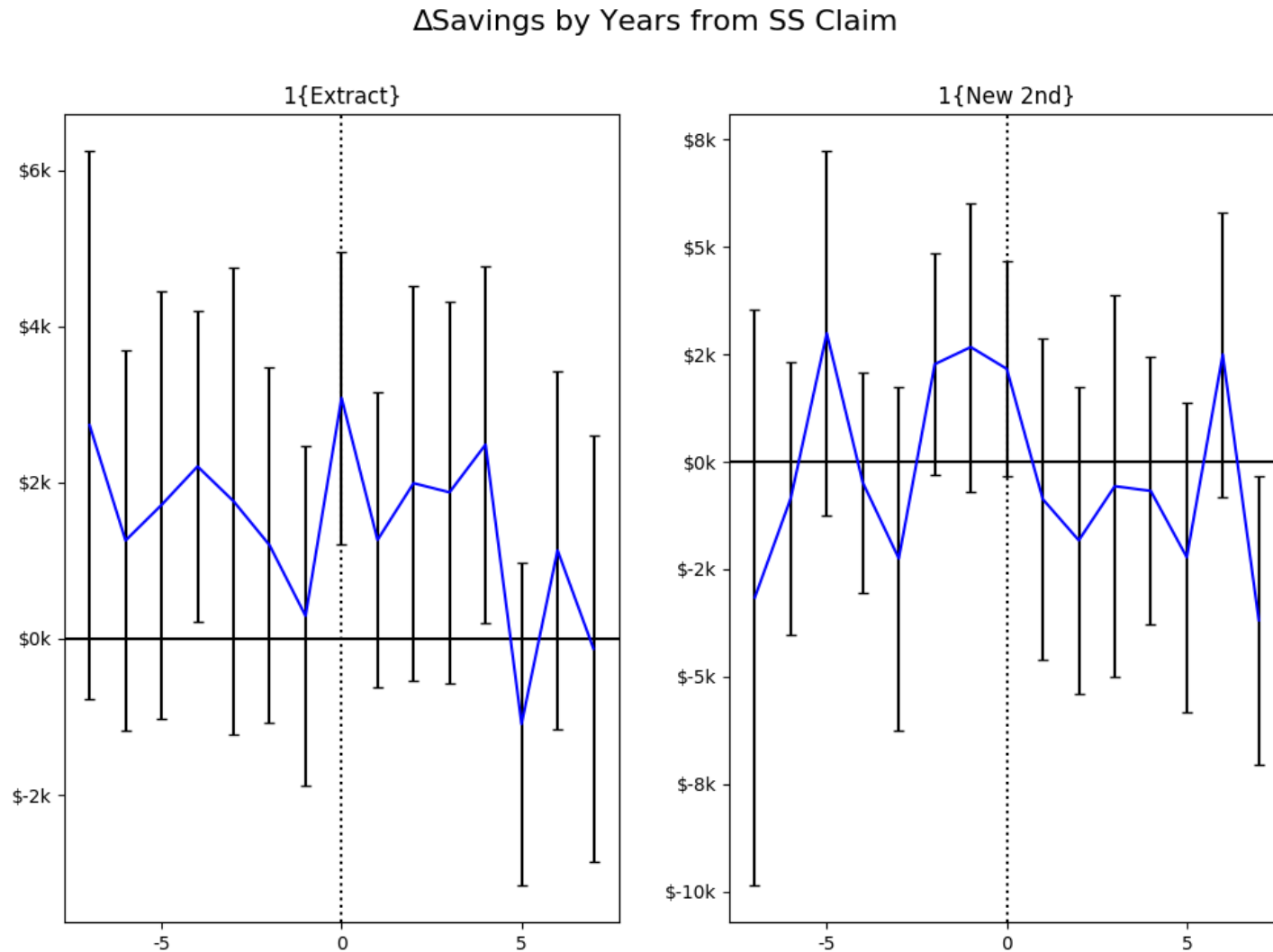


Figure 8: The above plots average ΔSav_{it} and 95pp CIs for HHs who extract equity and originate a 2nd mortgage by the years from their SS claim after winsorizing ΔSav_{it} at the 4pp level. This is suggestive evidence that the additional margin of HHs who borrow against home equity at the time they claim SS benefits leave some of these assets as liquid balances.