Joint Center for Housing Studies

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The Importance of Housing To the Accumulation of Household Net Wealth

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Introduction

Housing is the cornerstone of household wealth, especially for low-income households. With the growth in the U.S. homeownership rate, housing wealth is important to more American households than ever before. In fact, according to the 2001 Survey of Consumer Finances (SCF) data released in February 2003, home equity accounted for about 21 percent of household net wealth; on average, a homeowner holds 48 percent of his or her net household wealth in the form of home equity. Is that money well invested in terms of its rate of return relative to alternatives? To what extent does housing tenure choice and housing wealth affect the accumulation of total net wealth in the long run? These are important questions, but the answers are not fully resolved.

Most of the previous studies on homeownership focus on home price appreciation, social benefits of homeownership, comparing the costs of owning to renting, or comparing home appreciation and stock returns as investment tools. All of these are important and help us to understand the role of housing in the process of building up household net wealth, but literature shows quite complicated and sometimes controversial findings. More comprehensive research is necessary before reaching any conclusions.

Housing plays other roles in household wealth such as being a "protector" and a "cultivator".[1] Homeownership can protect a homeowner against inflation in the long run. The entire housing cost of a renter is subject to inflation, while a homeowner with a fixed-rate mortgage only has the home insurance and local property tax subject to inflation. This is especially obvious when inflation rates are high. As homeowners borrow against their houses to engage in other types of investment, their homes might actually "cultivate" wealth for them. They could use the money to start a business, invest in stocks, renovate the house to reinforce the home value, and spend on their (or even their children's) education. All these have the potential to increase household income. It is, therefore, necessary to adopt a comprehensive approach to study household wealth dynamics over a period of time.

Most studies overlook the comprehensive effects of homeownership and housing wealth on the long-term accumulation of household net wealth, and researchers know little about how this affects low-income homeowners in particular. In this paper we examine the effect of homeownership and housing wealth on the accumulation of household net wealth from multiple

[1] Di, Zhu Xiao. 2001. *The Role of Housing as a Component of Household Wealth*. Joint Center for Housing Studies at Harvard University, Working Paper W01-6.

perspectives. First, we look at housing tenure choice and its effect on wealth accumulation. We accomplish this by examining how much of the wealth gap can be attributed to individual households' housing tenure choice, all else equal. In other words, we want to find out how much of the difference between homeowners' actual amount of net wealth and predicted value of net wealth is due to their tenure choice.

Second, we measure the relationship between the housing wealth in a base year and the total household net wealth at the end of a period. This can be measured by home equity or housing value; the difference between the two reflects the impact of leverage. The amount of mortgage a homeowner borrows could be an important factor. A homeowner's down payment is usually only 10 percent of the housing value. If the property experiences an appreciation, the homeowner benefits by acquiring an investment return of ten times more, which can easily offset the interest payment. In other words, it is worthwhile to borrow money and invest in a home if its value appreciates. Of course, the risk of borrowing home mortgage with down payment exists when home value goes down because the down payment could be lost.

Another perspective is to see how housing's contribution to household net wealth varies from other sources, such as stock wealth. This helps to find the relative advantage or disadvantage of using a home as an investment tool. The dual nature of housing as both consumption and investment, however, sets it apart from other forms of investment in potentially appreciating assets. It is also riskier, not only because it directly affects life style if a foreclosure is imminent, but also because it is a single investment that lacks diversity. On the other hand, it is easy to purchase on margin, due to financial leverage, and this also results in savings. Households are compelled to save money in order to pay for the down payment in a mortgage loan. It is, therefore, difficult to simply evaluate home owning as an investment strategy. This point underscores the necessity to examine the effect of homeownership on wealth accumulation through multiple perspectives, which we will do in this study.

Finally, we contrast low-income homeowners with other homeowners to see whether and how the former is different from the latter in the impact of housing on household wealth. While income often constrains low-income households from achieving homeownership, home owning nevertheless is essentially their only investment tool for wealth accumulation.

Our multiple perspective approach is necessary because it is easy to get lost when thinking about the real value of owning a home. In a 1998 study, Hurst et al.[2] found the amount of home equity to be negatively associated with wealth accumulation. It turns out that their model in the study was measuring both home equity amount and stock value at the same time and was, therefore, examining the role of housing in portfolio management of household wealth, which is similar to only one of the perspectives we employ for this paper.

We use the Panel Survey of Income Dynamics (PSID) data to examine the period between 1984 and 1999. We report descriptive statistics to examine the tenure choice change during those fifteen years and the change of household wealth for renters and owners respectively in the years 1984, 1989, 1994, and 1999, as the survey only collected supplementary data on household wealth in those years. Subsequently, we use ordinary least squares regression models to look at the impact of housing tenure choice and housing wealth level, as well as its share in household net wealth in 1984 on household net wealth in 1999.

Literature Review

Perhaps the fundamental reason why housing wealth can contribute to the accumulation of household wealth lies in home price appreciation. As measured by the national weighted average, home price appreciation is positive in nominal terms. In fact, nominal home prices never declined on a year-over-year basis since the National Association of Realtors began tracking the sales data in 1968. Home prices typically increase at the general rate of inflation, plus one to two percentage points. Growth, however, is generally slower during periods of recession, excluding the most recent period. Of course, national measures of home price appreciation have little practical meaning to an individual homeowner because he invests in a single asset instead of a national index, and this asset cannot be diversified. The volatility of local home prices is far greater when measured by weighted averages for metropolitan areas. The limited studies that investigate the volatility of home prices at the tract or zip code level found it to be even greater. Nevertheless, the national average annual increase in nominal house

[2] Hurst, E. Luoh, M. C., & Stafford, F. P. 1998. *The Wealth Dynamics of American Families*, 1984-94. Brookings Papers on Economic Activity, 1: 1998.

price between 1968 and 2001 is 6.3 percent.[3] Such appreciation argues in favor of homeownership as one of the tools for accumulating household wealth.

Many studies compare homeownership with other investment tools. For example, Ibbotson and Siegel (1984) found that "from 1947 to 1982, an index of residential-property capital appreciation showed an annual compound rate of return of 7.4 percent. This was lower than the return on common stocks (11 percent), just about equal to the market composite (7.5 percent), and higher than the returns on US Government securities (3.98 percent)."[4] Goetzmann (1993) also found that "capital appreciation of real estate is higher than total returns to bonds over the 1971-1985 period, but less than that of stocks."[5] More recently, Marjamaa (2002) argued that during the last decade, the average stockholder earned $23,000 in the stock market while the average homeowner earned $44,000 in home equity.[6] All these claims indicate that housing is a good investment and that it is a particularly better investment than holding stocks when the bull market turns bearish.

