Wealth Accumulation in the Housing Market for Low-Income Households

An Honors Thesis for the Department of Economics

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Abstract

This study tests whether homeownership is a viable path to wealth accumulation for low-income households in the US. Using the most recently published data from a novel, panel dataset, I find that low-income households that transition to homeownership see small increases in wealth that vary based on when they purchased their homes. Low-income households, however, enter into homeownership with little wealth, thus they experience high percentage increases in wealth, usually within the first two years of ownership. The study tracks households from 1999 to 2013, thus the results must be interpreted in the context of the Great Recession and how the expansion and then decline in credit access affected the housing market. The results suggest that homeownership may not be the most reliable way for low-income households to accumulate wealth, as after an initial surge in home equity, wealth often decreases, and these households experience declines in non-home-equity wealth after transitioning to homeownership.

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Introduction

Since rising incomes and the boom of the automobile industry following WWII, America has been an ownership society. Housewarming gatherings and putting wedding checks towards a down payment on a house speak to homeownership's reach into American culture (Retsinas and Belsky 2002). The government continues to support homeownership, proven by its spending—"Federal expenditures for direct housing assistance totaled less than $40.2 billion in 2008; however, mortgage-interest deductions and other homeowner tax benefits exceeded $171 billion"— and Obama's recent reference to homeownership as "the most tangible cornerstone that lies at the heart of the American Dream, at the heart of middle-class life." (Schwartz 2010; Obama 2013). This continued push for homeownership remains despite the declining share of households purchasing homes. The homeownership rate increased steadily in the late 1990s and early 2000s to over 68%, and has since fallen to just over 63% in 2015 (US Census Bureau). One reason the government has promoted and continues to promote homeownership is its perceived link to wealth accumulation. And starting in the 1990s, researchers began to associate asset-building with better educational, health, and intergenerational outcomes.

Wealth may provide leverage and stability to low-income households[1], but does homeownership provide a viable path to wealth accumulation? Following the recent economic recession, during which $8 trillion of home equity was wiped out of households' asset holdings, there is a need to reassess the effectiveness of homeownership to accumulate wealth (Joint Center for Housing Studies 2012). This study uses a difference-in-differences approach to compare wealth accumulation for households that do and do not become homeowners over a

[1] There is no universal definition of low-income households accepted by all researchers. This paper defines low-income households as those whose incomes are below the 25th percentile, about $46,000, of household income in 1998 for all households used in the study sample.

fourteen-year period. Prior to the Great Recession, increased access to credit opened up the housing market to more low-income households, however barriers to homeownership re-solidified in the recession's wake. Home equity[2], however, is still the largest contributor to wealth for low-income households (Wolff 2014). Researchers are beginning to question pushing low-income households into ownership, as they may have a better chance of securing the American dream without purchasing a home, especially before they are financially and psychologically prepared (Olsen and Zabel 2015).

Housing policies often target households earning less than the median household income because fewer of these households own their homes. In 2013, 48.9% of these households owned their homes versus 78.4% of households earning above the median household income (Olsen and Zabel 2015). These policies, however, do not reach the majority of the households they aim to target: only one quarter of American households who qualify and apply for housing assistance[3] receive it (Desmond 2016). As ownership expands into the lower income brackets, it is important to reexamine homeownership policy. Do the public benefits of homeownership that accrue to the households that government policies push into homeownership outweigh the costs of these programs to society as a whole (Mallach 2011)? Do low-income households undervalue homeownership significantly enough to warrant government intervention in the housing market on their behalf (Olsen and Zabel 2015)?

Of the previous studies that attempt to answer the question "does homeownership increase wealth accumulation?" none use the most recent data from the Panel Study of Income Dynamics (PSID) nor a difference-in-differences framework, which does a better job of

[2] Home equity is defined as a home's market value minus the value of the mortgage(s) on the home ("PSID Main Interview User Manual: Release 2015")

[3] Housing assistance includes subsidies for both low-income homeowners and renters. Subsidies for renters are either attached to the unit itself or the renter(s) receiving the subsidy (Olsen and Zabel 2015)

controlling for household selection into homeownership, to track wealth accumulation following transition into ownership. I use PSID survey data collected every other year from 1999 to 2013.[4] I test whether households that transition from renting to owning during the study period, effectively the "treatment" group, accumulate more wealth than households that remain renters for the duration of the study, effectively the "control" group.

I find that low-income households experience a large percentage increase in wealth, on average, within the first two years of ownership, but this increase is quite small in absolute terms. Moreover, timing—both the state of the housing market and the year in which households purchase their first homes—plays a major role in wealth accumulation. Since the study period frames the Great Recession, wealth accumulation is particularly affected by the boom and bust in the housing market.

The rest of the paper is structured as follows. Section two provides a summary of the existing literature that researches wealth accumulation in the housing market. Section three explains the models I use to estimate the relationship between homeownership and wealth accumulation. Section four goes into more detail on the PSID dataset and provides descriptive statistics for the sample used in this study. Section five outlines the results from my study and their statistical and economic significance. Lastly, section six summarizes the study, explores policy implications, and poses areas of further research.

[4] 1999 is the first year with sufficient wealth data and 2013 is the most recent year for which survey data has been published.

Literature Review

This literature review provides an overview of the housing and mortgage markets as well as summarizes the findings from studies attempting to determine the impact of housing tenure on wealth accumulation. This section is split into four parts. The first defines home equity and wealth and discusses the factors that influence households' ability to accumulate wealth in the housing market. The second describes the benefits and risks of homeownership, with a focus on the factors that are related to wealth accumulation in the housing market. The third summarizes recent homeownership policy in the United States in the context of households' tenure decision making, particularly those with lower incomes. This discussion leads to a brief summary of the mortgage market in the US, and the changes it has undergone in recent years, and how these may connect to households' tenure decisions. The last part outlines several recent studies that have used both panel and financial datasets to determine whether owning or renting yields higher returns in the form of wealth accumulation for the general population, and low-income households.

I. What is Home Equity and what drives it?

This study is concerned with wealth accumulation through the housing market, thus we must understand how this process happens and why it is important. Wealth accumulation is an area of economic interest because wealth is an asset, unlike income, which provides a "financial cushion" and can be used to leverage income (i.e. purchasing a car and then using this car to obtain a higher paying job) (Galster and Santiago 2008; Green-Pimentel and Meikle 2014). Accumulating wealth throughout one's life is becoming more important, as retirement plans become less common than in the past ("EBRI Databook on Employee Benefits" 2015). Wealth accumulation is particularly important for low-income homeowners: in 2000, housing equity

accounted for one fifth of total wealth in the US overall, but one half of total wealth for low-income households[5] (Galster and Santiago 2008). Home equity is illiquid, yet since the 1980s homeowners have been able to use home equity as collateral resulting in loans known as HELOCs (home equity lines of credit), even more reason to investigate its impact on households.

Since home equity is accumulated in relation to the real purchase and selling prices of a home, wealth accumulation in the housing market depends on how home prices change over time. Authors that explore the effectiveness of homeownership in wealth accumulation have concluded that length of ownership and time of purchase are two of the biggest factors for homeowners. Timing is of particular importance in my study, as the time frame coincides with the Great Recession, and periods of recession are harder for low-income households to withstand due to their low levels of liquid wealth (Belsky and Duda 2002). Mallach (2011), using the S&P/Case-Shiller Home Price Index, finds that the majority of households experience reasonable gains in wealth from homeownership in most years from 1987 to 2010. However, in certain time periods this generalization does not hold true—from 2006 to 2008, for example, the probability of home price appreciation is zero for all households in Boston, Chicago, and Las Vegas. Mallach also finds that the year in which households sell their homes influences wealth accumulation, and determining the ideal time to sell is often more difficult for low-income households. This finding, along with other more in-depth studies of wealth accumulation over time discussed later in this section, serve as a reminder that the findings of wealth accumulation studies inevitably reflect the timing of the data used in the study.

In addition to timing and length of ownership, house type and quality also affect wealth accumulation through the housing market. Low-income households tend to purchase older,

[5] Here, low-income households are defined as those earning incomes in the bottom quintile of the US income distribution.

manufactured homes, which are often located on leased land, tendencies that have been linked to lower home price appreciation (Santiago et al. 2010; Galster and Santiago 2008). If low-income homeowners maintain and improve their homes, however, they can appreciate in value. These households may be less likely to keep up with maintenance, however, since they have little wealth to spare and homeowners are less incentivized to repair and improve their home if their neighbors are refraining from doing so (Mallach 2011).

II. The Benefits and Risks of Homeownership

Research has identified several non-financial benefits of homeownership, including positive externalities for the neighborhood and increases in human capital—for both homeowners and their children. Manturuk et al. (2012) find that homeowners are more than twice as likely to be part of a neighborhood group, thus neighborhoods with more homeowners may have more engaged communities, if this relationship is indeed causal. In terms of human capital, homeowners are more active in politics and volunteer opportunities than renters and are more likely to be employed and have higher incomes (Shlay 2006). Shlay, and Galster and Santiago (2006; 2008), find intergenerational human capital benefits for homeowners' children including fewer behavioral problems, higher wages as adults, higher educational attainment, and an increased likelihood of their children becoming homeowners. Harkness and Newman (2002) find that children see better outcomes later in life if their parents are homeowners in almost any neighborhood, irrespective of the concentration of homeowners in the area. In terms of financial benefits of homeownership aside from wealth accumulation, it can force households to save, serve as a hedge against inflation (i.e. increasing rents), and act as a form of insurance against households loosing their homes (Di et al. 2007).

These benefits, however, are not necessarily caused by homeownership itself and are often more pronounced for longer spells of ownership, less often attained by low-income households. Additionally, authors of these studies often assume that homeownership is a proven asset-building strategy for households, including those with low-incomes (Mallach 2011). Studies that have researched intergenerational benefits have not controlled for the self-selection of homeowners from the general population and none of the studies were able to pinpoint the economic mechanisms behind these benefits. Lindblad and Quercia (2015) are some of the first researchers to attempt to determine the economic mechanisms that underlie the non-financial benefits of homeownership. They find that the length of homeownership and homeowners' perceived control of their decisions are the most significant mechanisms behind better health and higher levels of civic engagement experienced by homeowners.[6] Determining the economic mechanisms behind homeownership's benefits would reveal whether these benefits result from owning a home.

