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Andrew Haughwout
Richard Peach
Joseph Tracy

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Abstract

After rising for a decade, the U.S. homeownership rate peaked at 69 percent in the third quarter of 2006. Over the next two and a half years, as home prices fell in many parts of the country and the unemployment rate rose sharply, the homeownership rate declined by 1.7 percentage points. An important question is, how much more will this rate decline over the current economic downturn? To address this question, we propose the concept of the “homeownership gap” as a gauge of downward pressure on the homeownership rate. We define the homeownership gap as the difference between the “official” homeownership rate and a recomputed rate that excludes owners who are in a negative equity position, meaning that the value of their houses is less than their outstanding mortgage balance. Our estimate of this gap suggests that the official homeownership rate will likely experience significant downward pressure in the coming years.

Key words: homeownership, mortgages

Haughwout: Federal Reserve Bank of New York (e-mail: andrew.haughwout@ny.frb.org). Peach: Federal Reserve Bank of New York (e-mail: richard.peach@ny.frb.org). Tracy: Federal Reserve Bank of New York (e-mail: joseph.tracy@ny.frb.org). Diego Aragon and Ebiere Okah provided excellent research assistance. The authors are grateful for excellent comments from Daniel Cooper, Charles Freeman, Marvin Goodfriend, and Joseph Gyourko. The views expressed in this paper are those of the authors and do not necessarily reflect the position of the Federal Reserve Bank of New York or the Federal Reserve System.

Introduction

Homeownership is often thought of as an integral part of the American dream, and encouraging homeownership has historically been an important feature of U.S. public policy. Figure 1 provides a time series of the aggregate homeownership rate published by the US Bureau of the Census.¹ After rising for a decade, the homeownership rate peaked at 69 percent in the third quarter of 2006. Over the next three years, as home prices declined in many parts of the country and the unemployment rate rose sharply, the homeownership rate declined by 1.7 percentage points to its current level of 67.3 percent – a level last seen in the second quarter of 2000. The current decline in the homeownership rate is approaching in magnitude the 2.3 percentage point decline observed in the early 1980s.

The collapse of the housing boom with the concomitant increase in unemployment, decline in house prices, and rise in foreclosures has exerted downward pressure on the homeownership rate. Foreclosures put downward pressure on the homeownership rate to the extent that the household which loses its home to foreclosure reverts to renting and that the purchaser of the foreclosed property is not a first time homebuyer. An question of broad interest is how large will the ultimate decline in the homeownership rate be over what has turned out to be the most severe economic downturn since the Great Depression of the 1930s? While this question cannot be answered with great precision, it would be helpful to have a gauge of the ongoing downward pressure on the homeownership rate over the next several years.

In this paper, we explore the economics of homeownership in more detail and introduce the notion of a “homeownership gap” as a useful guide to the likely decline in the homeownership rate. We begin by describing the public institutions that are designed to support the purchase of a home, and the logic behind these policy choices. We then turn to a discussion of how the official statistics on homeownership can obscure an important dimension of the ownership experience: owners’ equity. We present an alternative measure of homeownership that is particularly relevant when house prices are declining, as they have been recently in many markets. Homeownership under our alternative measure is substantially below the official rate, a fact which may have important implications for the future path of the homeownership rate and for household saving behavior.

¹ The Census bureau tabulates quarterly homeownership rates on a national, state and metropolitan statistical areas (MSAs) basis. The measured homeownership rate is the ratio of the number of owner-occupied housing units divided by the total number of occupied housing units. Second homes and vacation homes are excluded from the calculation. In addition, properties that are currently vacant are also excluded regardless of whether the property was previously owned or rented. See <http://www.census.gov/hhes/www/housing/hvs/annual08/ann08ind.html>

Homeownership and public policy

Since at least as far back as President Roosevelt's New Deal, the federal, state, and local governments have enacted policies to encourage people to become and remain homeowners. For example, in response to the high level of mortgage foreclosures experienced during the Great Depression, the Federal Housing Administration (FHA) and the Federal National Mortgage Association were created to establish the 30-year, fixed-rate, fully amortizing mortgage as the standard mortgage product. The FHA insured those mortgages, thus limiting expected losses for investors. The federal thrift charter created a financial institution devoted to providing mortgage credit, and the Federal Home Loan Bank System was created to help thrift institutions manage the problems associated with "borrowing short and lending long." After World War II, the GI Bill established the Veterans Administration (VA) mortgage program which provides veterans with high loan-to-value mortgage loans that were insured by the federal government. In the late 1960s and early 1970s, as thrift institutions came under stress from rising inflation, the government played a central role in the creation of the market for mortgage-backed securities (MBS). The Government National Mortgage Association (GNMA) began issuing federally-guaranteed mortgage passthrough securities backed by FHA and VA loans in 1970. Soon after, the Federal Home Loan Mortgage Corporation (Freddie Mac) began issuing mortgage participation certificates backed by conventional mortgages. Ultimately, the bulk of the flow of new mortgage loans were securitized by the government-sponsored enterprises (Fannie Mae and Freddie Mac) due in large part to the implicit federal guarantee on the MBS and debt that these institutions issued.²

The tax code is another channel through which homeownership is encouraged. For homeowners, the gross imputed income from their home is not subject to tax while the two major expenses of owning a home—mortgage interest and property taxes—are allowable itemized deductions.³ Moreover, most homeowners are now effectively exempt from taxes on capital gains realized on the sale of their home(s). Another feature of the tax code intended to spur homeownership is the ability of state and local governments to issue tax-exempt mortgage revenue bonds.

The benefits of homeownership

The case for government support for homeownership rests in large part on the view that ownership is an effective mechanism for aligning incentives such that economically efficient actions are taken. Because owners have a financial interest in the property, they have incentives

² See McCarthy and Peach (2002).