In addition to the capital benefit, believers and advocates of homeownership list many other positive impacts of homeownership, including tax deduction[7] and financial leveraging.[8] Homeownership may also bear certain social benefits. For example, Rohe, Zandt, and McCarthy (2001) found that people who are satisfied with their homes and neighborhoods are more productive at work.[9] Boehm and Schlottmann (2001) reported that children of homeowners, compared with children of renters, tend to achieve higher levels of education and income, own homes sooner, and have larger housing and non-housing wealth accumulation.[10] Upon putting these findings together, homeowners may have a greater ability to accumulate wealth. This certainly raises other social concerns. For example, in their study in 1991, Apgar, Masnick, and

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[3]Jones, D. S. 2002. Homeownership Means Wealth. Real Estate Center. http://recenter.tamu.edu/news/42-0302.html.
[4] Ibbotson, R. and Siegel, L. (1984) "Real Estate Returns: A Comparison with Other Investments," *Journal of the American Real Estate and Urban Economics Association*. 12, 3, pp.219-242. Cited from Michael Stegman, "Home Ownership and Family Wealth in the United States," Chapter 5 of *Housing and Family Wealth*, edited by Ray Forrest and Alan Murie. Routledge, 1995.
[5] Goetzmann, W. N. 1993. The Single Family Home in the Investment Portfolio. *Journal of Real Estate Finance and Economics*, 6: 201-222. p. 217.
[6] Marjamaa, L. 2002. Home Equity: The Cornerstone of Wealth. *Community Banker*, Sept 2002.
[7] Poterba, J. M. 1992. Taxation and Housing: Old Questions, New Answers. *The American Economic Review*, 82 (2): 237-242.
[8] Gates, L. 2002. Homes are a Valuable Investment. http://www.misshomes.com/news/valuableinvestment.html.
[9] Rohe, W. M., Zandt, S. V. and McCarthy, G. W. 2002. "The Social Benefits and Costs of Homeownership: A Critical Assessment of the Research" in N. P. Retsinas & E. S. Belsky (Eds.) *Low-Income Homeownership: Examining the Unexamined Goal*.

McArdle wrote: "the lack of homeownership opportunities for blacks has undermined their ability to accumulate wealth".[11] Blacks in the U.S. own a disproportionately low share of aggregate housing wealth for two distinct reasons. First, blacks are less likely than whites to own their houses. Second, black-owned houses have lower market values than white-owned houses.[12] A recent study even argues that houses owned by blacks appreciated less than the houses owned by whites.[13]

Some studies however, provide more complicated, or even provocative, arguments that force people to reconsider the importance of homeownership in wealth accumulation. For example, in a study on the wealth dynamics of American families, Hurst et al. (1998) found that the amount of home equity in primary residences in 1984 is negatively associated with accumulated household net wealth ten years later.[14] A first look at the finding gave the impression that buying a house is a money-losing investment. A careful examination of the study, however, revealed that when they talked about the impact on net wealth of investing in a home, they compared it to the benefit of investing in stocks. Given that the stock market generally yields higher returns than home appreciation, as found in studies cited previously, this finding of Hurst is not particularly surprising. The question is: should we generalize from these studies and reach a conclusion that home owning is a losing deal in terms of household wealth accumulation?

The most provocative finding came from Bond and Stillabower (1987). After examining the cash flows associated with renting versus buying a home, based on a set of assumptions, they concluded that compared to owning, an individual who rents would have a net worth increase of over $100,000 after a 30-year period.[15] We find that such a claim is based on the assumption that stocks increase at 8 percent while homes only appreciate at 2 percent annually.

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[10] Boehm, T. P. & Schlottmann, A. M. 2002. "Housing and Wealth Accumulation: Intergenerational Impacts" in N. P. Retsinas & E. S. Belsky (Eds.) *Low-Income Homeownership: Examining the Unexamined Goal.*

[11] Apgar, W. C., Masnick, G. S. & McArdle, N. 1991. Housing in America: 1970-2000. Joint Center for Housing Studies, Harvard University, p. 86.

[12] Long, J. E. & Caudill, S. B. 1992. Racial Differences in Homeownership and Housing Wealth, 1970-1986. *Economic Inquiry* 30: 83-100.

[13] Oliver, M. L. & Shapiro, T. M. 1997. *Black Wealth /White Wealth: A New Perspective on Racial Inequality*. New York: Routledge.

[14] Hurst, E., Luoh, M. C. & Stafford, F. P. 1998. *The Wealth Dynamics of American Families, 1984-94*. Brookings Papers on Economic Activity, 1: 1998.

[15] Bond, M. T. and Stillabower, L. M. 1987. Renting, Home Ownership and the Accumulation of Wealth. *Real Estate Issues* 12 (2): 29-35.

In a more persuasive study, Goetzmann and Spiegel (2002) claimed that housing appreciation between 1980 and 1999 was much less than the return of stocks, bonds, and mortgage-backed securities during the same period. In addition, returns to home investment only moderately exceeded inflation of this period, and homeownership, therefore, has high risks and is a poor investment tool.[16]

In a similar vein, Goodman (1997)[17] estimated how the housing costs of the typical homeowner between 1985 and 1995 would compare with their costs had they rented identical housing. The study concluded that, when all the costs of owning and renting are considered, a majority of families that bought a home in the mid-1980s would have saved money by renting comparable housing. The study also concluded that the average homebuyer in 1985 paid six percent more for housing during his residency in that house than if he was a renter. Short-term homeowners have particularly high costs.