Purchasing a home is a risky investment and it has not been shown whether the financial returns to homeownership are enough to compensate for the risk homeowners take on (Davis 2012). Rappaport (2010) categorizes homeownership risk into price, house, and household risk. Price risk includes changing home prices due to time (stage in the housing cycle) and place, lack of diversification, and illiquidity. House risk includes events that directly affect the house (which may also have time and emotional costs for the homeowner) and changing neighborhood characteristics. Finally, household risk captures the costs associated with relocation for homeowners. Other risks include rising maintenance fees and the high cost of foreclosure

[6] Perceived control is derived from categorical variables that attempt to measure how much control homeowners feel they have over their lives and how much of a difference homeowners feel they can make in the community.

(Herbert et al. 2013). These risks are often higher for low-income homeowners in addition to barriers they face in entering homeownership to begin with.

Low-income households face more risk in the housing market because it is stacked up against them through the mortgages they acquire, if they are able to acquire one. Galster and Santiago (2008) find that the main barriers that low-income families face in attaining, as well as sustaining, homeownership are low and unstable incomes, failure to meet minimum down payment requirements, weak credit ratings, lack of information on how to purchase a home, and discrimination. All in all, low-income families are more likely to obtain subprime loans, whose features include low down payments, high debt-to-income ratios, adjustable interest rates, and negative amortization (Olsen and Zabel 2015). Some of these loans may even be categorized as predatory loans, a subcategory of subprime loans, which lower home equity through fees, poor underwriting, high penalties, and other deceptive practices (Shlay 2006). Adjustable rate mortgages are two and a half times more likely than fixed rate mortgages to result in foreclosure due to higher instrument risk (Santiago et al. 2013; Grinstein-Weiss et al. 2013). Unexpected events, such as divorce, job loss, and health crises, increase the risk of low-income families leaving homeownership, as they may force them to default on their mortgage (Galster and Santiago 2008). Foreclosure, and the period leading up to it, not only results in a direct loss of assets, but is also correlated with lower access to credit in the future, increased stress levels, and negative effects for children (Mallach 2011).

Beyond the mortgage market, low-income households face additional risks to homeownership. Increases in housing-related costs—repairs, property taxes and utility payments—affect low-income households significantly as 40-60% of their income often goes to housing-related expenses (Galster and Santiago 2008). Households switching from renting to

owning incur additional costs in the form of property taxes, and insurance, maintenance, and repair costs, which are often more of a burden for low-income households (Mallach 2011). Some of the housing market risks faced by low-income families stem from discrimination—both racial and socioeconomic—and lower levels of wealth to begin with. Low-income households also face information asymmetry, meaning they are less knowledgeable about the housing market and therefore make less informed decisions than households with higher incomes (Mallach 2011).

Since low-income households experience these risks and benefits differently, we may expect their tenure choice decisions to be formulated differently as well. In a recent study on reassessing ownership preference in light of the Great Recession, Drew and Herbert (2013) find that preferences for ownership, in terms of financial criteria, are the same for all income groups (defined by income quartile). They do find, however, that low-income households recognize that they may not achieve ownership in the future because they will have a harder time getting a mortgage or they will not have enough wealth to purchase a home, even if they believe it to be the best option financially. This study does not delve into the relationship between households' expectations about their future tenure decisions and their wealth accumulation over time, however, this relationship would shed new light on the topic of wealth accumulation in the housing market.

III. US Housing Policy & the Mortgage Market

The government has intervened in the US housing market since the early 1900s. Homeownership as a policy goal traces its origins to the mid-1900s when politicians hoped it would improve overall housing conditions and stimulate the economy (Shlay 2006). Politicians have continued to embrace it as an uncontroversial goal ever since because it appeals to many constituents, can benefit many sectors of the economy, from finance to construction, and the

housing market comprises a significant portion of the country's GDP (Drew 2013; Shlay 2006; Rappaport 2010). Politicians have pushed for low-income homeownership in particular because it has been linked to economic, social, political, and neighborhood benefits such as higher school attendance, less criminal activity, and an increase in neighborhood property values (Shlay 2006). Not all of these effects of homeownership have been proven empirically, however, and they may be weaker for low-income households. Some researchers have argued that government intervention in the housing market only makes sense if the benefits to individuals and the community stemming from the households that the government nudges into homeownership outweigh the costs of the programs it runs (Mallach 2011).

Despite inconclusive empirical evidence, the US government has supported homeownership directly, through legislation and tax breaks, and indirectly, by condoning innovations in the mortgage market. The Federal Housing Act of 1934, which marks the beginning of the modern mortgage market, intended to revitalize the construction industry, largely dormant due to the Great Depression. To do this, the Federal Housing Administration began writing mortgages requiring a 25% down payment, a big drop from 50-60%, the average at the time (Olsen and Zabel 2015). Soon after, the government established the Federal National Mortgage Association, or Fannie Mae. The legislation of the 1930s, however, eventually resulted in urban decay across the US as private lenders took money from urban areas, in the form of loans, and invested it in well-off suburban areas (Olsen and Zabel 2015). Congress passed legislation in the 1970s to combat this practice, forcing lenders to report loans' locations and reinvest a certain amount of money in urban areas (Shlay 2006).

The mortgage market continued to change drastically in the 1980s and 1990s as private lenders, who were forced to follow reinvestment regulations, realized that low-income

Americans were an untapped market. In addition, computers could now process loans, allowing agencies to increase the number of mortgages they could write (Shlay 2006). Thus new legislation was passed in 1992 to establish performance standards for Fannie Mae and Freddie Mac (created in 1970) to keep pace with the changing mortgage market and ensure that low-income households received a certain number of mortgages (Shlay 2006). This legislation, along with innovations in the mortgage market, aimed to increase the homeownership rate for low-income families, however, this goal was not met as it was conceived without fully understanding the costs and benefits of homeownership for low-income families (Drew 2013). A recent study, for example, found that individual financial circumstances, more than macroeconomic housing market characteristics, are the main drivers behind the current homeownership rate, which is below its mid-2000s peak (Larrimore et al. 2016).

IV. Wealth Accumulation through the Housing Market

Low-income families that entered homeownership during the housing bubble were left with uncertain financial futures and the burdens of homeownership when the bubble popped (Drew 2013). This thesis asks whether homeowners were able to weather this uncertainty and these additional responsibilities. Several previous studies explore wealth accumulation in the housing market using panel, financial, house price, and program-specific datasets. Most of the previous literature concludes that homeownership is a more effective wealth-building tool than renting a home, yet each study with this finding has several limitations.

Herbert et al. (2013), using PSID data from 1999 to 2009, conclude that low-income[7] homeowners gain about $10,000 more in wealth from each additional year of homeownership than low-income renters. Analyzing data from the Survey of Consumer Finances over a similar

[7] Herbert et al. classify households as low-income if their household income, averaged across all years households are in the dataset, is under $40,000 (in 2011 dollars), the 25th percentile for income, rounded to the nearest $10,000 increment.

time period, they find that low-income households lost less home equity in the time period studied than other households—which they see as evidence for the continued importance of home equity as a source of wealth for low-income families. There are, however, several caveats to these findings. First off, households in the bottom 10th percentile of household income saw their wealth decline over the period. Secondly, the increase in wealth was biggest in the first year of owning, which may reflect efforts to save for a down payment. And most importantly, the study does not control for selection bias. The regression compares households that rented for the entire period to households that transitioned from renting to owning at some point during the time period of analysis and to those that owned for the entire period.

The following studies also conclude that low-income households can accumulate more wealth through owning using PSID data. Boehm and Schlottmann (2008), using data from 1984 to 1992, conclude that homeownership was effectively the only source of wealth for low-income[8] households, especially minority households, because homeownership forces low-income households to save money that they otherwise would not (Boehm and Schlottmann 2008). The study does find, however, that low-income households are much more likely to transition back to renting than other households which weakens their ability to accumulate wealth. Using data from 1989 to 2001, and controlling for propensity to save, Di et al. (2007) conclude that households accumulate more wealth through homeownership, yet households in the bottom quartile of net wealth at the beginning of the time period accumulate 86.6% less wealth than those in the upper quartile in 1989. Turner and Luea (2009), using data from 1987 to 2001, find that low-income[9] households have lower returns to homeownership than other

[8] Boehm and Schlottmann (2008) classify low-income households as those with incomes below the 1984 median income level of the study sample.

[9] Turner and Luea (2009) technically focus on low and moderate income households, which they define as making 120% or less of the state's median total family income.

households in times of overall wealth accumulation, but these returns, averaging $10,000 per year, are higher than the average changes in wealth experienced by renters.

Santiago et al. (2010), using 2005 to 2007 data from Denver's Home Ownership Program, conclude that low-income[10] homeowners who participated in the program gained more wealth owning than if they had continued renting—the median gain was over $4,000. The individuals studied, however, received more favorable mortgages than typical low-income households due to the specialized nature of the program and although the homeowners saw an increase in wealth, it was a small one in absolute terms. In addition, the households saw an increase in consumer debt over the time period, 20% of the households saw a decrease in wealth, and many households reported concerns about the psychological costs of homeownership. Grinstein-Weiss et al. (2015) use a special supplement to the Survey of Consumer Finances from 2007 to 2009 to determine how the Great Recession affected wealth accumulation for homeowners and renters. They find that owners lost 11% of their wealth, on average, while renters lost 3% of their wealth, on average, but that homeowners were less likely to loose 25% to 50% of their total wealth, implying that ownership acts as a buffer against significant losses in wealth.

Riley et al. (2013) use data from the Community Advantage Panel Survey (CAPS), a sample of low-income[11] homeowners living in urban areas who received 30-year fixed rate mortgages at near prime rates through a program that is part of the Community Reinvestment Act (CRA). They compare the CAPS data to rent data from the American Housing Survey for

[10] "The median household income at time of purchase was $31,188 – approximately 51 percent of the area median income" (Santiago et al. 2010)

[11] About half of the homeowners in this program earn, at most, 60% of the area median income and households must earn no more than 80% of the area median income or live in a census tract where median income is 80% or less than the area median income to qualify for the program.

housing units similar to the ones owned by CAPS homeowners. The researchers find that for the median homeowner, renting is more costly than owning from 2003 to 2011, if homes are appreciating by at least 5%. The findings are limited by potential differences between the owners and renters, as the samples come from different datasets, and the study does not account for liquidation costs or mobility bias, yet they bolster the literature on the user-cost of homeownership, which has important implications for wealth accumulation. Grinstein-Weiss et al. (2013) using 2005 to 2008 data from the same survey, find that homeowners experienced an increase of about $13,000 in total wealth, on average, over this three-year period. This study, however, does not control for time, and may not control for endogeneity as it did not track individuals who transitioned from renting to owning, rather a group of owners and a group of similar renters.