³ See Peach and Kokus (1992) and Jaffee and Quigley (2007). OMB does not estimate the cost of the implicit income exclusion to the Treasury, but Jaffee and Quigley estimate it at \$30 billion (2006 dollars) in FY 2005. The two expense provisions combined are expected to cost the Treasury approximately \$138 billion in fiscal year 2010 [OMB, FY 2010 Budget, Analytical Perspectives, Table 19-1].

to take actions that will maintain or increase its value. Some of these actions, like fixing a leaky roof, are closely related to the house itself. Others, like investing resources in the betterment of the neighborhood and the community, create what economists call “positive externalities” because they have beneficial effects more generally in the local area. Owners may take these actions because they have an equity stake in the house and therefore in the community.

Homeowners, unlike renters, typically receive 100 percent of any increase or decrease in the value of the houses they are living in. This creates incentives for homeowners to act in an economically efficient manner since their actions are reflected – or “capitalized” – in their home prices. Fischel (2001) calls this the “homevoter hypothesis.” These capitalization effects have been empirically documented along a number of dimensions. Holding constant the tax costs of publicly supported education, houses located in school districts that provide better educational outcomes sell at a premium (Black (1999), Barrow & Rouse (2004)).⁴ Capitalization can also lead to lower house prices. Localities where public sector unions appear to have negotiated large wage premia tend to have lower house values (Gyourko & Tracy (1989a,b)). The fact that these community-level characteristics affect house prices provides incentives for homeowners to support efficient public policies and projects in much the same way a corporation’s shareholders will support private projects that have a positive net present value for the firm. In the case of rental properties (or negative equity homeowners), the landlord (or lender) receives the benefits of gains in asset values up to the value of the mortgage. In both cases, an agency problem arises from the fact that the beneficiary of gains in the value of the house accrue to someone other than the occupant of the house, who is the one in a position to take actions to maximize this value through maintenance, public participation, etc.

Is there evidence that supports the homevoter hypothesis – that is, that capitalization effects actually induce homeowners to act in the best interests of the property and the community? Maintenance and repair is an important offset to the depreciation of a house over time. The typical homeowner expends several thousand dollars a year in maintenance (Gyourko & Tracy (2006), Harding *et al* (2007)). Before the current housing crisis, relatively few households ever found themselves in a “negative equity” position – that is, where the current value of the house is less than the mortgage balance. However, there have been regional house price cycles that have allowed researchers to study the effect of negative equity on homeowner behavior. Gyourko and Saiz (2004) document that homeowners in negative equity situations tend to under maintain their property relative to other homeowners. Also consistent with the homevoter hypothesis, researchers have found that elderly households without school age children still support local education bond issues. While altruism could be a factor, the most likely explanation appears to be the belief that supporting local schools will improve the value of

⁴ Black (1999) finds this capitalization of better schooling outcomes only for those types of houses that would be attractive to families with school age children. Capitalization of better local public services requires some inelasticity in the local supply of housing. See Hilber & Mayer (2009).

their houses (Bergstrom *et al* (1982), Hilber & Mayer (2009)).⁵ Green and White (1997) find that children of homeowners are more likely to finish school and less likely to have children as teenagers than children of renters. Finally, homeowners have a higher voting rate in local elections and are more aware of local issues and the identities of state and local civic leaders (see DiPasquale & Glaeser (1999)).⁶

While these studies all point in the direction of social benefits from homeownership, it is important to point out that other research is far less conclusive. Recent work by Engelhardt *et al* (2009) indicates that the measured benefits from homeownership may result from the fact that people who choose to buy homes are different from those who choose to rent, in that they are also more likely to value investing in social capital. They conclude, for example, that the estimates described above “overstate the impact of homeownership on political involvement and that the true effect . . . is zero or negative,” at least for their small sample of low-income households. While more research is warranted here, existing public support for homeownership implies that policymakers believe that its social benefits are substantial.

Equity and the homeownership gap

The important role of house price capitalization for generating incentives for homeowners to pursue and support economically efficient actions depends importantly on the homeowner having positive equity in the house. For a homeowner in a negative equity position, this capitalization effect is likely diminished if not completely shut off. Unless the homeowner either expects to be back in positive equity by the time he/she moves or intends to use other assets to pay off the loan in full upon sale of the property, changes in the value of the house only affect returns to the lender/investor and not to the homeowner.⁷ This holds in particular for homeowners in states where mortgages are “nonrecourse” – that is, the lender/investor can not pursue the homeowner for any shortfall between the value of the house and the value of the loan – and, in general, even in recourse states since few borrowers have additional financial assets for a lender/investor to pursue. A consequence of negative equity, then, is that the homeowner may face zero percent rather than 100 percent of any changes in the value of the property.

⁵ For example, elderly voters are less likely to support state education initiatives than local education initiatives. Capitalization effects are likely to be stronger for local as compared to state initiatives. See Brunner & Balsdon (2004) and Harris *et al* (2001).

⁶ Recognition that property ownership carries with it particular interests and debates over its role in democratic institutions are as old as the republic itself. In Federalist 10, for example, Madison writes, “Those who hold and those who are without property have ever formed distinct interests in society. Those who are creditors, and those who are debtors, fall under a like discrimination.” For detailed discussion of the debate over extending the franchise to non-property owners, see Wilentz (2005).

⁷ The extent to which the capitalization effect is shut off may be a function of the magnitude of the negative equity position.