Homeownership length is critical to the cost of owning. Belsky and Duda (2002) found that "Homeowners frequently sell homes for less than they paid for them in nominal terms and … large shares of them resell after experiencing real house appreciation insufficient to cover even transaction costs."[18] A short period of owning may cost homeowners dearly. In addition to length, the time when a home is bought and sold is also critical. After a careful study of several local markets at different times, Case and Marynchenko concluded that the complex pattern of the real estate market cycles made it difficult to make any generalizations.[19] After examining low-income households in Chicago, Boston, and Los Angeles, Case and Marynchenko discovered that homeownership has been an excellent vehicle for asset accumulation since the early 1980s in Boston, since 1987 in Chicago, and since 1995 in all three cities. They also found, however, that "significant periods of decline have led to substantial losses for low-income households in Boston and to periods of substantial negative equity for low-income households in Los Angeles" (p. 255). The authors thus found it difficult to conclude whether homeownership

[16] Goetzmann, W. N. & Spiegel, M. 2002. Policy Implications of Portfolio Choice in Underserved Mortgage Markets. In Retsinas, N. P. & Belsky, E. S. (Eds.) *Low-Income Homeownership: Examining the Unexamined Goal*. Cambridge, MA: Joint Center for Housing Studies.

[17] Goodman, J. 1997. The Costs of Owning and Renting Housing: 1985-1995. National Multi Housing Council working paper.

[18] Belsky, E. S. & Duda, M. 2002. "Asset Appreciation, Timing of Purchases and Sales, and Returns to Low-Income Homeownership" in N. P. Retsinas & E. S. Belsky (Eds.) *Low-Income Homeownership: Examining the Unexamined Goal*. p.232.

[19] Case, K. E. & Marynchenko, M. 2002. "Home Price Appreciation in Low- and Moderate-Income Markets" in N. P. Retsinas & E. S. Belsky (Eds.) *Low-Income Homeownership: Examining the Unexamined Goal*. p. 255.

for low-income households is, in general, a good or bad strategy for accumulating wealth. Another recent study by McCarthy et. al. also concluded that "homeownership offers much better financial security for wealthy owners than for low- and moderate-income and minority owners," partly because "lower-income and minority households hold more housing than is optimal in portfolio wealth, exposing them to higher risk."[20]

In summary, previous studies show different findings regarding whether homeownership benefits homeowners and helps them increase household net wealth. Part of the difficulty is that each study examines the issue through a different perspective. In our paper, we study from multiple perspectives, as described earlier, in the hope of reaching a more comprehensive conclusion.

Data and Methodology

This paper uses the Panel Survey of Income Dynamics (PSID) data collected by the Survey Research Center at the University of Michigan. It is a longitudinal survey of a representative sample of individuals and the families to which they belong. The center collected data annually from 1968 through 1997, and biennially thereafter. The sample size grew from 4,800 families in 1968 to more than 7,000 families in 2001. PSID in its sampling procedure has no intentional adjustment to wealth status representation. Compared with the Survey of Consumer Finances (SCF) data (which intentionally oversamples wealthy households) and the Survey of Income and Program Participation (SIPP) data (which by default oversamples poor households), PSID data is closer to a true representative sample. In other words, the median estimates of wealth in PSID should be somewhat more accurate than the medians in the other two datasets.

For each year of the survey, the center releases two data files for public use, the preliminary and the final data sets. The most recent final dataset when we started our investigation was the 1999 data. For the years of 1984, 1989, 1994 and 1999, there was a supplementary dataset that provided more information on household wealth. We use the term "household" instead of "family" in the rest of this paper. The term "family" sometimes refers to a mid-level unit between individuals and households, whereas households can be divided into

[20] McCarthy, G., Zandt, S. V. and Rohe, W. 2001. The Economic Benefits and Costs of Homeownership: A Critical Assessment of the Research. Center for Urban and Regional Studies, University of North Carolina at Chapel Hill.

family and non-family households. The latter refers either to a single-person household or to a household with people of no blood relationship. Our focus is on households, as in contrast to individuals, and we do not want to get into more detailed distinctions between family and non-family households.

We linked data from the years 1984, 1989, 1994, and 1999 and obtained 2683 observations (or households). Because wealth data are only available in 1984, 1989, 1994, and 1999 through supplemental data, we only linked these four years of the PSID family data through tracing the individual data. Such simplification has its caveats. For example, a temporary switch in housing tenure may occur, but we will not be able to detect it. We did, however, check each of the years between 1984 and 1989 and find that among the people who were owners in both 1984 and 1989 in our dataset only 3 percent switched to renting for a year and 2 percent switched to renting for two or more years. This low occurrence of tenure switching assures us of the quality of our model work based on the dataset that linked just the four years of the PSID data. Also, the PSID data follow households instead of physical housing units, and we therefore could not obtain accurate information on home price appreciation, even if we merged the annual PSID family data to construct our sample. Due to the limit of the PSID data, we are not able to examine some factors that could potentially affect household wealth accumulation. For example, we cannot ascertain whether owners refinanced their mortgages or whether they borrowed against equity through cash outs or second mortgages.

This paper uses both descriptive statistics and regression models. All dollars are expressed in 1999 dollars. The dependent variable is the household net wealth in 1999. We decompose household wealth into housing wealth (home equity), stock wealth (stock value), and other wealth (the residual). In our sample, 26.8% is black, 70.1% is white, and the remaining 3.1% are Hispanics and others. We code the race variable as "black" and "non-black" because the number of Hispanics and others is too small to be a separate group.

Findings

Life-Cycle Patterns in Homeownership and the Wealth Gap between Owners and Renters

The longitudinal nature of the PSID data helps us see transitions from renters to homeowners and vice versa from a historical perspective. Our sample is better than cross section data; we can actually observe in our sample when households achieved homeownership, went back to renter status, or went back and forth between owning and renting. We found that 56 households changed from renting in 1984 to owning in 1989 or 1994, but then changed back to renting again in 1999. On the other hand, 103 households switched from owning in 1984 to renting in 1989 or 1994, but then switched back to owning again in 1999.

Based on the linked PSID data of 1984 and 1999, we found a clear pattern that more renters switched to owning than owners switched to renting. Row percentages in Figure 1 illustrate such a pattern. This pattern also reflects a life cycle trend. The youngest (less than 30 years old) and the oldest (over 60 years old) have a relatively high share of switching back from owning to renting, although 87 percent remain owners. There may be two reasons for this. Young people have high mobility as they often switch jobs, while the elderly are likely to give up their houses to live with children or in senior housing or move to renting to minimize the hassle of maintaining their own properties.