Three studies using financial data to determine whether low-income households should rent or own find that renting allows for greater wealth accumulation. Beracha and Johnson (2012) combine several financial surveys and indexes from 1978 to 2009, to form a sample of households. The authors develop a model to simulate the decision to buy or rent for what they determine to be a typical US household. The future selling price of the house after eight years of ownership is used to measure wealth accumulation. Wealth for renters is the value of an investment portfolio equal in starting value to the down payment and closing costs of a typical house, and the difference between owning and renting expenses are added to the portfolio every year. The researchers find that home prices must appreciate 3.62% per year, on average, in order for homeowners to accumulate as much wealth as renters; therefore renting is preferred to owning in most cases. This study, however, assumes that renters will invest their savings, which may not be the case in reality. By constructing a horse race between renting and owning using

financial data, this study adds a new perspective to the literature because it stresses the importance of finding alternative methods of wealth accumulation for low-income households.

Green-Pimentel and Meikle (2014) investigate wealth accumulation in a rural county in Mississippi as a case study to examine the ability of low to moderate income households to accumulate wealth in the post-recession economy. To present descriptive statistics of the county, the researchers use census data and find that there are a higher percentage of minority households, families living in poverty, and household heads who have not graduated high school in these rural Mississippi counties than in the US population as a whole. They find that homeowners in the sample were somewhat better at managing their finances—they are more likely to have savings accounts for themselves and their children, to have emergency funds, to have access to credit, and to keep record of their personal finances—but cannot attribute causality to this finding. The researchers remind policymakers that low-income[12] households, particularly those in rural Mississippi, have a different demographic makeup than the US at large which may make them better suited toward other asset-building strategies such as education and small business development. This study adds to the literature by giving a voice to low-income homeowners themselves, but it does not provide a decisive conclusion as to whether low-income households should aim for homeownership.

Kaas et al. (2016), using home inheritance as an instrumental variable and individual-level data from the eight largest countries in the Eurozone, find that homeownership has a significant and negative effect on financial and real wealth. In particular, the researchers find that from 2009 to 2010 a 10 percentage point increase in the probability of owning a home is associated with a 18% decrease in total wealth, on average. By using an instrumental variable

[12] The study tracks wealth accumulation for 11 rural counties in Mississippi, where household income is $26,444, on average.

approach, this study controls for some of the selection bias inherent in homeownership and suggests that investing outside of the housing market can lead to more wealth accumulation.

Bayer et al. (2013) do not attempt to answer the same question of wealth accumulation, rather they estimate and isolate the reasons for the difference in delinquency and default rates for minority homeowners since the housing market bust. Using Home Mortgage Disclosure Act data from 2004 to 2008, they find that minority homeowners, who are more likely to have lower incomes than white homeowners, were more likely to face foreclosure after controlling for mortgage and dwelling type. This finding leads the researchers to conclude that pushing minority households into ownership leads to a financially stressful situation that has the potential to affect both wealth accumulation and future creditworthiness. This study does not measure wealth, yet its findings imply that wealth accumulation was harder for minority households in the time period studied than for white households.

Much of the previous literature does not fully control for selection bias, which is important to remember when interpreting their results. It is complicated to account for the endogeneity inherent in homeownership, as wealth is necessary to purchase a home. In addition, renters and owners differ in their propensity to save, their family background, and their preference for stability. Homeowners may accrue the benefits we assume to stem from ownership itself due to the quality of the neighborhoods they tend to live in, for example.

Data

This study compares wealth accumulation over time for households that remain renters for the entirety of the study, the "control" group, to households that switch from renting to owning, the "treatment" group. The data in this study come from the Panel Study of Income Dynamics (PSID), a survey that collects data on the same families annually from 1968 until 1997 and biennially from 1997 onward. This study uses data from 1999 to 2013 because the 1999 survey is the first to ask detailed questions on wealth and 2013 is the most recent year for which data have been collected and published. My analysis focuses on total net wealth, henceforth referred to as wealth, which is the sum of all assets—home equity (main residence and other real estate); value of vehicles, farms, businesses, financial investments, cash accounts, savings, gifts/inheritances, and pensions—minus the sum of debts. Home equity is equal to house value less the remaining mortgage principal(s), if the house has a mortgage. I also refer to non-home-equity wealth, which is total net wealth less home equity.

I analyze households with the same head from 1999 to 2013 that appear in the data for all eight waves that make up the study period. There is no way to calculate length of ownership for households that are missing for certain years in the dataset, as it would be necessary to assume that a household maintained its tenure status in the year it was missing, which may not be the case, and this assumption may lead to inaccurate results. The household heads must be older than 25 in 1999, the age most individuals have finished their education, and younger than 55 in 1999, to exclude differences in wealth accumulation during retirement.

The sample used in my study includes 2,220 households. Limiting the sample to this set of households in the ways described above changes the demographic makeup of the sample, documented in Table 1. All columns in Table 1 are limited to individuals aged 25 to 55, thus the

Table reports the changes to the sample apart from the age restriction. When the sample is limited to household heads present in every year of the survey, we see an increase in the share of household heads that are white and Hispanic, have higher educational attainment and household income, are employed, and are homeowners. Table 1 also provides the demographic breakdown of the total US population aged 25 to 55 using the 2000 census, thus showing the differences between the US population, the PSID, and the PSID sample used in this paper.

Wealth, income, and all other monetary variables (including rent payment, mortgage payment, and remaining mortgage principal) are measured in 2013 dollars. The data is winsorized—the top ten highest and lowest values of wealth are dropped from the sample—to limit outliers' impact on the regression results and because these extreme values may be the result of reporting errors. Households are considered to be low-income if they earn less than $46,000 in household family income in 1999, the 25th percentile for income across all 2,220 households in this year.[13] See Table 2 for the boundaries of the four income quartiles referred to for the remainder of this paper. Households in income quartiles two through four are referred to as higher-income households.

There are several limitations to this study. Non-financial associations with homeownership are discussed in the literature review; however, they are not included in the model. The data may not fully account for all costs associated with homeownership and renting, as some of these costs are psychological. Survey participants may not report their assets and debts with complete accuracy, survey components which are particularly vulnerable to mistakes. Survey respondents overstate home values (included in the measure of net wealth that this paper seeks to estimate) by about 5% on average (Kiel and Zabel 1999). This over-reporting may lead

[13] Income for all years is actually calculated in the year prior to the survey year, thus 1999 household income is actually the household's income in 1998 ("PSID Main Interview User Manual: Release 2015")

to higher values of net wealth for homeowners, which would affect the model's predictions, however, since it seems to remain constant, the impact of ownership on wealth accumulation can be adjusted once an estimate is found. The paper is also limited by the time period of analysis. The sample size is relatively small and may not accurately portray the US population. Moreover, new households are being created in the US over the time period of analysis, but are not added to the dataset used in the study. This study, using a difference-in-differences framework, does a better job of controlling for the selection bias of ownership than previous studies; however, the results cannot be interpreted as causal, as the model does not fully control for selection into ownership.

A majority of households owned their homes for the duration of the survey period (60% of households), which reflects the fact that the US is an ownership society. The households of interest are those that begin as renters in 1999 and switch from renting to owning their homes during the survey's duration, effectively the "treatment" group (17% of households). Of interest is whether the wealth accumulation of households in the "treatment" group differs from households in the "control" group, households that start as renters in 1999 and remain renters for the duration of the study. Table 3 shows how households in different tenure groups compare to one another in terms of descriptive statistics. Overall, households in the "treatment" group are more similar to those in the "control" group than to those that began as owners in 1999. Households that switch from renting to owning, for example, have incomes that are $25,000 higher, on average, than households that remain as renters for the duration of the study. About 50% of the households that remain as renters have female heads versus only about 20% of households that switch to owning. Households in the "treatment" group are more educated, less racially diverse, and more likely to be married than households in the "control" group. These

differences, however, are accentuated even more for households who own for the entire period. Individual households fixed effects, included in the model specifications, help account for the differences between households that do and do not switch to owning during the study period.

Table 4 lists values of household wealth by age, gender, education, family status, housing tenure, income, race, region, and population density in the first and final years of the dataset, as well as the dollar change and percent change in household wealth from 1999 to 2013. Overall, wealth increases from 1999 to 2013 for the households in the study, which is logical, as incomes and savings are positively correlated with age. The changes in wealth by race, age, and education are not surprising—younger, white, and more highly educated households see greater increases in wealth from 1999 to 2013. Low-income households see the highest percent change in both median and mean wealth from 1999 to 2013, probably because small gains in wealth add a lot, in percentage terms, to total wealth for these households. Additionally, low-income households experienced the Great Recession, and the boom that preceded it, more acutely than other households, as there was more house price volatility in areas with a higher concentration of low-income households.

Table 5 shows home and mortgage characteristics in 2001, 2007, and 2013 for households in the "treatment" group, for the years in which they own their homes, separated by income status. Low-income homeowners tend to have lower monthly mortgage payments, shorter mortgage durations, and lower remaining mortgage principals, which is logical given that they tend to purchase lower-cost houses, however, fewer low-income households have mortgages than other households. It is unclear why a lower percentage of low-income households have mortgages on their homes: it may be due to the smaller number of low-income households in the sample, and/or some households may have inherited their homes. A much

greater share of homeowners, including low-income households, pay more than 30% of their income on housing, in the form of their monthly mortgage payments, than renters in 2001, however, this statistic reverses by 2013, as a greater share of renters pay more than 30% of their income on housing. It does not seem as though the mortgages acquired by this sample of households reflect the mortgages that many low-income households in the US received during the same time frame.[14] Average house value and home equity change up to 25% in a two-year period, suggesting the importance that timing plays in the housing market. Homeowners that happen to own during years of higher home price appreciation may succeed in accumulating wealth, however this appreciation is by no means guaranteed, as the recent Great Recession reminds us.

Table 6 looks at changes in non-home-equity wealth, home equity, and total wealth over the time period of analysis for households in each "treatment" cohort and the "control" group. "Treatment" cohorts are mutually exclusive and are assigned based on the year the household first transitioned from renting to owning. For example, a household that purchased a home between 1999 and 2001 is in the 2001 cohort, even if they also purchased a home later in the study period. Households in the "treatment" group do not necessarily sustain ownership for the duration of the study after purchasing a home, thus the values of average wealth include both current and former homeowners. Two thirds of low-income households sustain ownership versus three quarters of higher-income households. The starkest difference in sustaining homeownership is for the 2001 cohort: 47% for low-income households and 71% for higher-income households. The sample size of each cohort is given in parentheses next to its name: note that the sample sizes are small and may not accurately represent US households at large.

[14] Mortgages to low-income households may have low down payments, adjustable interest rates, and negative amortization due to a lack of information on the households' part, low credit scores, discrimination, and instability.