If having a positive equity stake in one's house is critical to the positive externalities from homeownership, then this suggests an alternative way to measure the homeownership rate. We define the "effective" homeownership rate as the number of owner-occupied housing units where the household has a positive equity stake in the property divided by the total number of occupied housing units. In this measure of homeownership, negative equity owners are treated as effectively renters – hence the term the "effective" homeownership rate. Owners with negative equity create a gap between the official or measured homeownership rate and the effective homeownership rate. We define this gap as the "homeownership gap." While home buyers typically start out their ownership experience with positive equity which tends to grow over time as a result of debt amortization – the reduction in mortgage balances that accompanies scheduled payments – and increases in house prices, there have been in the past several episodes of home price declines at the regional level. This suggests that a homeownership gap has likely existed before. However, given the severity of the decline in home prices in many markets and the breadth of decline across markets, the current homeownership gap is likely to be unprecedented for the post WWII period.⁸

Since the homeownership gap reflects the extent of negative equity in the housing market, it also is a gauge of the potential downward pressure being exerted on the measured homeownership rate. Assuming that house prices do not appreciate over the next several years, then unless negative equity households can resave to cover the negative equity, the transactions costs of selling their home, and a new downpayment, they very likely will convert officially to renters when they move out of their current house.⁹ We discuss the details of this process below; the text box contains an example. As these transitions from owning to renting take place, the homeownership gap will tend to close with the measured homeownership rate declining to the effective rate.¹⁰ In this sense, the effective homeownership rate is a leading indicator for the measured homeownership rate. Of course, current renters may end up purchasing some of these negative equity homes that come onto the market, thereby dampening the net effect on the measured homeownership rate.

Measuring the extent of negative equity

To construct the effective homeownership rate we need to estimate the extent of negative equity across local housing markets. We use the methodology discussed in Haughwout & Okah

⁸ While it is unprecedented in the post-war U.S. housing market, the situation we describe is analogous to the developing country "debt overhang" problem, which received extensive analysis in the late 1980s. See Sachs (1990) for discussion.

⁹ If the household either defaults on the mortgage or negotiates a short-sale with the lender, then the damage to the household's credit will likely prevent them from buying a house for several years even if they managed to resave a downpayment.

¹⁰ Public policy such as mortgage modification efforts and the first time home buyer tax credit can affect the speed and nature of the convergence in the homeownership gap. See discussion in text box.

(2009). We start with loan level data on non-prime mortgages from First America LoanPerformance (LP) and prime mortgages from Lender Processing Services (LPS) Applied Analytics (formerly McDash). These data indicate the loan-to-value (LTV) for each mortgage at origination.¹¹ We update the loan-to-value ratio by adjusting the loan amount(s) to account for debt amortization and to reflect changes in the value of the house as indicated by a repeat-sale price index for the MSA or the state if the property is located outside an MSA.¹² The house price data is updated quarterly, allowing us to construct a quarterly estimate of the current LTV for every mortgage in our data. We restrict our equity calculations to owner-occupied primary residences since these are the homes captured in numerator of the Census Bureau's homeownership rate. Given this estimate of the current LTV, we need to decide what level of the current LTV is associated with an "owner" behaving more like a renter. The convention is to say that a mortgage is in negative equity if the current LTV exceeds 100. As we noted earlier, the key issue is what value of the current LTV is associated with a household likely not receiving any money back when they move. Therefore, some additional factors need to be considered. First, it is important to note that there are significant transaction costs associated with selling a house.¹³ We assume that these costs amount to six percent of the sale price, indicating that the LTV at the date of the sale would need to be no higher than 94 for the household to receive any money from the sale. A second consideration is that, given that the current LTV is above 94, how long would it take to bring it back down to 94 through scheduled debt amortization, assuming no further net changes in the price of the home.¹⁴ In the early years of a mortgage, the process of debt amortization reduces the LTV only slowly through time. Table 1 provides several percentiles of the distribution of durations of time for debt amortization to bring the LTV back down to 94 for the negative equity mortgages in our data. The distribution reflects both the differing magnitudes of negative equity and the remaining payment periods for mortgages in our data. For mortgages where the current LTV is greater than 100, ninety percent of the mortgages will take longer than five years to have the scheduled debt pay down process generate a LTV of 94. The median mortgage in this group will take almost ten years for debt reduction to bring the LTV down to 94. As we look at mortgages with even higher current LTVs, the break-even durations increase quite significantly.

For the purpose of constructing our alternative homeownership rate, we conclude that the incentives to behave like an owner are very weak if the benefits from this behavior require living

¹¹ The LTV is measured as the cumulative value of the mortgage balance across the 1st-lien and any subordinate lien mortgages divided by the value of the house. We only observe subordinate liens for our nonprime mortgages and conditional on the lien being present at the origination of the 1st-lien. If the value of the mortgage(s) equals the value of the house, we set the LTV to equal 100 (rather than a value of 1).

¹² We use the OFHEO/FHFA repeat-sale price indices. A widely cited alternative set of repeat-sale price indices are the S&P CaseShiller indices, which are available for only a small set of MSAs. We use CaseShiller indices for select cities below.

¹³ These include the fees to brokers as well as taxes and transfer fees.

¹⁴ This is consistent with house prices continuing to decline over the next year but then recovering by the sale date.

in the house for more than five years. This suggests that a current LTV of 100 – that is, the standard definition of negative equity – provides a useful demarcation for households that are likely to behave more as renters than owners. Given this definition of a negative equity owner, Figure 2 contrasts our aggregate effective homeownership rate with the Census measured homeownership rate over the period from the first quarter of 2005 to the first quarter of 2009. The effective homeownership rate begins to diverge from the measured homeownership rate in 2006. The homeownership gap widened in 2007 as the pace of house price decline intensified, pulling more households into negative equity. By the end of the first quarter of 2009, the effective homeownership rate had declined to 63.6 percent, creating a homeownership gap of 3.7 percentage points.