Figure 1: Tenure Choice in 1984 by Tenure Choice in 1999 for Different Age Groups

Age in 1984: Less than 30 (n=721)

	Tenure 1999		Row percentage	
Tenure 1984	Renter	Owner	Renter	Owner
Renter	186	286	39.4%	60.6%
Owner	28	190	12.8%	87.2%

Age in 1984: 30-44 (n=1067)

	Tenure 1999		Row percentage	
Tenure 1984	Renter	Owner	Renter	Owner
Renter	129	188	40.7%	59.3%
Owner	52	673	7.2%	92.8%

Age in 1984: 45-59 (n=572)

	Tenure 1999		Row percentage	
Tenure 1984	Renter	Owner	Renter	Owner
Renter	69	40	63.3%	36.7%
Owner	14	436	3.1%	96.9%

Age in 1984>=60 (n=323)

	Tenure 1999		Row percentage	
Tenure 1984	Renter	Owner	Renter	Owner
Renter	47	18	72.3%	27.7%
Owner	31	212	12.8%	87.2%

Total (n=2683)

	Tenure 1999		Row percentage	
Tenure 1984	Renter	Owner	Renter	Owner
Renter	431	532	44.8%	55.2%
Owner	125	1511	7.6%	92.4%

We also found some life-cycle patterns in household net wealth accumulation (Figure 2). A household younger than 60 in 1984 could expect its wealth to grow over time and to become wealthier 15 years later, but a household over 60 years old in 1984 should typically not expect its net wealth to continue growing for another 15 years, especially a renter household, which might see its net wealth dwindle by nearly 50 percent. Most senior households managed to retain their wealth quite well into the late stage of life: they still owned their homes. These owners over 75 years old in 1999 had a similar wealth level in 1999 as they had in 1984 when they were just over 60 years old, which is somewhat opposite to the life-cycle savings theory that projects a drastic reduction of wealth later in life.

Figure 2: Wealth by Age and Tenure in 1984

Median Wealth	Older than 60 in 1984		45-59 years old in 1984		30-44 years old in 1984		Under 30 in 1984	
	Owner in 1984	Renter in 1984	Owner in 1984	Renter in 1984	Owner in 1984	Renter in 1984	Owner in 1984	Renter in 1984
1984	14,6557	8,819	146,717	2,606	84,503	5,692	34,715	2,317
1999	14,9750	5,125	210,000	4,950	161,500	27,900	81,811	26,000

Homeownership often represents a household's economic achievement based on income level and wealth accumulation because it requires a certain degree of success in both aspects. Homeownership itself, however, is also a way of accumulating household wealth, since home value appreciates over time. Homeownership also serves as a "protector" against inflation and a "cultivator" when homeowners can wisely use home-secured loans. Given all these benefits, it is not surprising that we find consistently huge disparities in wealth and income between owners and renters, although we cannot attribute the difference to homeownership alone. Figure 3 demonstrates in both mean and median statistics these persistent gaps in wealth between all owners and renters in 1984, 1989, 1994, and 1999.

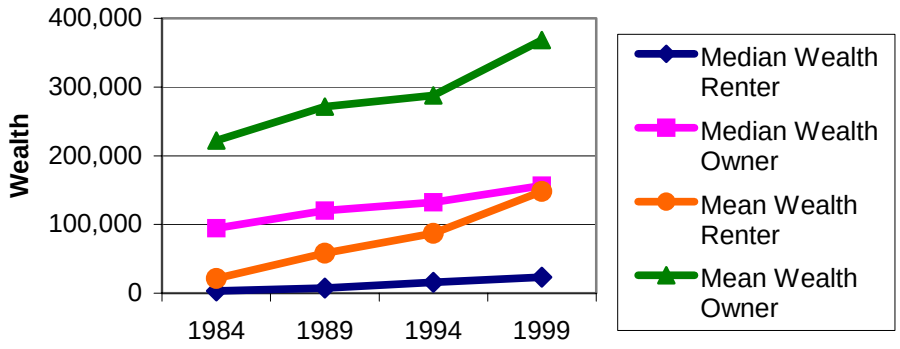
Figure 3: Household Wealth and Income by Tenure Between 1984 and 1999

Year	Median Wealth		Mean Wealth		Median Income		Mean Income	
	Renter	Owner	Renter	Owner	Renter	Owner	Renter	Owner
1984	3,848	111,441	24,808	246,878	22,272	46,172	27,736	53,999
1989	3,694	115,545	26,550	267,087	23,277	48,838	29,751	60,995
1994	3,935	120,285	35,479	271,844	24,519	49,068	33,248	66,216
1999	3,000	120,000	26,544	308,785	25,000	47,300	31,458	63,287

Note: Numbers are based on PSID data of each individual year (weighted with each year's family weight) rather than the linked dataset.

As we use the linked dataset between 1984 and 1999 to follow up on those households, we find yet another interesting phenomenon. Because most renters in 1984 were still young, as time moved on, they caught up with owners in earnings and rapidly built up their wealth. But the dollar amount gap between owners and renters in median wealth actually became larger from $91,397 in 1984 to $112,905 in 1989, $116,350 in 1994 and $133,100 in 1999. This gap persisted, if not widened, between the group means over time (Figure 4), indicating an ongoing relationship between household wealth and housing tenure in favor of homeownership. We use regression models to further explore such a relationship.

Figure 4. Household Wealth Between 1984 and 1999, by Tenure in 1984



Note: N=2683, including cases with zero or negative wealth.

In the following part of the paper, we fit various ordinary least squares regression models to examine the relationship between housing wealth in 1984 and household net wealth in 1999. Given that the distributions of wealth and income are highly skewed and that the bi-variate relationship between wealth and income is not linear, we applied logarithm transformations to all wealth and income variables.

Housing Tenure Choice in 1984 as a Determinant of Household Wealth in 1999

First we examined whether housing tenure status in 1984 had a significant relation to total household net wealth in 1999. The results from the regression models (Figure 5) show that compared with 1984 renters, owners in 1984 had significantly more wealth in 1999, even after controlling for household income and some commonly used demographics. Notice that we have controlled the incomes of different years to make sure that higher household wealth observed in owners was not due to household income increase.

As shown in Model 3, the total net wealth on average in 1999 for owners in 1984 is 2.2 times[21] that of renters in 1984, controlling for incomes and demographics. Model 4 further decomposes the tenure variable by comparing all-time renters with owners who have owned for different lengths of time. We code the length of owning based on housing tenure in 1984, 1989, 1994, and 1999. This is a relatively rough indicator of length of ownership, since some people

[21] Calculated by antilog the coefficient for Tenure84: 0.35.

may be renters briefly during the unexamined years between 1984 and 1999. Even with such possible interruption, our coding still reflects the relative length of owning among the groups, assuming the interruptions occur randomly. As indicated by the four positive and significant coefficients for owners with various length of owning, it is apparent that compared with all-time renters between 1984 and 1999, owners had significantly more wealth in 1999. In addition, as indicated by the magnitude of the coefficients, the longer they owned, the more wealth they had. In Model 5, we further control the total wealth in 1984, and the results are similar. Coefficients for owners with various lengths of owning compared with all time renters are positive and significant, even though the magnitudes of coefficients now are smaller than in Model 4.

