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# HOW MUCH DOES HOUSING AFFECT RETIREMENT SECURITY? AN NRRI UPDATE

BY ALICIA H. MUNNELL, WENLIANG HOU, AND GEOFFREY T. SANZENBACHER\*

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## Introduction

Housing wealth, a major asset for most households entering retirement, is determined by two factors: 1) the value of the house; and 2) the amount of mortgage debt. Since 2000, house prices have been on a roller coaster, soaring to new highs during the bubble, plummeting when the bubble burst, and then beginning a gradual recovery towards their long-term trend level. In contrast, housing debt for older households has followed a consistent pattern: more retirees are carrying mortgage debt than ever before and the value of the debt has increased significantly.

This *brief* examines how trends in house prices and borrowing affect retirement preparedness in the National Retirement Risk Index (NRRI). The NRRI is based on the Federal Reserve's *Survey of Consumer Finances* (SCF), which is conducted every three years. The current NRRI baseline uses data for 2013 (the most recent SCF). Our previous work showed that – even if households work to age 65 and annuitize all their financial assets, including their home equity – more than half are at risk of not being able to maintain their standard of living in retirement.

The current exercise is to estimate the extent to which below-trend house prices and high housing debt contributed to the high percentage of households at risk in 2013 and what current trends suggest for the NRRI in the future.

The discussion proceeds as follows. The first section describes the NRRI. The second section presents trends in house prices and borrowing, which show that – in 2013 – prices were still below their long-term trend, and debt levels were substantially higher for older households. The third section reports what the 2013 NRRI would have looked like absent the housing bubble, that is, a scenario with higher prices and lower borrowing levels. The fourth section considers what may lie ahead for house prices and borrowing, focusing on whether recent patterns are likely to be transitory or permanent. The final section concludes that the confluence of lower house prices after the bubble and greater borrowing was a key reason for the high percentage of households at risk in the 2013 NRRI baseline. Looking ahead, recent data suggest that house prices will fully recover, which will modestly improve the NRRI, but the future path of borrowing is less clear.

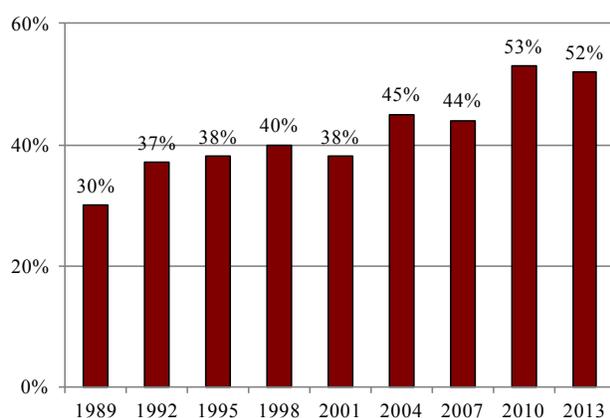
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\* Alicia H. Munnell is director of the Center for Retirement Research at Boston College (CRR) and the Peter F. Drucker Professor of Management Sciences at Boston College's Carroll School of Management. Wenliang Hou is a senior research advisor at the CRR. Geoffrey T. Sanzenbacher is a research economist at the CRR. The CRR gratefully acknowledges Prudential Financial for its sponsorship of the National Retirement Risk Index.

## The National Retirement Risk Index

The National Retirement Risk Index (NRRI) has increased over time due to longer life expectancies, reduced Social Security replacement rates, a decline in net housing wealth, and very low interest rates. In 2013, the Index showed that 52 percent of today's working-age households were at risk of being unable to maintain their pre-retirement levels of consumption once they stopped working (see Figure 1).

FIGURE 1. THE NATIONAL RETIREMENT RISK INDEX, 1989-2013



Source: Munnell, Hou, and Webb (2014).