The homeownership gap shown in Figure 2 likely underestimates the true homeownership gap for two reasons. First, the OFHEO/FHFA (hereafter FHFA) repeat-sale price indices that we use to calculate the updated LTVs have declined considerably less from their recent peaks than have competing home price indices. The methodology used by FHFA to construct these price indices involves measuring price changes for houses financed with prime, conforming mortgages purchased by the housing GSEs at two or more points in time. However, for many metropolitan areas in the hardest hit housing markets, non-prime mortgages rose in importance during the first half of this decade, and more recently foreclosures have become an important component of overall housing transactions. The S&P CaseShiller (hereafter CaseShiller) repeat-sale price indices, in contrast, cover homes financed with non-prime as well as prime loans and cover most foreclosure sales.¹⁵ The second reason that this estimate of the homeownership gap is likely an understatement is that the coverage of subordinate liens in our data base is most likely well below the actual for reasons cited above.

To illustrate this point, we include in Figure 2 the implied effective homeownership rate based on a recent estimate of aggregate negative equity from FirstAmerican Core Logic.¹⁶ Their estimate reflects the current market value of each property derived from their Automated Valuation Models, which more closely tracks the CaseShiller house price index as compared to the FHFA house price index. In addition, FirstAmerican Core Logic has a more complete set of information on subordinate liens to use in calculating the cumulative LTV. We have adjusted their estimate to match our methodology of restricting attention to primary residences of owner-occupied houses. The adjusted FirstAmerican Core Logic estimate is that 13.5 million owner-occupied primary residences were in negative equity as of the end of the first quarter of 2009. This compares to our estimate of 4.1 million. The implied homeownership gap based on the FirstAmerican Core Logic data is 11.9 percentage points. Taken together these estimates of the homeownership gap imply that a significant downward adjustment in the measured homeownership rate is possible over the coming years.

¹⁵ Specifically, the CaseShiller methodology includes all “arms-length” housing transactions.

¹⁶ For details, see

http://www.loanperformance.com/infocenter/library/FACL%20Negative%20Equity_final_081309.pdf

We can also compare the sensitivity of the homeownership gap estimates to the choice of the house price index by comparing homeownership gaps based on FHFA and on CaseShiller house price indices for the 20 MSAs where both sets of indices are available. Figure 3 shows measured and effective homeownership rates for four cities located in the housing boom/bust states of Arizona, California, Florida and Nevada. Two points jump out from this figure. The first is that the homeownership gaps measured from the FHFA price indices are much larger for these four cities than for the country as a whole. The smallest homeownership gap among the four metro areas shown in Figure 3 is for Los Angeles which at 9.1 percent is more than *double* the size of the aggregate homeownership gap. The second is that, consistent with the evidence shown in Figure 2 at the national level, the MSA homeownership gaps produced using the CaseShiller house price indices are *much* larger than those produced using the FHFA house price indices.

Implications of the Homeownership Gap

Earlier we argued that the homeownership gap is a gauge of the pressure currently being exerted on the measured homeownership rate. Precisely how the gap will close going forward cannot be known with certainty. As discussed earlier, a foreclosure will likely result either in the former occupants of the house transitioning from owning to renting or combining with another household. Both outcomes will reduce the national measured homeownership rate. However, if the new owner of the foreclosed property was formerly a renter, the net effect on the measured homeownership rate would be a wash. We regard it as unlikely that all foreclosed homes end up being purchased by renters.

With this caveat in mind, an important feature of the CaseShiller-based effective homeownership rates for the four cities shown in Figure 3 is that they are all under fifty percent. That is, the median voter in these metropolitan areas is no longer a household with strong financial incentives to behave as an owner. Depending on the distribution of negative equity households across municipalities within these metropolitan areas, civic involvement and commitment may be adversely impacted by this development. With negative equity comes enhanced risk of housing vacancies, which may also have important implications for local law enforcement.¹⁷ Low effective homeownership rates are not restricted to a few MSAs. Table 2 provides a comparison of the housing gap estimates for the full set of 20 MSAs. The CaseShiller effective homeownership rates are below fifty percent for 10 of the 20 MSAs.

The large homeownership gaps that have emerged during this housing market crisis will likely have significant effects on the macro economy as well. One potential important effect is the impact on the national saving rate. Households typically own several homes over their lifetime. In order to move from renting to owning, the household needs to save up a sufficient

¹⁷ See for example Millman (2009).

downpayment on their first house. As family income and family size grows, the household is likely to trade-up to a larger and nicer home. To trade-up, the household needs to have accumulated the larger required downpayment. Normally, three factors contribute to this trade-up downpayment: the initial downpayment, debt amortization, and house price appreciation.

For households caught in a negative equity situation, the initial downpayment has been wiped out. Consequently, as discussed above, the household will need to resave a downpayment and the ability to pay off its current mortgage in order to remain a homeowner when it moves out of its current residence. Engelhardt (1996) argued that this creates an asymmetric impact of house price changes on household consumption – households are more likely to save to offset falling house prices than they are to spend in response to rising house prices. This savings effect may be more pronounced for younger households who have a stronger motive to remain homeowners.¹⁸

In order to remain homeowners, these households must remain current on their mortgage, pay off any remaining negative equity balances upon sale of their current home, and provide cash to cover transactions costs and a new downpayment. How much sacrifice will this require? A precise answer depends on the likely value of the current and the next house, the lending standards that will be in effect at the time the household wishes to move, and the cost of the transaction. To give a sense of the magnitudes involved, we will assume that the household's "desired" downpayment equals twenty percent of the current value of their existing house, and that transactions costs total six percent of that value.¹⁹

Note that remaining current on the mortgage serves, even absent any house price appreciation, to build the mortgagors' equity position through debt amortization. For each negative equity homeowner in our sample, we can project the reductions in debt balances that result from making the scheduled payments for a given period of time, and incorporate these "savings" into our analysis. If a borrower who is currently in negative equity continues to make payments, this process alone will bring over a third (37%) into a positive equity position within three years, and over half (53%) within five years.²⁰ For these borrowers, their housing equity could serve as part of a down payment on a new home. Those households whose regular debt amortization will not reduce the mortgage balance sufficiently will need to save enough to pay off the current mortgage before buying again.