Alternatively, when we replace the dependent variable (net wealth in 1999) with wealth growth between 1984 and 1999 (net wealth in 1999 minus that in 1984) in Models 3 and 4, we get similar results. These results indicate that both the level of wealth in 1999 and the growth of wealth between 1984 and 1999 positively relate to homeownership in 1984 and the length of owning during the period. When we consider the length of ownership as in Models 4 and 5, model predictions are more accurate. Tenure in 1984 may not accurately reflect the benefits of homeownership during the entire period between 1984 and 1999. An owner who subsequently changed to renting soon after 1984 actually benefited less than a renter-turned-owner right after 1984.

Figure 5: Effect of Tenure Choice in 1984 on Total Wealth in 1999

	Model 1 (n=2335)	Model 2 (N=2310)	Model 3 (N=2310)	Model 4 (N=2310)	Model 5 (N=2129)
Constant	4.52***	-1.00***	-1.30***	-0.97**	-0.91**
Tenure 84	0.66***	0.46***	0.35***		
Income 84 (log)		0.20***	0.13***	0.13***	0.06~
Income 89 (log)		0.19***	0.19***	0.14***	0.09**
Income 94 (log)		0.33***	0.35***	0.29***	0.26***
Income 99 (log)		0.49***	0.56***	0.52***	0.43***
Head age 99			0.01***	0.01***	0.001
Male			-0.06	-0.04	-0.05
Black			-0.22*	-0.20***	-0.11***
Northcentral 99			-0.05	-0.05	-0.01
South 99			-0.06~	-0.07*	-0.07*
West 99			0.06	0.05	0.01
Suburb 99			0.04	0.02	0.03
Rural 99			0.06*	0.01	0.01
Married 84			-0.12**	-0.14***	-0.18***
Married 99			0.17***	0.08*	0.12***
# of child 84			-0.05***	-0.04***	-0.04***
# of child 99			-0.02~	-0.03*	-0.01
Owning 15+ years				0.90***	0.57***
Owning 10+ years				0.65***	0.47***
Owning 5+ years				0.57***	0.48***
Owning less than 5 years				0.49***	0.31***
Total Wealth 84 (log)					0.35***
R-Square	0.16	0.45	0.51	0.57	0.60

~ p<.10 * p<.05 ** p<.01 *** p<.001

Figure 5 also shows that blacks had significantly lower wealth than non-blacks in 1999, even after controlling for incomes, demographics, length of ownership, and wealth in 1984. This evidence may suggest that blacks have a lower savings rate. More likely, it may indicate that the house value of black homeowners experiences lower and slower appreciation, compared to that of white homeowners. Since PSID data follow-up households instead of physical housing units, we cannot directly test our dataset to see if homes of blacks suffer from lower appreciation;

existing literature, however, suggests lower appreciation for blacks.[22] The smaller home equity amount or housing value of black-owned houses in 1984, furthermore, cannot explain the wealth gap between blacks and whites. As shown in Figures 5 & 7, even after controlling for home equity or housing value, incomes, and demographics, blacks still have significantly lower wealth in 1999 than non-blacks.

In order to provide a more intuitive picture of the gap in wealth accumulation between owners and renters in 1984, we borrow a method developed by Blinder (1973).[23] This technique estimates a regression model, using only part of the sample, and applies the model coefficients to the other part of the sample to get the expected value for the dependent variable and compare it to the observed value. The purpose of using this technique is to see how the gap in wealth could be attributed to household tenure choice in 1984. The two groups compared are owners and renters in 1984. We first ran Model 3 in Figure 5 for the sample of renters in 1984 alone.[24] We then estimated expected values of household wealth in 1999 for the sample of owners in 1984. We can compare these expected values to the wealth in 1999 of owners and renters in 1984. For example, we can compare means or medians between observed and expected values. Because the distribution of wealth is highly skewed to the high end and we used logged wealth in our model, medians should be more reliable than means. Figure 6 displays the results of our analysis.

Figure 6: Comparison of Median Wealth in 1999 for Renters and Owners in 1984

	Median Wealth in 1999
1984 renters with positive wealth in 1999 (N=409)	42,000
1984 owners with positive wealth in 1999 (N=478)	167,000
Expected of owners based on model prediction	71,423

Given the fact that owners in 1984 had higher incomes than renters and were more likely to be white with higher income, we expect our model to predict that a typical owner will have

[22] Oliver, M. L. & Shapiro, T. M. 1997. *Black Wealth /White Wealth: A New Perspective on Racial Inequality*. New York: Routledge. Di, Z. X. 2001. *The Role of Housing as a Component of Household Wealth*. Joint Center for Housing Studies at Harvard University, Working Paper W01-6.

[23] Blinder, A. S. 1973. Wage Discrimination: Reduced Form and Structural Estimates. *Journal of Human Resources* 8: 436-455.

[24] We could not use Model 5 here because it includes owner variables such as the length of owning in the equation.

more wealth by 1999 than a typical renter. Such prediction, however, only raised the median wealth of owners in 1999 to $71,423, far less than the $167,000 that these owners actually had in 1999. We can attribute some or even most of this extra $95,577 to the housing tenure choice made in or prior to 1984.

The Effect of Home Equity and House Value in 1984 on Total Household Net Wealth in 1999

How much wealth accumulation can we associate with the amount of home equity that a homeowner had in 1984? Since we only consider homeowners, the sample size for this analysis reduces to 1669. Among these owners, 1407 owned homes in 1984, 1989, 1994, and 1999. We code these people as "owning 15+ years." Even though they may interrupt their homeownership during the interval years, those who were owners in 1984, 1989, 1994, and 1999 should have a longer owning history than those who were not consistently owners in those four selected years.