Most cohorts, on average, experience a significant bump in overall wealth, and home equity, in the year of first purchase, followed by increasing and then declining total wealth which reflects the housing market boom and bust. Households typically make up some of this lost wealth in the remaining years of the period, however, rarely does the wealth at the end of the period reach its highest level during the study, typically 2007, the peak of the housing bubble. Some of the declines in home equity may de due to an increase in the number of households taking out home equity lines of credit (HELOCs) during this time. Both during and after the Great Recession, many cohorts experience declines in non-home-equity wealth as well, often greater, percentage-wise, than declines in home equity. The initial values of total wealth and home equity vary greatly between cohorts, which may explain some of the differences in wealth accumulation between them.

Households that purchase a home experience gains in wealth, which outpace those of renters. These homeowners have an extra source of wealth, home equity, that renters lack, thus leading to higher values of total wealth. In fact, home equity, in almost every year, accounts for the highest share of total wealth, on average, which is in line with national data that home equity makes up the biggest portion of wealth for low-income households (Wolff 2014).[15] In the year before purchase, median wealth for low-income households is $30,000, a relatively low level of wealth, thus these households see a high percentage change in wealth over the time period. Most households, however, end up with relatively low levels of wealth (the mean is brought up by those that bought houses that appreciated in value a lot).

[15] The average percent of home equity in total wealth in the US is 48% overall and 70% for low-income households.

Models

I. OLS Regression Model

I first employ an OLS regression model that quantifies partial correlations between wealth accumulation over time and variables in the PSID dataset such as educational attainment, location, and marital status. These variables are time invariant (or assumed to be) and therefore cannot be included in the fixed effects regression. The model is specified as follows:

$$\log(W_{it}) = \beta_0 + \beta_1 tot_{it} + \alpha_1 year_t + \alpha_2 bpurchase_{it} + \alpha_3 X_{it} + u_{it}$$

The subscripts i and t index the individual household and survey year respectively. *W* is total wealth, in 2013 dollars.[16] *X* is a vector of demographic variables including baseline wealth, income, age, marital status, children, race, educational attainment, region, population density, employment, and year of first purchase. *Tot* is the cumulative years of homeownership for all households in the dataset from 1999 on.[17] *Year* is the year of the survey. *Bpurchase* is a dummy variable that turns on in the survey year prior to the first year of homeownership (as we may expect future homeowners' savings to increase in the years prior to ownership, in preparation for a down payment).

II. Household Fixed Effects Model

I employ a household-level fixed effects regression model to determine whether households that own their homes accumulate more wealth, on average, then households that rent their homes. The sample of households included in these models is limited from the sample for the OLS model to a "control" group—households that started as renters in 1999 and remained

[16] Total wealth has been transformed using an inverse hyperbolic sine transformation, which allows for a logarithmic adjustment of the wealth variable, while also allowing for wealth to be zero and negative. See Burbidge et al. (1988) for more information about this transformation.

[17] Income interaction terms are not included since the p value for the t test that *tot* interacted with the lowest income quartile equals *tot* interacted with the rest of the households is .6532, thus in this model, the effect on wealth is not different based on income group.

renters for the duration of the time period—and a "treatment" group—households that started as renters in 1999 and switched to owning at some point during the study, leaving 639 households in the sample. Limiting the sample to these households further changes the demographic makeup of the sample (see Table 1). The percentage of black households is greater than that of white households, the sample is significantly younger than the previous sample and has a higher percentage of household heads that did not complete high school. Lastly, mean and median income for this sample are both less than the full PSID sample. Also, note that in the limited sample half of the households have incomes under $46,000 in 1999, the cutoff for the 25th percentile for the 2,220-household sample.[18] This cutoff is used for the limited sample, despite the fact that it has a different income distribution, as I aim to understand how low-income households in the population accumulate wealth, and the bigger sample is designed to more closely resemble the US population.

The fixed effects models employed have several limitations. Time-varying unobservable household characteristics may be correlated with ownership and wealth, or households may experience changes in one time period that affect their tenure decision in the next time period. I explore adding several endogenous, time-varying variables—marriage, and the presence of children—to the model, however, I decided to exclude them as their presence only marginally changes the coefficients on the variables of interest. Another limitation arises if the "control" and "treatment" groups are not similar enough to one another, which was discussed in the previous section. Additionally, the PSID is conducted biennially, introducing uncertainty into calculating length of ownership. For the fixed effects models, the length of ownership variable is only

[18] I ran the model using the 25th percentile of totally family income for the US population using the 2000 census, which is $28,600. The correlation between ownership and wealth is more pronounced using this lower threshold to define low-income households, as would be expected. The results of these regressions, however, do not change the trends for low-income household wealth accumulation in the housing market, nor the conclusions of the paper.

calculated for households that switch from renting to owning at some point from 2001 to 2013. For each survey year that a household owns a home, two years are added to the *years_own* version of the *ownership* variable. This approach assumes the maximum amount of time a household could have owned a home, which results in a conservative estimate of wealth accumulation.

The fixed effects model is specified below:

$$W_{it} = \beta_0 + \beta_1 ownership_{it} + \beta_2 ownership_{it} * inc1_i + \beta_3 ownership_{it} * inc\_other_i + \alpha_1 year_t + \alpha_2 bpurchase_{it} + u_i + \varepsilon_{it}$$

The subscripts i and t index the individual household and the survey year respectively. *W* is wealth, in 2013 dollars*; Year* is the survey year; and *ownership* tracks homeownership for "treatment" households and is specified differently depending on the model. *Inc1, inc_other,* and *bpurchase* are dummy variables that turn on for households in the lowest income quartile, households in all other income quartiles, and in the survey year prior to homeownership respectively.

Results

I. Correlations with Total Wealth

Table 7 provides an overall picture of to what degree, if at all, selected variables from the PSID dataset are linearly related to wealth accumulation for the households in the sample. Income has a strong linear correlation with wealth accumulation, and there are weak correlations between wealth and race, and years of ownership. The lack of strong correlations between wealth and the set of explanatory variables supports using fixed effect models to determine the impact of tenure decisions on changes in household wealth.

II. OLS Regression where the dependent variable is total wealth (in logs)

The results from the OLS regression, in Table 8, show that many of the demographic and household characteristics captured by the PSID are correlated with wealth. According to the OLS model, homeowners with an additional two years of ownership have 20% higher wealth holdings than renters, on average and all else equal. Household heads who are older, married, and more educated, earn more wealth than those who are not. In terms of income, households in the bottom three income quartiles accumulate less wealth, on average, than households with the highest incomes. And households earning below the median income accumulate less wealth, on average, than households in the third income quartile. Households in the Northeast and West regions of the US have 11% and 41% more wealth respectively than households in the North Central US, on average and all else equal. This regional discrepancy may stem from differences in cost of living throughout the country, reflected in the housing market. Households that move have almost 27% less wealth on average than those that do not, signaling that moving is a financially risky decision. Household heads of racial and ethnic minority groups accumulate less wealth, on average, than white heads of households, which is in line with previous literature. The

explanatory variables that we are able to observe account for half of the changes in wealth accumulation experienced by households over the study period, thus there are unobservable characteristics correlated with wealth accumulation as well, that the households fixed effects, used in the following models, control for.

III. Fixed Effects Regressions

Five fixed effects models are constructed and estimated several times, with differing specifications of the dependent variable, wealth.[19] In the first model, *ownership* tracks the cumulative years of ownership to reveal the impact of any two years of ownership on wealth and therefore assumes that wealth and years of ownership are linearly related. The second model relaxes the assumption of linearity, to reveal the impact of owning for a specific number of years on wealth over the study period. The third model imposes the restriction that all lengths of ownership impact wealth equally, to reveal the impact of ownership on wealth over the study period. The fourth and fifth models, motivated by previous research pointing to the importance of timing in wealth accumulation, allow the impact of ownership to change depending on the year that households bought their first home. Another model is estimated to trace the wealth accumulation of "treatment" households that switch back to renting, despite the exogenous relationship between these two variables. The specification of *ownership* in each model is summarized in Table 9.

A. Dependent variable is total wealth (in logs)

The results from model one, reported in column one of Table 10, suggest that increasing ownership by two years is correlated with a 10.6% increase in wealth for higher-income

[19] Note that when wealth is in log form, it has been transformed using an inverse hyperbolic sine transformation—with the formula $\log(x + (1 + x^2)^{1/2})$ where x is wealth—to allow for negative values of wealth. See Burbidge et al. (1988) for more information about this transformation.

households and an increase of 7.7% for low-income households.[20] Model two relaxes the restriction that the impact of ownership on wealth is linear in two-year increments (results are reported in column two of the same Table). The p values that the dummy variables for each length of ownership are equal for low-income and higher-income households are .08 and .12, thus owning for any length of time (in two year increments from two to fourteen years) impacts wealth accumulation differently for low-income households at the 10% level. According to this model, low-income homeowners are seeing high percentage increases in wealth, which, for the most part, increase with length of ownership. Model three imposes the restriction that every interval of ownership length has the same impact on wealth accumulation. Results from this model, reported in column three of Table 10, suggest that households that switch to owning earn over 600% more wealth for the duration of the study period, on average, than those that remain as renters and that this increase in wealth happens within the first two years of ownership (the percentage increase in wealth for low-income homeowners is greater than for higher-income households).[21] Table 7, discussed in the above section, which tracks changes in wealth overtime for the "treatment" households by cohort, provides an important context for this increase in wealth because low-income households are starting from a low level of wealth ($10,000 to $40,000 on average, for most "treatment" cohorts) and are less likely to sustain ownership for the entire time period than other households.

[20] The difference in wealth accumulation for these two groups, however, is not significant. The F test that the coefficients on *years_own* for the two income groups are equal is .3288.

[21] The p value for the F test that the coefficients on the interaction terms between own and income group are equal is .1095.

The next two models, reported in Table 11, control for the year in which households first purchased their homes, and suggest that year of first purchase affects wealth accumulation.[22] Results from model four, reported in column one, and which imposes linearity on how ownership impacts wealth accumulation, suggest that low-income households that purchased their homes in 2001 see a 11% decrease in their wealth holdings over a two year period, whereas the rest of the households see a 9% increase. This cohort of homeowners remains in the dataset the longest after switching to owning, thus it can be argued that their experience with wealth accumulation is the most applicable to future, potential homeowners. In this model, wealth accumulation is higher, on average, for households that purchased their homes later on in the study period, which may be due to the smaller number of households switching to ownership. According to model five, in column two, households that first purchased homes in 2007 accumulate the least wealth, on average, yet low-income and other households still see increases of 400% and over 100% respectively. An increase of 400% for low-income households, however, is equivalent to a small nominal increase in wealth over a six or so year period. Overall, these models suggest that low-income households see large percentage increases in wealth, on average, over the study period. These increases in total wealth tend to occur within the first two years of ownership, and do change significantly depending on the year the house was purchased.