Table 3 reports the net savings required for the average negative equity household to buy again in five years. These figures are the sum of the amounts required to make a new down

¹⁸ Older households may decide that the reduced consumption today required to resave a downpayment is not worth the benefits of continued homeownership in the future.

¹⁹ This would allow the household to purchase an equivalent valued house with current tight lending standards. This is a conservative assumption given that a new home could be more expensive.

²⁰ Of course, house price appreciation would hasten this process of equity gains, while continued declines would slow it.

payment, to pay all transactions costs, and to pay off (or receive) the difference between the current house price and the mortgage balance at the time of sale. Even accounting for the benefits of debt amortization on the borrower's equity position, the typical household must save over \$1,300 more per month if it wishes to buy again in five years. (See the text box for a detailed example of the calculations underlying Table 3.) Because the numbers of households in negative equity are very large, these figures imply an aggregate annual savings increase of \$66 billion for five years. Personal saving as defined in the National Income and Product Accounts average around \$425 billion (annual rate) over the first three quarters of 2009 for an average personal saving rate of 3.9 percent. All else equal, for these borrowers to remain homeowners under our assumptions, personal saving must rise about 16 percent per year for five years. Alternatively, the personal saving rate would have to rise about 0.6 percentage points.

Since these savings are so large at both the household and aggregate level, it seems unlikely that all of today's negative equity households will be able to remain owners unless they forestall moving for several years. The second row of Table 3 reports similar figures for the "better" half of the negative equity distribution – those with LTVs below 111.6 – whose chances of remaining owners seem more realistic. Even here, however, the average monthly savings requirements (\$708) are quite large.

Several recent articles have concluded that the U.S. personal saving rate is likely to rise sharply over the next several years due to the steep decline of household net worth that has occurred since the middle of 2007.²¹ This conclusion is derived from empirical analysis of the relationship between the personal saving rate and household net worth, as measured by the ratio of household net worth over disposable personal income. For several reasons, it is quite possible that these studies understate the likely future increase in the personal saving rate. First, estimates of the size of the wealth effect based on periods of rising house prices may understate the true magnitude for the reason articulated by Engelhardt (1996) and discussed above. Second, while the most recent decline in household net worth is the largest of the post WWII period in percentage terms, it is also likely to be the most wide spread across households. This is due to the fact that a steep decline in the value of residential real estate has been a major contributor to the decline in the net worth to disposable income ratio, something unique to the current episode. Ownership of financial assets is heavily skewed toward upper income households, although less so than in the past. But for the typical or median household, home equity is the primary source of net worth.²²

Another implication of the large homeownership gap is that household mobility is likely to be significantly reduced until the gap is closed. Negative equity households that are saving for a new downpayment need to delay a move during the period they are rebuilding their savings. Past regional housing cycles suggest that household mobility may fall by as much as a third for

²¹ See for example Hooper and Slok (2009) and Glick and Lansing (2009).

²² See Tracy *et al* (1999).

households in a negative equity position.²³ Recent Census bureau data indicates the number of households moving is at its lowest level since 1962.²⁴ While there are likely many factors currently weighing on household mobility, the prevalence of negative housing equity is likely to be high on the list.

It is difficult to predict with much precision how the homeownership will ultimately affect measured homeownership, savings and mobility. Our analysis suggests that either savings must rise and mobility must fall, or the homeownership gap will close with the measured rate moving down to the effective rate.

Conclusion

The current severe house price cycle, combined with borrowers who had little or no equity at origination of their mortgages, has led to a dramatic rise in homeowners with negative equity and, therefore, a large gap between the measured and effective homeownership rates. In some of the worst hit metropolitan areas, effective homeownership rates are 25 to 45 percentage points below the measured rate. This situation is likely to put downward pressure on future homeownership rates, and has potentially important implications for the maintenance of the housing stock, the stability of neighborhoods, and future household saving behavior.

Public policy has long promoted homeownership, and subsidies for owner-occupants are an important feature of the tax code. But these recent developments present numerous challenges to policymakers both now and in the future. Absent any action, the high saving requirements for remaining an owner make it likely that the current effective homeownership rate will be a predictor of the future measured rate. As households who prefer to own their own homes try to re-accumulate a downpayment, the national saving rate may rise. Reductions in the homeownership rate may create a large set of residents who may be less invested in the long run outlook for their homes and communities. This could yield lower levels of home maintenance and civic participation, as well as more short-sighted decisions in local affairs.

Public policy dealing with mortgage modifications can help to support the homeownership rate by reducing foreclosures and facilitating the process of borrowers in negative equity re-saving for a future downpayment. However, the structure of these modification programs is important for their efficacy in this regard. Programs that encourage principal write-down will do more to support the homeownership rate than those that focus exclusively on the monthly mortgage burden to the borrower, and will allow maintenance of homeownership without producing dramatic declines in consumption. Addressing the problems of negative equity and low effective homeownership rates is most important for those

²³ See for example Ferreira *et al* (2009).

²⁴ For more details see Roberts (2009).

metropolitan areas most hit by house price declines. The current large homeownership gaps and low effective homeownership rates in these housing markets will present challenges in terms of maintaining the positive externalities associated with a high homeownership rate.