Here we use home equity amount as an independent variable (Figure 7). Models 1 through 4 confirm our earlier finding of the importance of homeownership. Home equity in 1984 is a significant determinant of household wealth 15 years later, even after controlling for household incomes, demographics, and length of ownership. In Model 4, for example, compared with those who did not own consistently in those four years, those who did own had significantly higher wealth in 1999. In Model 5, where we add net wealth in 1984, home equity in 1984 is no longer significant, perhaps due to the high correlation between home equity amount and net wealth ($r=0.77$, $p<0.001$). This finding, however, is not surprising because for most homeowners home equity is the largest part of their household net wealth.

Alternatively, when we use wealth increase between 1989 and 1999 as the dependent variable, we find that the amount of home equity in 1984 has a significant and positive association with wealth growth between 1984 and 1999, even after controlling for incomes, demographics, and the length of ownership. The model, in this case, already considers household net wealth in 1984. Unlike the models in Figure 5, we now have a coefficient for the amount of home equity in its logged form, allowing us to estimate the dollar-to-dollar relationship between home equity in 1984 and household net wealth in 1999. Model 4 in Figure 7 illustrates that for every one percent difference in home equity in 1984, there is 0.38 percent difference in total net wealth in 1999.

Figure 7: Effect of Home Equity and House Value in 1984 on Net Wealth in 1999

	Model 1 (N=1546)	Model 2 (N=1531)	Model 3 (N=1531)	Model 4 (N=1531)	Model 5 (N=1525)	Model 6 (N=1525)	Model 7 (N=1525)
Constant	2.10***	-1.17***	-1.09***	-0.97*	-0.66**	-1.00*	-0.97***
Home equity amount 84 (log)	0.66***	0.54***	0.44***	0.38***	-0.02		-0.14**
House value 84 (log)						0.16***	0.24***
Income 84 (log)		0.14***	0.13***	0.13***	0.08*	0.07*	0.06~
Income 89 (log)		0.07~	0.08*	0.07*	0.04	0.04	0.04
Income 94 (log)		0.25***	0.27***	0.24***	0.22***	0.21***	0.20***
Income 99 (log)		0.35***	0.38***	0.39***	0.33***	0.32***	0.31***
Head age 99			-0.004**	0.003**	-4.02E-7	2.12E-4	5.32E-4
Male			-0.06	-0.02	-0.05	-0.06	-0.05
Black			-0.18***	-0.21***	-0.15***	-0.13***	-0.14***
Northcentral 99			0.02	0.02	0.02	0.01	0.01
South 99			-0.04	-0.04	-0.06~	-0.06~	-0.06*
West 99			0.04	0.04	0.01	0.01	-0.005
Suburb 99			0.06*	0.05~	0.05*	0.07*	0.07*
Rural 99			0.06~	0.04	0.01	0.04	0.04
Married 84			-0.06	-0.05*	-0.06	-0.06	-0.05
Married 99			0.13***	0.02	0.05	0.05	0.05
# of child 84			-0.05***	-0.05***	-0.03**	-0.04***	-0.03
# of child 99			0.00	-0.00	-0.01	-0.01	-0.01
Owning 15+ years				0.40***	0.41***	0.41***	0.42***
Net Wealth 84 (log)					0.51***	0.43***	0.50***
R-Square	0.22	0.42	0.46	0.51	0.56	0.56	0.57

~ p<.10 * p<.05 ** p<.01 *** p<.001

Because housing wealth is usually a form of financially "leveraged" wealth through mortgages, the returns from investing in housing are actually magnified through mortgage lending. When we replaced home equity amount in the regression models with house value as an independent variable, the benefit from financial "leveraging" became clear. Even after controlling for total wealth in 1984, house value in 1984 is still significant as shown in Model 6 in Figure 7. This result is different from the one in Model 5 in Figure 7 where home equity amount is not significant after controlling for wealth in 1984. To understand the difference, suppose there are two households: A and B, and that in 1984 A had $60,000 of wealth with half of it in home equity and half in stock market, and B also had $60,000 of wealth, but all of it was in home equity. Model 5 in Figure 7 cannot help us predict the household that would be wealthier in 1999. But if A had a house worth $300,000 and B had a house worth $600,000,

Model 6 in Figure 7 can help us predict that B would be wealthier in 1999. On the other hand, if B did not fully use the leverage and only owned a house worth $300,000, the model predicts he would have lower wealth than A had in 1999, as shown in Model 7 in Figure 7. This is because A invested half of his resources in the stock market while receiving the same level of leveraged finance through home mortgage. This example should help illustrate the power of financial leverage and how homeowners can make money through borrowed money. Taking a borrowing opportunity is often desirable, but investing in homes can be risky because it is not diversified.

The Relative Disadvantage of Using Homes as Investment Tools

We identified, through the above models, how housing wealth (measured as housing tenure, home equity, and house value) positively and significantly correlated with higher achievements in household wealth after 15 years (1984 through 1999). This does not mean, however, that owning a home is the best investment strategy, as other investment tools such as owning a business or stocks exist. Taking into account how well stocks performed during the late 1990s, putting a lot of money in home equity may actually cause homeowners to suffer from some opportunity cost. To compare the relative effects of homes, stocks, and other wealth, we ran regression models measuring home equity as a share of total household net wealth. The results are completely different from what we previously found (Figure 8).

Figure 8: Effect of Home Equity as a Share of 1984 Wealth on Total Net Wealth in 1999

	Model 1 (N=1461)	Model 2 (N=1461)	Model 3 (N=1461)	Model 4 (N=1461)	Model 5 (N=1461)	Model 6 (N=1461)
Constant	0.44	0.49~	-0.40	-0.73**	-0.60*	-0.34
Home equity as a share of net wealth in 84	-0.37***	-0.41***	-0.15***	-0.29***		-0.14**
House value 84 (log)				0.31***		
Stock as a share of total wealth in 84					0.22*	0.17
Income 84 (log)	0.21***	0.20	0.10**	0.07*	0.10**	0.10**
Income 89 (log)	0.07*	0.06~	0.04	0.04	0.04	0.04
Income 94 (log)	0.26***	0.22***	0.21***	0.18***	0.21***	0.21***
Income 99 (log)	0.43***	0.42***	0.34***	0.30***	0.34***	0.34***
Head age 99	0.01***	0.01***	6.97E-4	0.001	1.89E-4	5.15E-4
Male	-0.09	-0.03	-0.05	-0.06	-0.05	-0.06
Black	-0.26***	-0.28***	-0.16***	-0.15***	-0.16***	-0.16***
Northcentral 99	-0.03	-0.03	0.02	0.02	0.03	0.02
South 99	-0.09*	-0.09*	-0.06~	-0.06*	-0.06~	-0.06~
West 99	0.02	0.02	0.01	-0.01	0.01	0.01
Suburb 99	0.02	0.01	0.05~	0.07**	0.05*	0.05~
Rural 99	-0.02	-0.03	0.002	0.04	0.01	0.004
Marry 84	-0.06	-0.04	-0.06	-0.05	-0.06	-0.06
Marry 99	0.15***	0.01	0.04	0.05	0.04	0.04
# of child 84	-0.03*	-0.02~	-0.03**	-0.02*	-0.03**	-0.02*
# of child 99	-0.03*	-0.04**	-0.01	-0.02	-0.01	-0.01
Owning 15+ years		0.48***	0.43***	0.43***	0.42***	0.43***
Net wealth 84 (log)			0.43***	0.29***	0.46***	0.42***
R-Square	0.43	0.50	0.56	0.56	0.55	0.56