B. Dependent variable is total wealth

Results from model one, reported in column one of Table 12, suggest that two additional years of homeownership are correlated with no change in wealth for low-income households, on average, while all other households accumulate about $12,000, on average, during these two

[22] The p values of the F tests that the coefficients on the interaction terms between ownership and "treatment" cohorts are equal for low-income households are 0 to five decimal places and .17, and 0 to five decimals for both models for the higher-income households.

years.[23] Results from model two, which relaxes the linearity assumption, reported in column two of Table 12, suggest that longer spouts of ownership are associated with greater gains in wealth for higher-income households and echo the results from model one for low-income households, that they see no gain in wealth from homeownership, on average.[24] In particular, higher-income households see their wealth holdings increase by more, on average, the longer they own their homes. Results from model three, which assumes that each length of ownership impacts wealth accumulation identically, are reported in column three of Table 12 and indicate that low-income homeowners see their wealth holdings increase by $20,000, on average, over the study period (versus over $100,000 for higher-income households) compared to households that remain renting.[25] Results from models four and five, reported in Table 13, control for timing of first home purchase, and suggest that this year matters for the wealth accumulation of all households, however, only the wealth changes for higher-income households are statistically different from zero.[26] Households that purchase their homes in the beginning and final years of the study period see greater increases in wealth than those that purchase their homes in the middle years, which coincide with the Great Recession. Overall, the results from these models indicate that low-income homeowners see very small, if any, gains in wealth from homeownership, while other households experience gains in wealth from ownership that vary depending on length of ownership and, to a lesser extent, the year they purchased their home.

[23] The p value for the F test that the coefficients on the interaction terms between *years_own* and each income group are equal is .002.

[24] The p values for the F tests that the coefficients on the length dummies are equal for low-income and all other households respectively are .9769 and .0025.

[25] The p value for the F test that the coefficient on *own* for low-income households is significantly different from zero is .2535, thus this $30,000 increase is not significantly different from zero. The p value for the F test that the coefficients on the interaction terms between *own* and each income group are equal is .0003, thus the differential in wealth accumulation is significantly different by income group at the 1% level.

[26]The p values for the F tests that the cohort and *years_own* interaction terms are equal to one another for the low-income and other households are .4200 and .2194 respectively. The p values for the F tests that the cohort and *own* interaction terms are equal to one another for the low-income and other households are .8143 and .1748 respectively.

C. Dependent variable is Non-home-equity wealth (in logs)

An additional two years of ownership is associated with a 7.2% increase in non-home-equity wealth holdings for higher-income households, and no change in non-home-equity wealth for the low-income households (according to model one presented in column one of Table 14).[27] Relaxing the linearity assumption, we find that length of ownership impacts the ability of higher-income households to accumulate non-home-equity wealth—longer spouts of ownership are associated with higher percentage increases in wealth accumulation over the study period, on average.[28] Models four and five are not reported, as there are no major differences in non-home-equity wealth accumulation between "treatment" cohorts.[29] Overall, these models suggest that homeownership is associated with increases in home equity, and not other components of wealth, for low-income households, while the other households see significant increases in non-home-equity wealth that vary with length of ownership.

D. Dependent Variable is Non-home-equity Wealth

Models with the dependent variable specified as non-home-equity wealth suggest that low-income homeowners loose non-home-equity wealth, on average, over the study time period (the results are presented in Table 15). For low-income households, an additional two years of ownership is associated with a loss of over $3,000 in non-home-equity wealth and over the entire time period, low-income households loose over $20,000 in non-home-equity wealth, on

[27] The p value for the F test that the coefficients on the interaction terms between *years_own* and each income group are equal is .0035.
[28] The p value for the F test that the interaction terms between length and the higher-income group are equal is .0251.
[29] The p values for the F tests that the coefficients on the cohort and *years_own* dummy variables are equal for the low-income and other households are .0273 and .0134 respectively. The p values for the F tests that the coefficients on the cohort and *own* dummy variables are equal for the low-income and other households are .6497 and .1658 respectively, however the coefficients on these variables are not different from zero for the low-income households.

average.[30] For higher-income households, wealth accumulation depends on the length of ownership, as some lengths of ownership are associated with no change in non-home-equity wealth accumulation.[31] Models that include cohort dummies are not reported in the paper for this specification of the dependent variable, as time of first purchase does not significantly change non-home-equity wealth overtime for the "treatment" group.[32] These models build on the results from Section C that low-income households are only seeing increases in home equity after transitioning to ownership and that other households are seeing fairly small increases in non-home-equity wealth, limited to particular lengths of ownership.

E. The Transition from Owning to Renting

Another model is estimated to evaluate the impact of households in the "treatment" group that switch back to renting from owning and the results are presented in Table 16. Fourteen to 30 households make this transition in each year, most of which are low-income households. The relationship between wealth and the transition from owning to renting is more endogenous than the tenure transition in the opposite direction because the transition back to renting is often prompted by an event that negatively impacts wealth and/or income—thus we expect the coefficient on the own to rent variable to be negative. Households in the lowest income quartile that make this transition accumulate almost 300% less wealth, on average, than households that remain owners (ie. do not switch from owning to renting in any given year).

Also included in the model is an indicator variable for the year before the household switched back to renting, its coefficient is positive and significant. This most likely indicates that

[30] The p values for the F tests that the coefficients on the interaction terms between the first income quartile and *years_own* and *own* are equal are .3601 and .2812 respectively.
[31] The p value for the F test that the coefficients on the interaction terms between *length* and *inc_other* are equal is .1509.
[32] For the low-income households the p values for the F tests that the interaction terms between the cohorts and *years_own* and *own* are equal are .7911 and .8578 respectively.

households transition back to renting at most two years after a negative wealth/income shock occurs, however, it may also indicate that households transition back to renting in the absence of a shock. Looking at the data more closely, we see evidence for household shocks for about 65% of the 113 households that switch back to renting, with most of the shocks occurring in the same two-year period that households left homeownership. The household shocks include divorce, the household head losing his or her job, foreclosure, negative equity, and children moving out of the house.

Conclusion

This study tested whether homeownership, as opposed to renting, is the best way for low-income households to accumulate wealth using a difference-in-differences approach, to better control for the selection into homeownership. It adds to the previous literature on wealth accumulation in the housing market by employing this econometric technique, using the most recent data from the PSID, and including an additional control for timing by creating cohorts tracking year of first home purchase. I find that although low-income households that transition to ownership see high percentage increases in wealth in the first two years of ownership, these percentages mask the small absolute increases in wealth that these households experience. Households that transitioned to ownership during the Great Recession see no significant increases in wealth upon transitioning, pointing to the crucial role that timing plays in the ability of households to accumulate wealth.

The results of the estimated models suggest that homeownership is associated with some wealth accumulation. However, this link does not justify policies pushing low-income households into homeownership. Households that enter homeownership see a jump in wealth, in the form of home equity, in the beginning years of homeownership, suggesting that ownership is not a reliable and consistent form of wealth. Homeowners experience a one-time surge in home equity that often dissipates either from failure to sustain homeownership or because of macroeconomic conditions at the time. Since wealth is so volatile for the low-income households in this study, homeownership does not appear to serve as a financial cushion for them, one of the claimed benefits of wealth accumulation of particular importance to low-income households. In addition, it does not appear as though low-income homeowners are able to leverage their wealth holdings, another key benefit of wealth accumulation for low-income households, as their non-

home-equity wealth often drops after transitioning to ownership—thus their wealth is constrained to fairly illiquid home equity.

These volatile, small increases in wealth for low-income homeowners should push policy makers to explore alternative options for wealth accumulation for low-income households. The data show that low-income households that remain as renters are not saving the money that homeowners save to pay down payments on their homes. This finding bodes well for the argument that homeownership serves as a means of forced savings, yet it also shows that there are other avenues of wealth accumulation for low-income households to explore.

Based on the results of this study, and the limitations it faces discussed in the data section, there is a need for future research on this topic. The dataset used here does not include enough households to run models for particular regions of the country, thus further studies should attempt to impose stricter controls for location and neighborhood quality. Further studies may also wish to explore the quality and stability of low-income homeownership, as it may make more sense for the government to focus on these factors as opposed to the quantity of households that transition into low-income homeownership. Researchers should continue to find new ways to control for the selection into homeownership as household characteristics play a major role in differences in wealth accumulation across the population. There are certain household characteristics, for example, common to low-income households that create barriers to homeownership and can exacerbate the risks of homeownership.

Tables

Table 1 Demographic Characteristics for Several Samples in 1999 (means reported)				
Characteristics	**2000 Census**	**Head Sample**	**Study Sample**	**Fixed Effects Sample**
Age & Gender				
Age 25 to 34	0.31	0.29	0.26	0.41
	(0.46)	(0.46)	(0.44)	(0.49)
Age 35 to 44	0.36	0.41	0.39	0.39
	(0.48)	(0.49)	(0.49)	(0.49)
Age 45 to 54	0.33	0.30	0.35	0.20
	(0.47)	(0.46)	(0.48)	(0.40)
Male	0.49	0.75	0.83	0.66
	(0.50)	0.43	0.38	0.47
Education				
Less than HS	0.12	0.06	0.06	0.11
	(0.32)	(0.23)	(0.24)	(0.31)
Graduated HS	0.40	0.24	0.29	0.31
	(0.49)	(0.42)	(0.45)	(0.46)
Some College	0.23	0.14	0.18	0.18
	(0.42)	(0.35)	(0.38)	(0.39)
College Degree or More	0.26	0.28	0.39	0.29
	(0.44)	(0.45)	(0.49)	(0.46)
Missing Education	0.00	0.27	0.06	0.08
	(0.00)	(0.45)	(0.23)	(0.27)
Family Status				
Married	0.65	0.63	0.72	0.44
	(0.48)	(0.48)	(0.45)	(0.50)
Single	0.23	0.23	0.19	0.41
	(0.42)	(0.42)	(0.39)	(0.49)
Divorced	0.13	0.14	0.10	0.15
	(0.33)	(0.35)	(0.29)	(0.35)
Whether have Children	0.30	0.63	0.63	0.57
	(0.46)	(0.48)	(0.48)	(0.50)
Race				
White	0.77	0.58	0.63	0.42
	(0.42)	(0.49)	(0.48)	(0.49)
Black	0.11	0.33	0.28	0.46
	(0.31)	(0.47)	(0.45)	(0.50)
Asian	0.04	0.02	0.02	0.02
	(0.19)	(0.13)	(0.12)	(0.15)
Hispanic	0.08	0.06	0.06	0.07
	(0.27)	(0.23)	(0.23)	(0.25)