Remaining a homeowner requires substantial saving commitment, but mortgage modifications can help

For negative equity borrowers who are already stretched in their current mortgage, but who want to remain owners, saving for a new downpayment may not be feasible. Mortgage modification programs can assist these households, to a degree, by reducing the required monthly mortgage payment, thus freeing up financial resources to fund saving for a new downpayment. But the structure of the modification program is important. Modifications that reduce interest rates alone offer a reduced monthly payment, while those that reduce principal balances allow both reduced monthly cost and additional saving through debt reduction.

To illustrate, consider a household that has a house currently worth \$181,818, as shown in the first column of panel (a) in the table below. The household has a non-prime 30-year fixed rate mortgage at a 7 percent interest rate that was originated two and a half years ago and has a current balance of \$200,000.²⁵ The household's monthly income is \$4,474. The required monthly mortgage payment is \$1,367 and the monthly taxes and insurance are \$333. This gives the household a debt service to income ratio (DTI) of 38 percent, so this household is financially stretched in its current mortgage.

Now assume that the household would like to move in five years, that the value of the house will not change over this time period, and that the household would like to remain an owner. To be able to make a 20 percent downpayment on a house of equivalent value, the household needs to accumulate \$36,364. The household also anticipates that the sale of its current home will result in a 6% transactions cost, or \$10,909. The household is currently in a negative equity position of \$18,182; five years of payments on the original mortgage would reduce its negative equity to \$3,823. In order to be able to sell the house, pay off its mortgage and make a downpayment on a new house, the household must accumulate \$51,096 in savings.

Assuming that they try to save this amount over a five year period and that they earn 1.6% on their savings, the household would have to set aside an additional \$819 per month. This would raise their DTI to 56 percent, which would require a significant reduction in their consumption and is likely to be unsustainable. Even if the household is not stretched in its current payments, say it has a DTI of 28 percent, saving to remain a buyer would push its DTI to a high level (46 percent).²⁶

Consider the benefit to the household if they qualify for one of two loan modification programs. Both programs target a DTI of 31 percent so reduce the monthly payment from \$1,367 to \$1,049. Modification 1 accomplishes this by reducing the interest rate to 4.8% and extending

²⁵ In this example, then, the current LTV is 110, very close to the median LTV (111) among negative equity mortgages in 2009Q1.

²⁶ This assumes that the household has no other financial assets that it can use to help finance its next purchase.

the mortgage term an additional 30 months, to 30 years. The household remains in a negative equity position, but the lower interest rate allows the household to build equity slightly more quickly, so that after 5 years the remaining mortgage balance will exceed the house value by \$1,312. If the household wants to save for a new downpayment over this five year period, it must accumulate \$48,585, for an effective DTI is 48 percent – lower than the 53 percent without the loan modification, but still quite high.

Now consider the impact of a second modification program which reduces the principal balance to the current value of the house, extends the term by 30 months and reduces the interest rate to bring the DTI to 31 percent. Under this program the principal is reduced by \$18,182 and the new interest rate is 5.6 percent. The new monthly payment is the same as under the first modification program. To save a new downpayment over a five year period would raise the effective DTI under this modification program to 43 percent – lower than the 48 percent under the interest rate only modification program. Even with this lower DTI, this still leaves the household financially stretched.

Modifying for affordability

<u>(a) Mortgages and Modifications</u>	Original	Modification 1	Modification 2
House value	\$ 181,818	\$ 181,818	\$ 181,818
Mortgage Balance	\$ 200,000	\$ 200,000	\$ 181,818
Interest rate	7.0%	4.8%	5.6%
Taxes and Insurance	\$ 333	\$ 333	\$ 333
Mortgage Principal & Interest	\$ 1,367	\$ 1,049	\$ 1,049
Monthly Income	\$ 4,474	\$ 4,474	\$ 4,474
DTI	38%	31%	31%

<u>(b) Saving for a new down payment</u>	Original	Modification 1	Modification 2
Borrower equity after 5 years*	\$ (3,823)	\$ (1,312)	\$ 13,388
Downpayment req'd to buy a house of this price	\$ 36,364	\$ 36,364	\$ 36,364
Transactions costs @ 6%	\$ 10,909	\$ 10,909	\$ 10,909
Savings required to buy again in 5 years	\$ 51,096	\$ 48,585	\$ 33,885
Savings per month (5 years, assuming 1.6% interest rate)	\$ 819	\$ 778	\$ 543
"Full" housing cost to income**	56.3%	48.3%	43.0%

*Assumes no house price growth

** Full housing cost includes both mortgage PITI plus savings required to purchase a new home of equal value in five years

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Table 1. Durations for Debt Amortization to Bring LTV Down to 94

Current LTV	Percentiles				
	10 th	25 th	50 th	75 th	90 th
> 100	70	95	141	187	227
> 105	93	118	158	196	232
> 110	113	138	172	205	236

Note: Durations are in months. Assume constant house prices.

Table 2. MSA Measured and Effective Homeownership Rates

MSA	Measured		Effective		Homeownership Gap	
	Homeownership Rate		Homeownership Rate		Homeownership Gap	
	Peak	Current	OFHEO	Case-Shiller	OFHEO	Case-Shiller
Atlanta	70.8	68.5	68.0	54.1	0.5	14.4
Boston	67.7	64.9	63.5	60.9	1.4	4.0
Charlotte	68.3	66.4	66.3	60.8	0.1	5.6
Chicago	71.3	69.5	67.3	54.7	2.2	14.8
Cleveland	78.6	67.2	66.1	58.8	1.1	8.3
Dallas	64.5	60.1	60.0	52.0	0.1	8.0
Denver	72.0	68.3	68.0	59.7	0.3	8.6
Detroit	78.4	72.6	63.2	42.2	9.4	30.4
Las Vegas	65.0	60.4	23.9	15.6	36.5	44.8
Los Angeles	55.2	50.7	41.6	33.2	9.1	17.5
Miami	71.0	66.9	50.7	41.9	16.2	25.1
Minneapolis	74.8	68.8	65.4	42.9	3.4	25.9
New York	55.9	51.1	49.7	46.9	1.4	4.2
Phoenix	74.9	70.9	58.2	37.4	12.7	33.5
Portland	72.7	61.0	59.3	53.7	1.7	7.2
San Diego	63.3	57.7	43.9	31.6	13.9	26.1
San Francisco	61.7	57.1	48.6	34.7	8.5	22.4
Seattle	65.7	62.7	60.7	54.4	2.0	8.3
Tampa	74.1	68.2	61.2	50.1	7.0	18.1
Washington DC	70.9	67.7	62.1	46.0	5.6	21.7