Constructing the NRRI involves three steps: 1) projecting a replacement rate – retirement income as a share of pre-retirement income – for each member of a nationally representative sample of U.S. households; 2) constructing a target replacement rate that would allow each household to maintain its pre-retirement standard of living in retirement; and 3) comparing the projected and target replacement rates to find the percentage of households “at risk.”

### Projecting Household Replacement Rates

Retirement income at age 65 is defined broadly to include all of the usual suspects plus housing.<sup>1</sup> Retirement income from financial assets and housing is derived by projecting assets that households will

hold at retirement, based on the stable relationship between wealth-to-income ratios and age evident in the 1983-2013 SCFs. Financial assets and housing are estimated separately.<sup>2</sup>

Sources of retirement income that are not derived from SCF-reported wealth are estimated directly. For defined benefit pension income, the projections are based on the amounts reported by survey respondents. For Social Security, benefits are calculated directly based on estimated earnings histories for each member of the household. Earnings prior to retirement are calculated by creating a wage-indexed earnings history and averaging each individual's annual indexed wages over his lifetime. Once estimated, the components are added together to get total projected retirement income at age 65.

The items that comprise pre-retirement income include earnings, the return on 401(k) plans and other financial assets, and imputed rent from housing.<sup>3</sup> Average annual income from wealth is calculated by applying a real return of 4 percent to projected wealth prior to retirement. Average lifetime income then serves as the denominator for each household's replacement rate.

### Estimating Target Replacement Rates

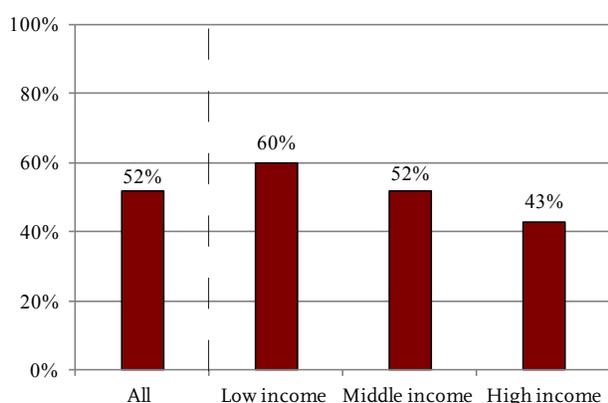
To determine the share of the population at risk requires comparing projected replacement rates with a benchmark rate. A commonly used benchmark is the replacement rate needed to allow households to maintain their pre-retirement standard of living in retirement. People need less than their full pre-retirement income to maintain this standard once they stop working since they pay less in taxes, no longer need to save for retirement, and historically have often paid off their mortgage. Thus, a greater share of their income is available for spending. Target replacement rates are estimated for different types of households assuming that households spread their income so as to have the same level of consumption in retirement as they had before they retired.<sup>4</sup>

### Calculating the Index

The final step in creating the Index is to compare each household's projected replacement rate with the appropriate target. Households whose projected replacement rates fall more than 10 percent below

their target are deemed to be at risk of having insufficient income to maintain their pre-retirement standard of living. The Index is simply the percentage of all households that fall more than 10 percent short of their target. Not surprisingly, the percentage at risk declines as household income rises, but even a significant share of households in the top third of the income distribution will be at risk (see Figure 2).

FIGURE 2. PERCENTAGE OF HOUSEHOLDS “AT RISK” AT AGE 65 BY INCOME GROUP, 2013



Source: Munnell, Hou, and Webb (2014).

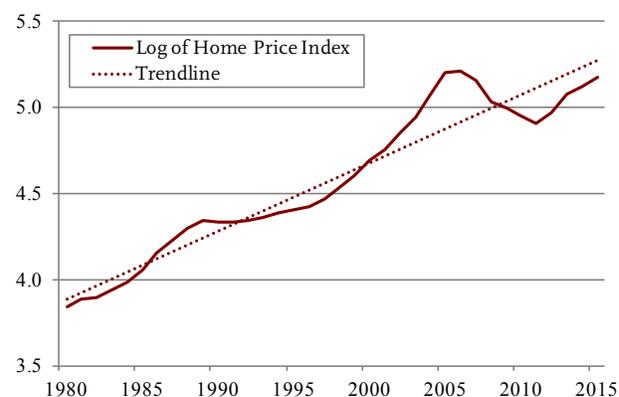
## Trends in House Prices and Debt

House prices and housing debt are the two parameters that affect housing wealth in the NRRI. They have followed different patterns over time, which are discussed briefly below.