~ p<.10 * p<.05 ** p<.01 *** p<.001

Note: Using wealth growth as the independent variable yielded similar results.

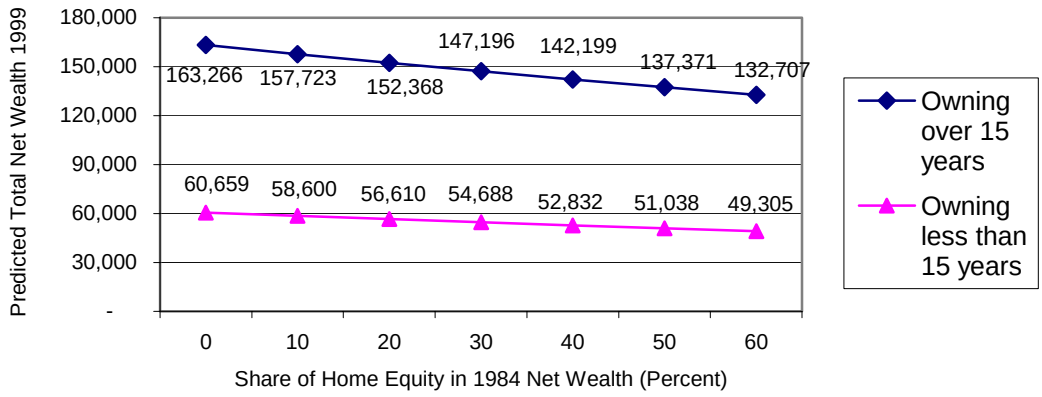
The models indicate that the share of home equity in total household net wealth in 1984 had a significantly negative effect on total wealth in 1999.[25] There are two possible explanations.

[25] Notice that when both home equity share and stock share is put in the model (Model 6), stock share is not significant any more but home equity share is still negative and significant.

First, many households with the exception of very wealthy households put most of their wealth in housing equity rather than stocks or other forms of investment. A larger share of housing wealth in household net wealth in 1984, therefore, actually reflects that the household had a smaller size of household net wealth to start with in 1984, as suggested by Models 1 and 2. Second, after we control it for wealth in 1984, the coefficient for home equity as a share in household wealth in Model 3 remains negative and significant, although the magnitude changes a lot. The increased performance of stock investments, especially during the late 1990s, may explain this result. Model 5 shows a positive impact of owning stocks.

Figure 9 illustrates that long-term homeowners who allocated more resources to home equity during the 1984-1999 period suffered slightly more from opportunity costs than short-term owners. Model 3 in Figure 8 is the basis for this estimate, and we already control for several important factors, such as the head of household age.

Figure 9: Predicted Net Wealth in 1999 Has a Negative Relatioship to the Share of Home Equity in Net Wealth in 1984



Note: Estimates are for household heads who live in urban Northeast, are white, married in 1984 and 1999, with median incomes in 1984, 1989, 1994, 1999, median wealth in 1984, mean age in 1999, mean number of children in 1984 and 1999.

Our findings also help solve the "puzzle" raised by Hurst et al.'s study in 1998 (p. 314), in which they reported that "main home" (home equity amount in primary residence) negatively impacts household wealth accumulation. We clarify the issue through different perspectives; we separately examine home equity amount and home equity as a share of total household net

wealth in our models. While home equity has a positive association with wealth growth, it is not necessarily the best investment tool. When Hurst et al. put the "main home" variable in their regressions with other variables such as the amount of stocks owned they actually examined home equity as an alternative investment strategy relative to stockholding. In fact, their model is almost equivalent to our models in Figure 8 and not those in Figure 7. They actually measured the comparative advantage or disadvantage of the two. Our models in Figure 8 show negative coefficients for home equity as a share in total net wealth, which attests to the excellent performance of stock during the period. In other words, such models look at investment portfolio management rather than estimating the direct relationship between home equity amount and total household net wealth amount.

Both our Model 7 in Figure 7 and Model 4 in Figure 8 indicate that, given the same house value, more home equity actually raised the opportunity cost and therefore achieved less wealth in 1999. Measuring home equity amount and the amount of stock values together in Hurst's paper is misleading if it simply implies that higher home equity in 1984 is associated with less wealth in 1999. We, on the other hand, measured home equity amount and its share in total household net wealth separately and controlled for house value, the relationship among home equity, housing value (and therefore financial leverage), and household net wealth, therefore, became much clearer. This clarification is important because Hurst's model may mislead people to think that owning a home decreases potential wealth. Our models help demonstrate that financial leverage through mortgage lending may give homeowners the opportunity to make money through borrowed money.

Homeownership is More Important to Low-Income Households in Achieving Household Wealth

Throughout our models, household income in 1984 consistently plays a significant role in predicting household wealth growth between 1984 and 1999, regardless of how much home equity a household had in 1984. There was no investment strategy (including owning a home) that would help low-income households catch up to the higher income households in 1984. The underlying meaning of such statistics is two-fold. On one hand, the statistics reveal the limitation of social upward mobility in American society. Such mobility, however, is a part of the American dream. America, in general, traditionally has a higher social mobility compared to other countries in the world. Our data show that the distribution of household wealth still relies

heavily on historical background and that a span of fifteen years is too short to reshuffle that distribution. Everything else being equal, a household with lower income at a given starting point should not generally expect within 15 years to catch up to another household with higher initial income. Household wealth in 1984 exemplifies the constraining effect of initial wealth, indicating that 15 years is not a long enough period of time for a typical household to catch up in wealth accumulation to another household that was ahead fifteen years before.