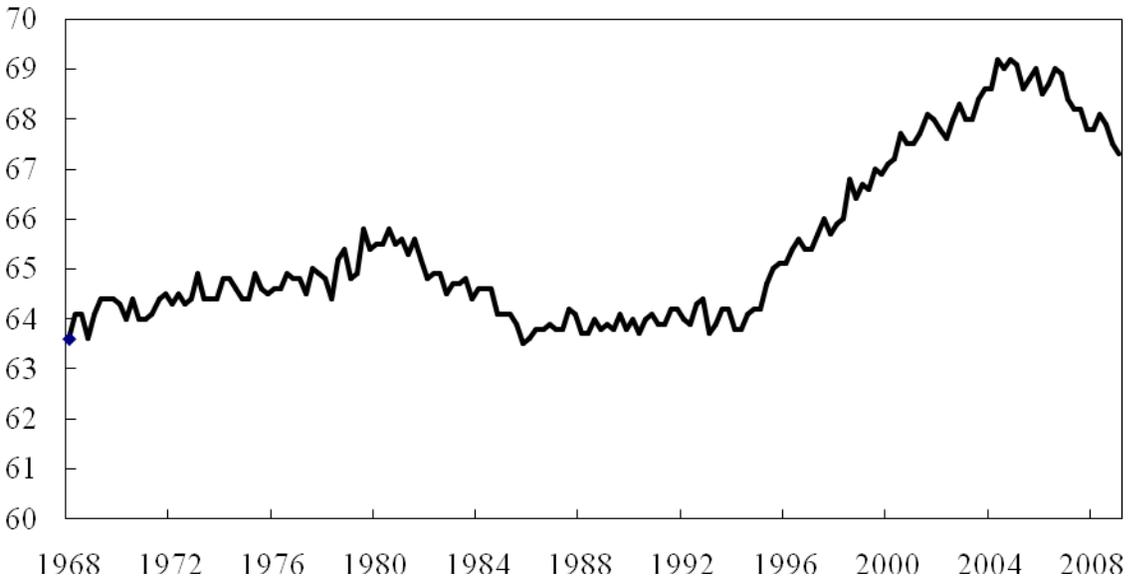
Notes: Current Population Survey data, LPS Applied Analytics and LP data; authors calculations

Table 3. Savings required to remain an owner if moving in five years

	Monthly \$ per household	Annual total (\$ billion)	Grand total (\$ billion)
All borrowers with LTV>100	\$ 1,323	\$ 66.6	\$ 203.2
Borrowers with 100<LTV<111.6	708	17.8	54.3

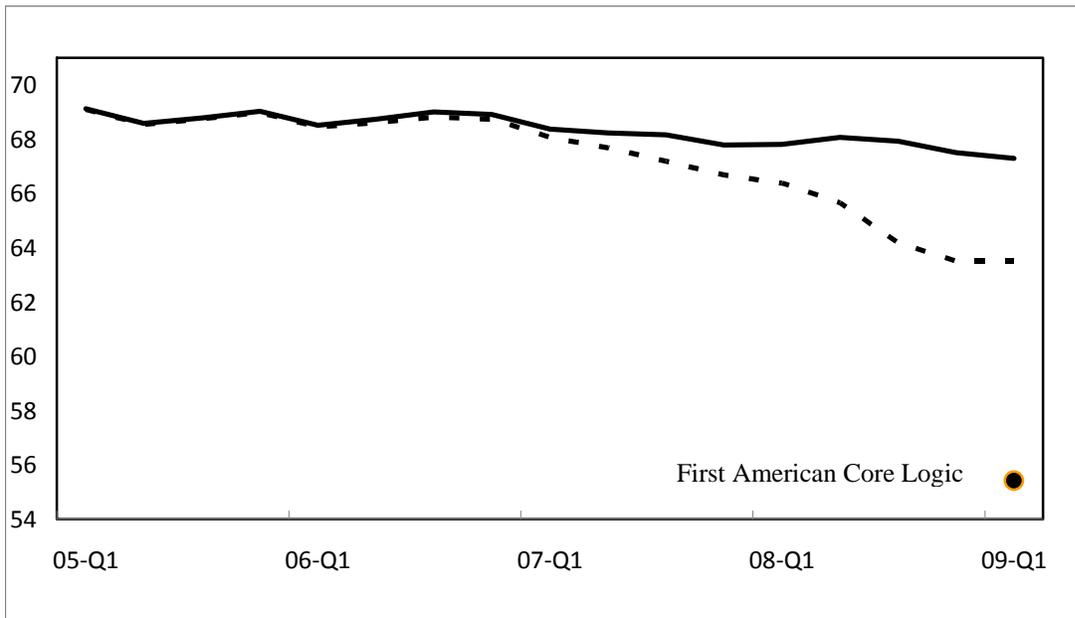
Figure 1. Aggregate Measured Homeownership Rate

Percent



Source: U.S. Census Bureau, Housing and Economic Statistics Division.