### House Prices

The last two decades have been a roller coaster for house prices. In the early 2000s, prices rose robustly, far above their long-term trend growth rate. At the peak of the bubble in 2006, prices were more than 60 percent higher than in 2000, according to the S&P CoreLogic Case-Shiller Home Price Index (see Figure 3). Prices then plunged before beginning a gradual recovery. In 2013, the year used in this analysis, prices were still lagging below their long-term trend.

FIGURE 3. S&P CORELOGIC CASE-SHILLER HOME PRICE INDEX, LOG SCALE AND TREND LINE, 1980-2015



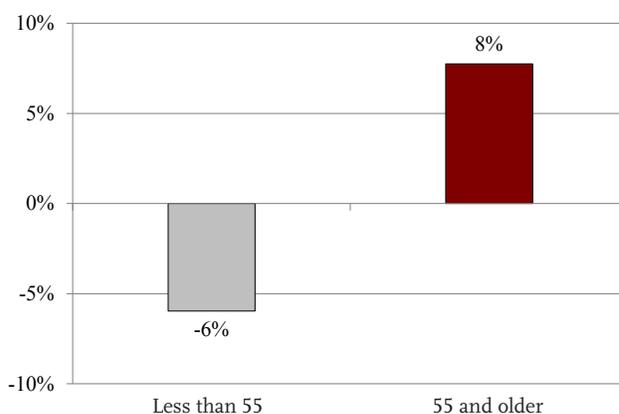
Note: A log scale is used for easier interpretation of the percentage changes.

Source: Authors' calculations using S&P CoreLogic Case-Shiller Home Price Index (1980-2015).

### Housing Debt

Housing debt, for this analysis, is defined broadly to include mortgages, home equity loans, and home equity lines of credit. Unlike house prices, recent trends in housing debt have been less volatile and, for older households, debt has increased consistently over time.<sup>5</sup> For households ages 55 and older, the share with housing debt increased by 8 percentage points between 2001 and 2013 (see Figure 4).<sup>6</sup> And the debt

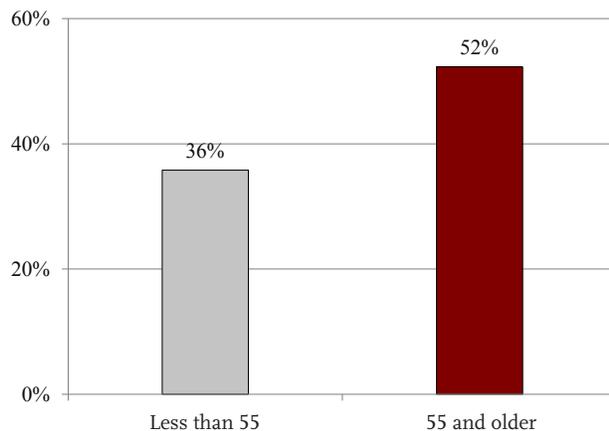
FIGURE 4. PERCENTAGE-POINT CHANGE IN HOUSEHOLDS WITH HOUSING DEBT BY AGE, 2001-2013



Source: Authors' calculations using U.S. Board of Governors of the Federal Reserve System, *Survey of Consumer Finances* (SCF) (2013).

burden – defined as the median ratio of housing debt to household income – increased by more than 50 percentage points for this age group (see Figure 5). In contrast, the prevalence of housing debt did not increase for younger households and the growth in the debt burden was much smaller.