The strong coefficients for household income in 1984 in our models, on the other hand, suggest limited investment opportunities available for low-income households. After we separate our data sample into low-income and other household groups, we can examine their wealth accumulation patterns separately. We find that homeownership is relatively more important to lower-income households in their endeavor to achieve household wealth than it is to households with higher-income.

We define "low-income" household as the bottom quintile ($18,375) in household income distribution in 1984. There are 534 households in this sample, among which 194 are non-Hispanic white, 319 are black, 9 are Hispanic, and 5 are other. Figure 10 shows that their homeownership rate and stock holding rate are fairly low.

Figure 10: Low Income Households Rarely Own Stock Wealth

Year	1984	1989	1994	1999
Homeownership rate	25.7	32.6	39.1	48.8
Stock holding rate	3.2	3.8	9.2	6.6

We ran our models on these low-income households and other households separately, using household net wealth in 1999 as the dependent variable. We compare owners with various lengths of owning against all-time renters, controlling for household income and other demographic variables. The results in Figure 11 show that the standardized coefficients for length of owning in the low-income sample are consistently larger than that of the other group. Such standardized coefficients allow us to make direct comparisons and demonstrate that homeownership and its length are more important to lower-income households than other households. Part of the reason for this may be that low-income households usually do not have investment tools other than owning homes. In fact, we are unable to examine the relative merits

of putting money in stocks vs. home equity for low-income households alone because too few of them own stocks.

Figure 11: The Lower-Income Group is More Dependent on Homeownership to Achieve Household Wealth

	Low-income in 1984 (N=237)	Non-low income in 1984 (N=1892)
Constant	0	0
Income 84 (log)	-0.004	0.09***
Income 89 (log)	0.18***	0.02
Income 94 (log)	0.12~	0.14***
Income 99 (log)	0.28***	0.22***
Head age 99	0.09	0.01
Male	0.12	-0.05*
Black	0.04	-0.08***
Northcentral 99	-0.08	0.002
South 99	-0.19*	-0.04
West 99	0.03	0.01
Suburb 99	0.04	0.02
Rural 99	0.01	0.01
Marry 84	-0.19**	-0.09**
Marry 99	0.004	0.10
# of child 84	0.03	-0.08***
# of child 99	-0.12*	-0.01
Owning 15+ years	0.58***	0.36***
Owning 10+ years	0.27***	0.20***
Own 5+ years	0.30***	0.16***
Owning less than 5 years	0.24***	0.14***
Net Wealth 84 (log)	0.17***	0.37***
R-Square	0.59	0.55

~ p<.10 * p<.05 ** p<.01 *** p<.001

Note: The coefficients are standardized.

The complexity of the situation lies in the policy making geared towards promoting homeownership. Because housing already consumes a large share of income for low-income households, it is impossible for these homeowners to reach a balance between investing in homes

and investing in other alternatives. As MaCarthy et al. (2001) argue, lower-income households often hold more housing than is optimal in portfolio wealth, and homeownership could, therefore, actually be harmful rather than helpful to them. Our models in Figure 8 confirm these ideas.

Conclusion

After investigating the comprehensive effect of homeownership on household wealth accumulation from four different angles, housing tenure choice, home equity, house value, and housing wealth as a share of total household net wealth, we conclude that homeownership has a significant impact on household wealth accumulation in the long run (15 years between 1984 and 1999). There are five main findings.

First, homeownership and the length of owning have a significant and positive association with both wealth growth during the period between 1984 and 1999 and the net wealth in 1999. Our model suggests that a typical homeowner in 1984 became much wealthier in 1999 than did a typical renter in the same time period. Homeownership contributed an estimated $100,000 to the expected wealth gap in 1999.

Second, after controlling for household incomes, demographics, length of ownership, and even household net wealth in 1984, homeowners with larger home equities in 1984 tended to have larger increases in household net wealth during the period, but they did not necessarily have a higher wealth level in 1999. After controlling for the same variables, homeowners with higher home values in 1984 were wealthier 15 years later than their renter counterparts in 1984, and had a larger increase in wealth. Financial leverage through home mortgage seems to have a positive association with wealth accumulation.

Third, we found that owning a home is not necessarily the best investment strategy during the 1984-1999 period. In fact, with the existence of other investment tools, such as owning a business or stock (especially stocks that performed extraordinarily well during the late 1990s), putting a lot of money in home equity may actually cause homeowners to suffer from opportunity costs. The data show that higher stock share in household net wealth in 1984 correlates with higher household net wealth in 1999. Home equity share in 1984 had a negative association with total net wealth in 1999, after controlling for incomes, demographics, length of homeownership, and the total household net wealth in 1984. This comparison attests to both the

relative advantage of stock investment, particularly during the booming years before 2000, and to the observation that only the wealthy had the option to invest in stocks. More importantly, our models demonstrate that if a homeowner does not take advantage of the power of financial leverage and omits the borrowing opportunity, the return will likely be less desirable than if he/she takes such opportunity and grabs other investment tools such as stocks.

Fourth, after closely examining the effect of homeownership for low-income households in 1984 and comparing that to the non-low-income group, we find that homeownership and its length are much more important to low-income households than the non-low-income group in wealth accumulation, controlling for incomes, demographics, and total net wealth in 1984. Such differences may be due to the lack of opportunity for low-income households to invest in anything else but their homes.

Fifth, we found that blacks accumulate significantly lower wealth than whites, even after controlling for housing tenure, income variations over time, demographics, length of homeownership, and initial household net wealth in 1984. This is true throughout all of our models, even when we control for housing tenure, home equity, house value, or home equity as a share of household net wealth.

In summary, homeownership generally has a positive association with household wealth accumulation over long periods of time. Such tenure choice contributed an estimated $100,000 to household net wealth in 1999 for a typical homeowner. Compared with other investment tools such as stocks, investing in homes may yield lower returns, and therefore our models actually predict that a higher share of housing wealth in total household net wealth has a negative association with wealth accumulation. This is quite a dilemma for many households that place most of their net wealth in housing, particularly low-income households. On the one hand, homeownership is often the only available investment tool for increasing household net wealth. On the other hand, failure to diversify investments may be detrimental to the household's portfolio. Financial leverage through a home mortgage generally plays a positive role in helping a homeowner build household wealth.