Other Race	0.08	0.02	0.02	0.02
	(0.28)	(0.14)	(0.13)	(0.15)
Missing Race	0.00	0.01	0.01	0.02
	(0.00)	(0.10)	(0.10)	(0.13)
Region & Population Density				
Northeast	0.19	0.15	0.16	0.16
	(0.40)	(0.36)	(0.37)	(0.37)
North Central	0.23	0.24	0.25	0.23
	(0.42)	(0.43)	(0.44)	(0.42)
South	0.35	0.42	0.39	0.39
	(0.48)	(0.49)	(0.49)	(0.49)
West	0.23	0.19	0.20	0.21
	(0.42)	(0.39)	(0.40)	(0.41)
Urban	0.14	0.69	0.69	0.78
	(0.35)	(0.46)	(0.46)	(0.41)
Midsize	0.30	0.28	0.28	0.20
	(0.46)	(0.45)	(0.45)	(0.40)
Rural	0.20	0.03	0.03	0.02
	(0.40)	(0.16)	(0.16)	(0.14)
Employed	0.76	0.89	0.92	0.86
	(0.43)	(0.32)	(0.27)	(0.35)
Wealth in 1999	N/A	$142.03	$162.58	$35.49
(in 1000s)	N/A	(743.51)	(564.22)	(182.14)
Homeownership Rate	0.69	0.62	0.71	0.00
	(0.46)	(0.49)	(0.45)	(0.00)
Household Income (in 1000s)	$68.11	$60.20	$80.04	$48.98
Notes:(i) Standard deviations in parentheses (ii) Household Income is the median value				

Table 2 Income Quartile Cutoffs	
Quartile	**Income, in 1000s**
Minimum	-$100
25th Percentile	$46
Median	$74
75th Percentile	$117
Maximum	$1213

Table 3 Demographic Characteristics by Tenure Group (means reported)					
Total Households (2,220)	**Rent in 1999** (639)		**(3) Own in 1999** (1,581)	**P values**	
	(1) Always Rent (274)	**(2) Switch to Own** (365)		**(1) v. (2)**	**(2) v. (3)**
Age & Gender					
Age 25 to 34	0.33	0.47	0.20	0.000	0.000
	(0.47)	(0.50)	(0.40)		
Age 35 to 44	0.45	0.35	0.39	0.933	0.000
	(0.50)	(0.48)	(0.49)		
Age 45 to 54	0.22	0.19	0.42	0.000	0.001
	(0.42)	(0.39)	(0.49)		
Male	0.52	0.77	0.89	0.000	0.000
	(0.50)	(0.42)	(0.31)		
Education					
Less than HS	0.16	0.07	0.04	0.000	0.000
	(0.36)	(0.25)	(0.21)		
Graduated HS	0.38	0.25	0.28	0.005	0.000
	(0.49)	(0.43)	(0.45)		
Some College	0.18	0.19	0.17	0.111	0.352
	(0.38)	(0.39)	(0.38)		
College Degree or More	0.16	0.40	0.43	0.000	0.000
	(0.36)	(0.49)	(0.50)		
Missing Education	0.09	0.07	0.05	0.000	0.031
	(0.28)	(0.26)	(0.21)		
Family Status					
Married	0.32	0.53	0.83	0.000	0.000
	(0.47)	(0.50)	(0.37)		
Single	0.54	0.32	0.09	0.000	0.000
	(0.50)	(0.47)	(0.29)		
Divorced	0.14	0.15	0.07	0.000	0.963
	(0.35)	(0.36)	(0.26)		
Whether have Children	0.65	0.50	0.66	0.000	0.582
	(0.48)	(0.50)	(0.48)		
Race/Ethnicity					
White	0.25	0.55	0.71	0.000	0.000
	(0.44)	(0.50)	(0.45)		
Black	0.62	0.35	0.21	0.000	0.000
	(0.49)	(0.48)	(0.41)		
Asian	0.02	0.02	0.01	0.000	0.573
	(0.15)	(0.16)	(0.11)		
Hispanic	0.08	0.06	0.05	0.000	0.005
	(0.27)	(0.24)	(0.22)		
Other Race	0.03	0.02	0.01	0.000	0.352
	(0.16)	(0.15)	(0.11)		

Missing Race	0.03	0.01	0.01	0.000	0.000
	(0.16)	(0.10)	(0.09)		
Region & Population Density					
Northeast	0.15	0.17	0.16	0.493	0.021
	(0.35)	(0.38)	(0.37)		
North Central	0.24	0.23	0.26	0.000	0.717
	(0.43)	(0.42)	(0.44)		
South	0.40	0.39	0.38	0.288	0.404
	(0.49)	(0.49)	(0.49)		
West	0.22	0.21	0.19	0.000	0.489
	(0.41)	(0.41)	(0.39)		
Urban	0.81	0.76	0.66	0.000	0.000
	(0.39)	(0.43)	(0.47)		
Midsize	0.17	0.22	0.31	0.000	0.000
	(0.38)	(0.42)	(0.46)		
Rural	0.02	0.02	0.03	0.000	0.000
	(0.13)	(0.14)	(0.17)		
Employed	0.79	0.91	0.94	0.000	0.000
	(0.40)	(0.29)	(0.23)		
Household Income	$40.01	$65.27	$110.17	0.000	0.000
(in 1000s)	(34.40)	(53.03)	(91.89)		
Wealth in 1999	$28.55	$40.71	$213.94	0.000	0.018
(in 1000s)	(209.17)	(158.97)	(651.56)		
Notes: standard deviations in parentheses below					

Table 4 Median and Mean Wealth by Demographic Characteristics (2,220-household sample)								
	Median Wealth				Mean Wealth			
	1999	2013	Change	% Change	1999	2013	Change	% Change
Age								
25 to 34	$69	$124	$55	80%	$228	$402	$174	76%
35 to 44	$24	$64	$40	161%	$84	$236	$153	183%
45 to 54	$65	$103	$38	58%	$183	$308	$126	69%
Male	$151	$223	$71	47%	$382	$624	$242	63%
Education								
Less than HS	$90	$165	$75	83%	$263	$464	$201	76%
Graduated HS	$11	$15	$4	34%	$63	$86	$23	37%
Some College	$49	$73	$24	50%	$129	$212	$83	64%
College Degree or More	$70	$111	$40	57%	$219	$309	$90	41%
Family Status								
Married	$148	$293	$145	98%	$358	$675	$317	89%
Single	$103	$190	$87	84%	$283	$489	$206	73%
Divorced	$11	$13	$2	18%	$75	$217	$142	189%
Children	$34	$35	$1	3%	$107	$130	$23	21%
Housing Tenure								
Own in 1999	$65	$86	$21	33%	$231	$268	$37	16%
Always Rent	$122	$197	$75	62%	$305	$524	$218	71%
Rent in 1999 & Switch to Own	$2	$2	$0	19%	$29	$31	$2	8%
Income Quartile								
Inc 1	$8	$53	$45	606%	$41	$151	$110	271%
Inc 2	$7	$14	$7	100%	$36	$78	$42	116%
Inc 3	$43	$76	$33	77%	$121	$187	$66	55%
Inc 4	$96	$176	$79	82%	$205	$332	$126	61%
Race/Ethnicity								
White	$281	$545	$264	94%	$549	$1,010	$461	84%
Black	$124	$237	$113	92%	$308	$565	$257	83%
Asian	$25	$30	$5	19%	$80	$103	$23	29%
Hispanic	$142	$284	$142	100%	$377	$537	$160	42%
Other Race	$21	$47	$26	125%	$55	$124	$69	126%
Region & Population Density								
Northeast	$73	$93	$20	28%	$193	$170	-$24	-12%
North Central	$116	$225	$109	94%	$281	$541	$260	93%
South	$77	$120	$43	57%	$214	$381	$168	79%
West	$56	$88	$32	57%	$171	$300	$129	76%
Urban	$75	$172	$97	130%	$313	$510	$197	63%
Midsize	$70	$124	$54	77%	$243	$432	$189	78%
Rural	$68	$125	$57	85%	$181	$318	$137	76%

Table 5 Housing Overtime for Households that Switch to Owning						
	Low-Income Households			All Other Households		
	2001	2007	2013	2001	2007	2013
Mortgage						
Percent With Mortgage	73%	82%	75%	95%	88%	84%
	(0.45)	(0.38)	(0.44)	(0.22)	(0.33)	(0.36)
Monthly Mortgage Payment	$592	$889	$633	$1,282	$1,354	$1,194
	(678.63)	(751.19)	(571.46)	(764.94)	(949.31)	(897.47)
Interest Rate	5.17	5.11	3.35	6.75	5.17	3.65
	(3.87)	(3.25)	(2.54)	(2.26)	(2.48)	(2.18)
Remaining Mortgage Principal	$79	$138	$100	$160	$201	$170
	(63.12)	(105.87)	(72.51)	(99.07)	(154.10)	(155.01)
Remaining Years on Mortgage	23.59	23.14	19.70	24.80	23.37	20.12
	(8.97)	(7.63)	(7.86)	(7.68)	(6.67)	(7.15)
Percent that Refinance	10%	18%	28%	8%	43%	52%
	(0.31)	(0.39)	(0.45)	(0.27)	(0.50)	(0.50)
Percent Paying >30% of Income on Mortgage	27%	18%	11%	6%	9%	10%
	(0.45)	(0.39)	(0.31)	(0.24)	(0.29)	(0.30)
House Value & Equity						
House Value (in 1000s)	$87	$180	$123	$203	$322	$241
	(81.23)	(144.72)	(91.35)	(136.78)	(268.60)	(238.34)
Percent House Value Appreciation		24%	-2%		21%	16%
		(1.42)	(0.35)		(1.39)	(1.91)
Home Equity	$9	$42	$35	$28	$110	$75
	(30.22)	(60.88)	(62.95)	(66.21)	(193.24)	(128.96)
Percent of House Value that is Equity	50%	42%	42%	32%	42%	36%
	(0.42)	(0.33)	(0.49)	(0.32)	(0.27)	(0.42)
Percent with Negative Equity	3%	1%	13%	1%	2%	7%
	(0.18)	(0.10)	(0.34)	(0.10)	(0.13)	(0.26)
Renters						
Monthly Rent	$536	$523	$682	$878	$1,004	$1,232
	(301.97)	(253.42)	(430.42)	(376.24)	(491.86)	(1094.67)
Percent Paying >30% of Income on Rent	18%	27%	32%	7%	18%	20%
	(0.39)	(0.45)	(0.47)	(0.26)	(0.39)	(0.41)
Note: standard deviations in parentheses below						