FIGURE 5. PERCENTAGE-POINT CHANGE IN HOUSING DEBT-TO-INCOME RATIO BY AGE, 2001-2013



Source: Authors' calculations using 2013 SCF.

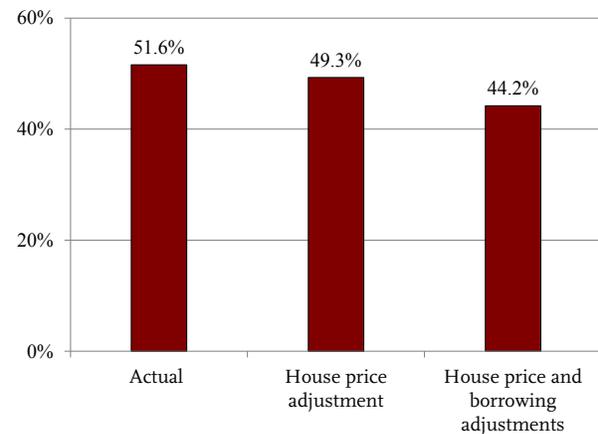
## How House Prices and Debt Affect the NRRI

To calculate the effect of house prices and borrowing on the 2013 NRRI, we set house prices in 2013 at their long-term trend level and borrowing at the pre-bubble level observed in 2001. Each of these assumptions increases the housing wealth of the sample households in the NRRI, and thus reduces the percentage at risk; the question is how large are these effects.

For setting house prices, we use the long-term trend growth line depicted in Figure 3. At the end of 2013, the S&P CoreLogic Case-Shiller Index was 12.4 percent below this trend line. Therefore, we increased the replacement rates from net housing by 12.4 percent for each household. As a result, the NRRI drops from 51.6 percent to 49.3 percent (see Figure 6).

Next, we alter borrowing patterns. Using SCF data for 2001, we recalculate 2013 loan-to-value ratios by age for those who own a home. The lower 2001

FIGURE 6. 2013 NRRI ADJUSTED BY HOUSE PRICE AND BORROWING PATTERNS



Source: Authors' calculations.

ratios increase the net housing component of replacement rates and reduce the NRRI from 49.3 percent to 44.2 percent – a much larger drop than that generated by the higher house prices.

The results also indicate that middle-income households were hurt the most by the collapse in house prices and the increase in borrowing (see Table 1). As a result, the share of middle-income households actually at risk in 2013 was a substantial 9.5 percentage points higher than it would have been under the price and borrowing adjustments. The likely reason for the differences by income level is that – compared to the middle-income group – the lowest income group has a smaller percentage of homeowners while the highest-income group, with greater financial assets, is less reliant on housing wealth for retirement security.

TABLE 1. 2013 NRRI ADJUSTED BY HOUSE PRICE AND BORROWING PATTERNS, BY INCOME GROUP

Scenario	Low	Middle	High	Total
Actual NRRI 2013	59.5 %	52.2 %	43.4 %	51.6 %
House price adjustment	58.1	49.5	40.8	49.3
House price & borrowing adjustments	54.0	42.7	36.1	44.2

Source: Authors' calculations.

## The Outlook for House Prices and Debt

Looking past 2013, it is worth considering what might happen to house prices and borrowing, providing a possible preview for the 2016 NRRI. The story with prices looks reasonably clear. Since 2013, house prices have continued to recover and are now close to their long-term trend level. Thus, rising house prices will improve the NRRI a bit when it is updated for the 2016 SCF.

The harder question is what to expect for housing debt patterns. Some evidence indicates that the big upsurge in debt among older households could be a one-shot phenomenon, while other evidence indicates the high levels in 2013 could represent a “new normal.” These arguments are explored further below.