Table 6 Changes in Mean Wealth Overtime by Cohort										
	Low-Income Households					All Other Households				
Year	Non Equity Wealth	Home Equity	Total Wealth	Change	% Change	Non Equity Wealth	Home Equity	Total Wealth	Change	% Change
2001 Cohort (131)										
1999	$11	$0	$11	$0	0%	$84	$0	$84	$0	0%
	(26)	(0)	(26)			(249)	(0)	(249)		
2001	$49	$42	$91	$79	698%	$63	$63	$127	$43	51%
	(145)	(55)	(163)			(146)	(87)	(202)		
2003	$98	$31	$129	$38	42%	$115	$74	$189	$62	49%
	(467)	(45)	(463)			(274)	(86)	(306)		
2005	$13	$55	$68	-$60	-47%	$220	$121	$341	$152	81%
	(31)	(80)	(85)			(1180)	(138)	(1186)		
2007	$36	$34	$69	$1	1%	$201	$125	$326	-$15	-5%
	(118)	(48)	(124)			(395)	(139)	(457)		
2009	$7	$30	$38	-$32	-46%	$217	$92	$310	-$16	-5%
	(44)	(58)	(71)			(676)	(121)	(720)		
2011	-$3	$18	$15	-$23	-61%	$203	$76	$279	-$31	-10%
	(44)	(34)	(62)			(391)	(99)	(439)		
2013	$5	$14	$19	$4	26%	$171	$89	$260	-$19	-7%
	(46)	(33)	(67)			(311)	(138)	(395)		
2003 Cohort (89)										
1999	$10	$0	$10	$0	0%	$31	$0	$31	$0	0%
	(31)	(0)	(31)			(73)	(0)	(73)		
2001	$14	$0	$14	$4	37%	$51	$0	$51	$19	62%
	(43)	(0)	(43)			(113)	(0)	(113)		
2003	$11	$46	$57	$43	309%	$66	$63	$129	$78	153%
	(46)	(37)	(67)			(134)	(98)	(170)		
2005	$32	$65	$97	$41	72%	$258	$124	$381	$253	196%
	(66)	(60)	(86)			(1599)	(322)	(1636)		
2007	$64	$65	$129	$32	33%	$67	$134	$201	-$180	-47%
	(184)	(67)	(203)			(183)	(304)	(384)		
2009	$28	$30	$59	-$71	-55%	$151	$78	$229	$27	14%
	(86)	(47)	(107)			(496)	(165)	(532)		
2011	$25	$26	$51	-$7	-12%	$66	$96	$162	-$67	-29%
	(84)	(43)	(103)			(166)	(285)	(363)		
2013	$47	$41	$88	$37	71%	$97	$61	$158	-$4	-3%
	(110)	(59)	(142)			(221)	(97)	(259)		

2005 Cohort (50)										
1999	$41	$0	$41	$0	0%	$81	$0	$81	$0	0%
	(202)	(0)	(202)			(172)	(0)	(172)		
2001	$191	$0	$191	$151	371%	$50	$0	$50	-$31	-38%
	(975)	(0)	(975)			(85)	(0)	(85)		
2003	$21	$0	$21	-$170	-89%	$58	$0	$58	$9	17%
	(43)	(0)	(43)			(85)	(0)	(85)		
2005	$41	$59	$100	$79	371%	$58	$92	$150	$92	157%
	(132)	(76)	(146)			(72)	(87)	(123)		
2007	$65	$58	$123	$22	22%	$83	$157	$240	$90	60%
	(236)	(73)	(247)			(93)	(182)	(248)		
2009	$22	$40	$61	-$61	-50%	$59	$113	$172	-$68	-28%
	(63)	(65)	(97)			(99)	(188)	(194)		
2011	$37	$39	$76	$14	23%	$121	$67	$187	$15	9%
	(96)	(85)	(151)			(149)	(99)	(204)		
2013	$15	$34	$49	-$26	-35%	$110	$99	$209	$22	12%
	(42)	(62)	(87)			(110)	(213)	(235)		
2007 Cohort (36)										
1999	$1	$0	$1	$0	0%	$19	$0	$19	$0	0%
	(27)	(0)	(27)			(45)	(0)	(45)		
2001	$11	$0	$11	$10	722%	$13	$0	$13	-$6	-33%
	(52)	(0)	(52)			(37)	(0)	(37)		
2003	$36	$0	$36	$25	233%	$31	$0	$31	$18	138%
	(152)	(0)	(152)			(54)	(0)	(54)		
2005	$52	$0	$52	$16	44%	$166	$0	$166	$135	439%
	(148)	(0)	(148)			(394)	(0)	(394)		
2007	$44	$60	$104	$51	98%	$53	$59	$112	-$54	-32%
	(144)	(66)	(188)			(94)	(58)	(144)		
2009	$85	$46	$131	$27	26%	$10	$17	$27	-$85	-76%
	(223)	(72)	(284)			(50)	(80)	(108)		
2011	$38	$31	$69	-$61	-47%	$95	$15	$111	$84	314%
	(128)	(65)	(180)			(190)	(43)	(212)		
2013	$21	$29	$50	-$19	-27%	$79	$16	$95	-$15	-14%
	(78)	(73)	(140)			(185)	(31)	(194)		
2009 Cohort (23)										
1999	-$20	$0	-$20	$0	0%	$55	$0	$55	$0	0%
	(49)	(0)	(49)			(154)	(0)	(154)		
2001	-$17	$0	-$17	$2	-12%	$127	$0	$127	$72	130%
	(46)	(0)	(46)			(241)	(0)	(241)		
2003	-$23	$0	-$23	-$6	34%	$167	$0	$167	$40	32%
	(66)	(0)	(66)			(382)	(0)	(382)		
2005	-$24	$0	-$24	$0	2%	$222	$0	$222	$54	33%

	(81)	(0)	(81)			(597)	(0)	(597)		
2007	$14	$0	$14	$38	-160%	$278	$0	$278	$56	25%
	(93)	(0)	(93)			(596)	(0)	(596)		
2009	$0	$72	$72	$58	408%	$198	$54	$252	-$26	-9%
	(43)	(62)	(89)			(363)	(86)	(410)		
2011	-$13	$52	$39	-$33	-46%	$201	$40	$242	-$10	-4%
	(43)	(49)	(69)			(408)	(54)	(428)		
2013	$6	$36	$42	$3	7%	$109	$48	$156	-$85	-35%
	(40)	(40)	(66)			(258)	(69)	(307)		
2011 Cohort (16)										
1999	$4	$0	$4	$0	0%	$37	$0	$37	$0	0%
	(11)	(0)	(11)			(55)	(0)	(55)		
2001	$6	$0	$6	$2	39%	$29	$0	$29	-$8	-22%
	(14)	(0)	(14)			(53)	(0)	(53)		
2003	-$3	$0	-$3	-$8	-150%	$64	$0	$64	$35	122%
	(24)	(0)	(24)			(148)	(0)	(148)		
2005	$7	$0	$7	$9	-343%	$86	$0	$86	$22	34%
	(13)	(0)	(13)			(161)	(0)	(161)		
2007	-$3	$0	-$3	-$10	-145%	$164	$0	$164	$77	89%
	(14)	(0)	(14)			(315)	(0)	(315)		
2009	$18	$0	$18	$21	-693%	$237	$0	$237	$74	45%
	(29)	(0)	(29)			(438)	(0)	(438)		
2011	$8	$89	$97	$79	447%	$243	$103	$347	$110	46%
	(42)	(114)	(148)			(384)	(123)	(494)		
2013	$11	$74	$85	-$11	-12%	$112	$141	$254	-$93	-27%
	(16)	(113)	(116)			(216)	(138)	(279)		
2013 Cohort (20)										
1999	-$2	$0	-$2	$0	0%	-$42	$0	-$42	$0	0%
	(17)	(0)	(17)			(118)	(0)	(118)		
2001	$5	$0	$5	$6	-396%	-$8	$0	-$8	$34	-81%
	(34)	(0)	(34)			(31)	(0)	(31)		
2003	$24	$0	$24	$19	399%	$34	$0	$34	$41	-527%
	(69)	(0)	(69)			(61)	(0)	(61)		
2005	$32	$0	$32	$8	35%	$14	$0	$14	-$20	-60%
	(88)	(0)	(88)			(41)	(0)	(41)		
2007	$24	$0	$24	-$8	-25%	$62	$0	$62	$49	360%
	(59)	(0)	(59)			(89)	(0)	(89)		
2009	$224	$0	$224	$200	838%	$219	$0	$219	$156	251%
	(726)	(0)	(726)			(369)	(0)	(369)		
2011	$31	$0	$31	-$193	-86%	$67	$0	$67	-$151	-69%
	(57)	(0)	(57)			(169)	(0)	(169)		
2013	$28	$51	$78	$47	150%	$238	$43	$281	$214	318%
	(88)	(73)	(152)			(398)	(41)	(429)		

Always Rent (274)										
1999	$22	$22	$44	$0	0%	$234	$94	$328	$0	0%
	(89)	(40)	(114)			(684)	(138)	(747)		
2001	$25	$24	$49	$5	11%	$240	$116	$356	$28	8%
	(88)	(42)	(116)			(749)	(165)	(821)		
2003	$40	$29	$70	$21	43%	$277	$137	$414	$59	16%
	(226)	(50)	(248)			(847)	(181)	(932)		
2005	$48	$36	$84	$15	21%	$305	$175	$480	$66	16%
	(202)	(64)	(234)			(636)	(231)	(770)		
2007	$50	$50	$101	$16	19%	$420	$194	$615	$134	28%
	(251)	(119)	(331)			(1204)	(242)	(1308)		
2009	$50	$35	$85	-$16	-16%	$387	$158	$545	-$69	-11%
	(299)	(73)	(328)			(1117)	(216)	(1230)		
2011	$31	$34	$65	-$20	-24%	$401	$148	$550	$4	1%
	(150)	(73)	(188)			(1051)	(208)	(1162)		
2013	$53	$32	$85	$20	32%	$408	$149	$556	$7	1%
	(282)	(60)	(310)			(974)	(201)	(1093)		
Note: standard deviations in parentheses below										

Table 7 Correlations with Wealth	
Variable	**Correlation**
Age & Gender	
Age	0.178
Male	0.104
Cohort	
2001	-0.020
2003	-0.017
2005	-0.013
2007	-0.011
2009	-0.005
2011	-0.005
2013	-0.006
Education	
Less than HS	-0.058
Graduated HS	-0.078
Some College	-0.023
College Degree or More	0.155
Family Status	
Married	0.094
Divorced	-0.060
Single	-0.063
Children	-0.071
Housing	
Total Years Owned	0.152
Whether Transitioned	-0.047
Income	0.404
Race/Ethnicity	
White	0.156
Black	-0.139
Asian	0.018
Hispanic	-0.058
Other Race	-0.013
Region	
Northeast	0.029
North Central	-0.013
South	-0.045
West	0.043

Table 8 OLS Regression with the Dependent Variable is Total Wealth (in logs)

Variables	Coefficients	Variables	Coefficients	Variables	Coefficients
Total Years Owned (tot)	0.183***	Married	0.141**	Northeast	0.104**
	(0.004)		(0.066)		(0.052)
Age	0.0237***	Divorced	-0.150**	South	0.0534
	(0.002)		(0.064)		(0.043)
Graduated HS	0.273***	Children	0.0616	West	0.346***
	(0.058)		(0.038)		(0.050)
Some College	0.305***	Transition	0.049	Rural	0.0468
	(0.064)		(0.032)		(0.095)
Graduated College	0.432***	Asian	-0.0785	Midsize	-0.107***
	(0.059)		(0.132)		(0.039)
Male	0.0715	Black	-0.315***	Moved	-0.319***
	(0.066)		(0.045)		(0.046)
Inc1	-0.680***	Hispanic	-0.151*	Employed	0.191***
	(0.064)		(0.084)		(0.047)
Inc2	-0.633***	Other Race	-0.0202	1999 Wealth (in logs)	0.335***
	(0.052)		(0.129)		(0.007)
Inc3	-0.538***				
	(0.048)				
Observations	17,531				
R-squared	0.492				

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

Notes: (i) Standard errors in parentheses (ii) Survey years, cohorts, and intercept included in model (iii) Left out variables: Less than HS, Inc4, Single, White, North Central, Urban

Table 9 Specification of the *Ownership* Variable in Models 1 to 5			
***Ownership* specified as**	**Definition**	**Possible Values**	**Included in which models?**
Years_own	Cumulative years of ownership	2, 4, 6, 8, 10, 12, 14	(1), (4)
Length	Dummy variables for each possible length of ownership		(2)
Own	Whether household owns home in given year	1 if household owns home; 0 otherwise	(3), (5)

Table 10 Dependent Variable is Total Wealth (in logs)				
	(1)	(2)		(3)
Ownership specified as	Years_own	Length		Own
		Inc1 * Length	Inc_other * Length	
VARIABLES				
Inc1 * *Ownership*	0.0741***			1.957***
	(0.027)			(0.194)
Inc_other* *Ownership*	0.101***			2.008***
	(0.020)			(0.189)
Two		2.142***	1.967***	
		(0.236)	(0.216)	
Four		2.079***	1.859***	
		(0.259)	(0.233)	
Six		2.221***	1.887***	
		(0.298)	(0.248)	
Eight		1.563***	2.342***	
		(0.318)	(0.270)	
Ten		1.782***	2.247***	
		(0.389)	(0.289)	
Twelve		1.619***	2.296***	
		(0.459)	(0.312)	
Fourteen		0.305	2.746***	
		(0.712)	(0.384)	
Bpurchase	-0.518***	0.435**		0.338**
	(0.150)	(0.171)		(0.150)
Observations	5,112	5,112		5,112
R-squared	0.045	0.077		0.099
*** p<0.01, ** p<0.05, * p<0.1				
Notes: (i) Standard errors in parentheses (ii) Survey year and intercept included in all models (iii) 639 household observations in each of the eight survey years				

Table 11 Dependent Variable is Total Wealth (in logs)				
	(4)		(5)	
Ownership specified as	Years_own		Own	
Cohort	Years_own * Cohort * Inc1	Years_own * Cohort * Inc_other	Own * Cohort * Inc1	Own * Cohort * Inc_other
2001	-0.108**	0.0845***	1.433***	2.135***
	(0.043)	(0.023)	(0.523)	(0.362)
2003	0.142***	0.129***	2.412***	1.928***
	(0.041)	(0.031)	(0.366)	(0.292)
2005	0.109**	0.340***	1.215***	2.634***
	(0.053)	(0.056)	(0.338)	(0.377)
2007	0.249***	-0.0338	1.721***	0.606
	(0.072)	(0.078)	(0.386)	(0.407)
2009	0.680***	0.242**	3.541***	1.452***
	(0.144)	(0.101)	(0.602)	(0.444)
2011	0.959***	1.115***	2.791***	3.879***
	(0.214)	(0.235)	(0.634)	(0.718)
2013	1.099***	1.923***	2.151***	3.799***
	(0.337)	(0.510)	(0.668)	(1.013)
Bpurchase	-0.483***		0.396**	
	(0.149)		(0.197)	
Observations	5,112		5,112	
R-squared	0.071		0.106	
*** p<0.01, ** p<0.05, * p<0.1				
Notes: (i) Standard errors in parentheses (ii) Survey year and intercept included in all models (iii) 639 household observations in each of the eight survey years				

Table 12 Dependent Variable is Total Wealth				
	(1)	(2)		(3)
Ownership specified as	Years_own	Length		Own
		Length * Inc1	Length * Inc_other	
VARIABLES				
Inc1 * *Ownership*	-0.902			20.26
	(3.549)			(25.62)
Inc_other * *Ownership*	12.11***			113.2***
	(2.613)			(24.90)
Two		51.59*	56.13**	
		-(31.150)	(28.530)	
Four		39.73	142.9***	
		(34.140)	(30.690)	
Six		34.34	148.0***	
		(39.310)	(32.750)	
Eight		18.01	179.4***	
		(41.950)	(35.580)	
Ten		4.816	174.7***	
		(51.310)	(38.030)	
Twelve		37.66	155.9***	
		(60.510)	(41.070)	
Fourteen		10.39	182.1***	
		(93.850)	(50.610)	
Bpurchase	-28.77	4.111		-5.136
	(19.500)	(22.470)		(22.15)
Observations	5,112	5,112		5,112
R-squared	0.020	0.024		0.022
*** p<0.01, ** p<0.05, * p<0.1				
Notes: (i) Standard errors in parentheses (ii) Survey year and intercept included in all models (iii) 639 household observations in each of the eight survey years				

Table 13 Dependent Variable is Total Wealth				
	(4)		(5)	
Ownership specified as	Years_own		Own	
Cohort	Years_own * Cohort * Inc1	Years_own * Cohort * Inc_other	Own * Cohort * Inc1	Own * Cohort * Inc_other
2001	-7.279	14.32***	53.30	181.4***
	(5.652)	(3.049)	(69.17)	(47.87)
2003	4.32	8.382**	50.42	151.2***
	(5.341)	(4.066)	(48.44)	(38.67)
2005	-5.568	17.45**	-32.12	99.12**
	(6.960)	(7.366)	(44.73)	(49.84)
2007	7.031	5.065	50.16	15.81
	(9.507)	(10.240)	(51.11)	(53.85)
2009	13.78	6.069	61.22	42.90
	(18.890)	(13.260)	(79.65)	(58.72)
2011	32.82	59.93*	91.12	202.2**
	(28.130)	(30.960)	(83.89)	(94.91)
2013	24.29	125.1*	36.66	238.2*
	(44.300)	(67.030)	(88.32)	(133.9)
Bpurchase	-27.08		16.82	
	(19.530)		(26.11)	
Observations	5,112		5,112	
R-squared	0.024		0.023	
*** p<0.01, ** p<0.05, * p<0.1				
Notes: (i) Standard errors in parentheses (ii) Survey year and intercept included in all models (iii) 639 household observations in each of the eight survey years				

Table 14 Dependent Variable is Non-home-equity Wealth (in logs)				
	(1)	(2)		(3)
Ownership specified as	Years_own	Length		Own
		Length * Inc1	Length * Inc_other	
VARIABLES				
Inc1 * *Ownership*	-0.00958			0.0934
	(0.027)			(0.196)
Inc_other *Ownership*	0.0694***			0.595***
	(0.020)			(0.190)
Two		0.152	0.623***	
		(0.238)	(0.218)	
Four		0.249	0.432*	
		(0.261)	(0.234)	
Six		0.275	0.414*	
		(0.300)	(0.250)	
Eight		0.31	1.105***	
		(0.320)	(0.272)	
Ten		-0.228	0.930***	
		(0.392)	(0.290)	
Twelve		0.0191	1.022***	
		(0.462)	(0.314)	
Fourteen		-0.549	1.191***	
		(0.717)	(0.387)	
Bpurchase	0.269*	0.436**		0.382**
	(0.149)	(0.172)		(0.169)
Observations	5,112	5,112		5,112
R-squared	0.01	0.013		0.009
*** p<0.01, ** p<0.05, * p<0.1				
Notes: (i) Standard errors in parentheses (ii) Survey year and intercept included in all models (iii) 639 household observations in each of the eight survey years				

Table 15 Dependent Variable is Non-home-equity Wealth				
	(1)	(2)		(3)
Ownership specified as	Years_own	Length		Own
		Length * Inc1	Length * Inc_other	
VARIABLES				
Inc1 * *Ownership*	-3.171			-23.63
	(3.464)			(25.02)
Inc_other **Ownership*	6.843***			34.31
	(2.551)			(24.32)
Two		1.587	-1.498	
		(30.450)	(27.890)	
Four		-10.73	54.28*	
		(33.370)	(30.000)	
Six		-20.39	45.3	
		(38.430)	(32.020)	
Eight		-24.14	83.85**	
		(41.020)	(34.790)	
Ten		-46.91	70.64*	
		(50.160)	(37.180)	
Twelve		-15.95	78.07*	
		(59.160)	(40.150)	
Fourteen		-24.39	73.25	
		(91.760)	(49.480)	
Bpurchase	1.681	4.2		-1.859
	(19.040)	(21.970)		(21.62)
Observations	5,112	5,112		5,112
R-squared	0.007	0.008		0.005
*** p<0.01, ** p<0.05, * p<0.1				
Notes: (i) Standard errors in parentheses (ii) Survey year and intercept included in all models (iii) 639 household observations in each of the eight survey years				

Table 16 The Transition from Own to Rent	
	Total Wealth (in logs)
VARIABLES	
Years_own	0.111***
	(0.017)
Own to Rent * Inc1	-1.306***
	(0.347)
Own to Rent * Inc_other	-0.595*
	(0.324)
Bswitch	1.528***
	(0.241)
Observations	5,112
R-squared	0.057
*** p<0.01, ** p<0.05, * p<0.1	
Notes: (i) Standard errors in parentheses (ii) Survey year and intercept included in all models (iii) 639 household observations in each of the eight survey years	

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