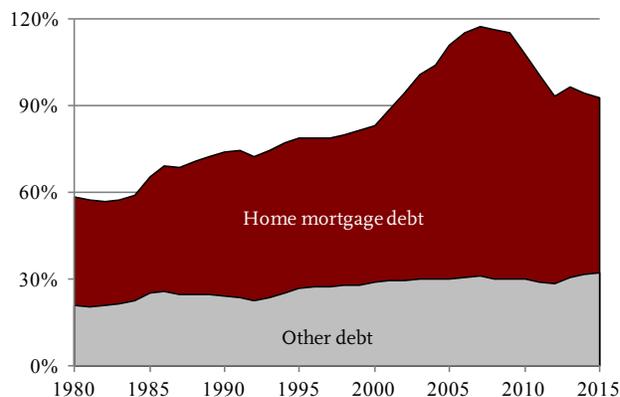
### *High Borrowing Could Be Temporary*

On the one hand, the rise in borrowing could reflect the surge in refinancing during the housing boom. Economic theory suggests that younger and older households will respond differently to rising house prices, because of their different time horizons. The logic is simple. When house prices are rising, rents are rising too. Therefore, any homeowner who sells a house in a buoyant housing market will face higher rents. Younger sellers would need to pay the higher rents for several decades while older sellers would pay these rents for a much shorter time. Therefore, older households should be more likely to refinance and extract equity when house prices soar.

And, in fact, evidence indicates that those in their 50s and early 60s were much more likely than younger people to refinance and extract equity during the bubble.<sup>7</sup> That means that yesterday’s 50- and 60-year-old extractors may be those who carried mortgages into retirement in 2013, suggesting that retiring with a mortgage may be a one-shot phenomenon.

Another piece of evidence for the one-shot phenomenon is that the surge in debt relative to income that accompanied the run-up in house prices during the bubble has reversed. The Federal Reserve’s Flow of Funds data show total debt soaring from about 80 percent of income in the mid-1990s to nearly 120 percent in 2007 and then falling back to 93 percent in 2015 (see Figure 7). Although these data refer to all households – not just those entering retirement – and may reflect the decline in homeownership

FIGURE 7. RATIO OF DEBT TO INCOME FOR ALL HOUSEHOLDS, 1980-2015



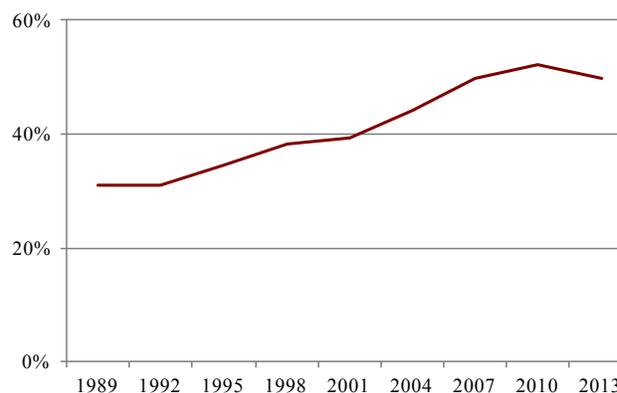
Source: Authors’ calculations using U.S. Board of Governors of the Federal Reserve System, *Financial Accounts of the United States: Flow of Funds* (1980-2015).

among younger groups, the fact that housing debt as a percentage of income is going down provides a little additional support for the one-shot hypothesis.

### *High Borrowing Could Be Permanent*

On the other hand, three pieces of evidence support the counter-argument that the rise in retiree mortgage debt reflects a new normal. First, the trend toward holding mortgages at older ages did not start with the bubble; rather the percentage has been increasing since the early 1990s (see Figure 8). Second,

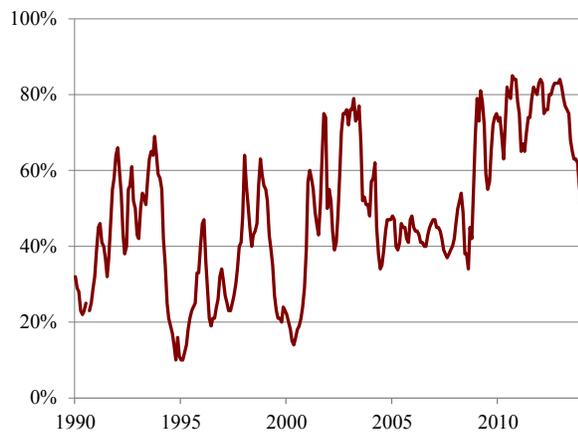
FIGURE 8. PERCENTAGE OF HOUSEHOLDS AGES 55 AND OVER WITH HOUSING DEBT, CONDITIONAL ON OWNING A HOUSE, 1989-2013



Source: Authors’ calculations using 2013 SCF.

the NRRI suggests that households are becoming increasingly less prepared for retirement, so some may choose to delay paying off a mortgage in order to build up 401(k) balances. Finally, a large number of households have been refinancing to take advantage of low mortgage rates; many of these households are likely to carry these new mortgages into retirement (see Figure 9).<sup>8</sup>

FIGURE 9. REFINANCES AS A PERCENTAGE OF TOTAL MORTGAGES, 1990-2015



Sources: Freddie Mac (2015a, b).

## Conclusion

Since 2000, the U.S. housing market experienced a major bubble and a crash. By 2013, the latest year for *Survey of Consumer Finance* data, it had not yet fully recovered. One clear trend that has emerged is an increase in the percentage of older households carrying mortgage debt into retirement and an increase in the amount of this debt. Combined with lower house prices after the bubble burst, these trends significantly reduced net housing wealth and undermined retirement preparedness and financial flexibility for a substantial share of households in 2013.

Looking past 2013, house prices have been continuing to rise, but the path of housing debt among older households is much less clear. The big question is whether the recent high-debt pattern reflects a one-shot reaction to the housing bubble that will gradually fade away or a more permanent habit of carrying mortgages into retirement. Only time will tell.

## Endnotes

1 The Index does not include income from work, since labor force participation declines rapidly as people age.

2 In the case of housing, the projections are used to calculate two distinct sources of income: the rental value that homeowners receive from living in their home rent free and the amount of equity they could borrow from their housing wealth through a reverse mortgage. Both mortgage debt and non-mortgage debt are subtracted from the appropriate components of projected wealth. For 401(k) assets, other financial wealth, and housing wealth, the assumption is that households convert the wealth into a stream of income by purchasing an inflation-indexed annuity – that is, an annuity that will provide them with a payment linked to the Consumer Price Index for the rest of their lives. For couples, the annuity provides the surviving spouse two thirds of the base amount. While inflation-indexed annuities are not widely used by consumers, they provide a convenient metric for calculating the lifetime income that can be obtained from a lump sum. And while inflation-indexed annuities provide a smaller initial benefit than nominal annuities, over time they protect a household's purchasing power against the erosive effects of inflation.

3 Interest on both mortgage and non-mortgage debt is subtracted from the appropriate components of pre-retirement income.

4 We recognize that smoothing consumption is not the same as smoothing the marginal utility of consumption that theory suggests, but the concept of smoothing is central to the calculation of the targets.

5 For more on this trend, see Lusardi and Mitchell (2013) and Butrica and Karamcheva (2013).

6 Figure 4 shows a drop in the percentage of younger households with mortgage debt. This drop, though, reflects the reduction in homeownership at these ages; conditional on owning a home, the percentage of younger households without a mortgage remains basically steady.

7 Munnell and Soto (2008).

8 About two thirds of households that refinance stay with the same term as their original mortgage. For example, households with an initial 30-year mortgage who refinance would take on a new 30-year mortgage, extending the total number of years for paying off their housing debt.

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## Contact Information

Center for Retirement Research  
Boston College  
Hovey House  
140 Commonwealth Avenue  
Chestnut Hill, MA 02467-3808  
Phone: (617) 552-1762  
Fax: (617) 552-0191  
E-mail: [crr@bc.edu](mailto:crr@bc.edu)  
Website: <http://crr.bc.edu>

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