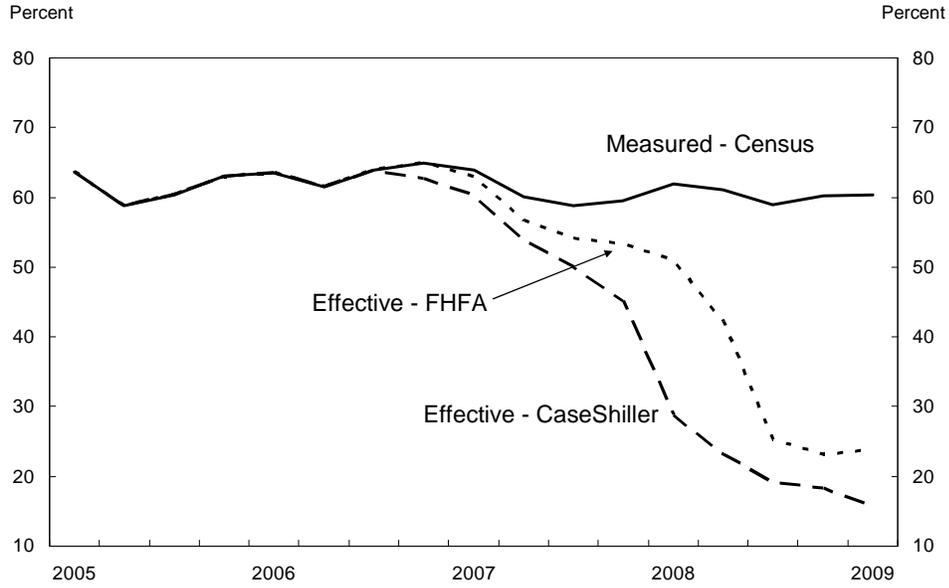
Figure 2. Aggregate Measured and Effective Homeownership Rates



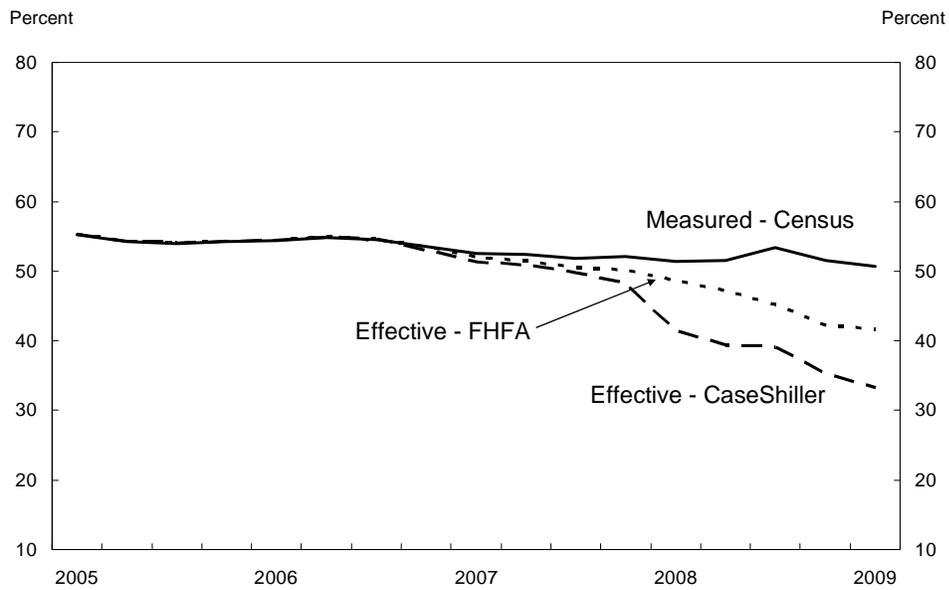
Source: U.S. Census Bureau, LPS Applied Analytics and LP data, authors' calculations

Figure 3. Measured and Effective Homeownership Rates – Selected MSAs

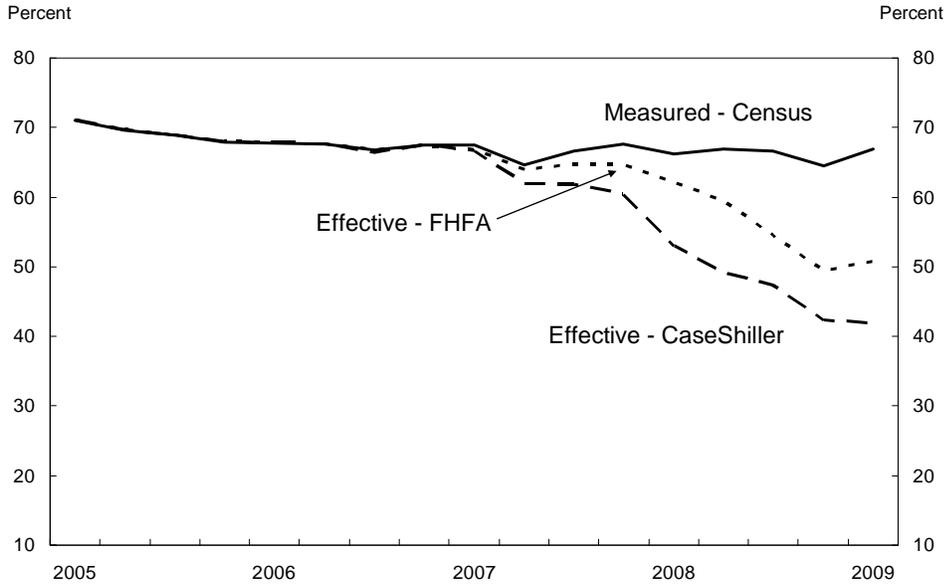
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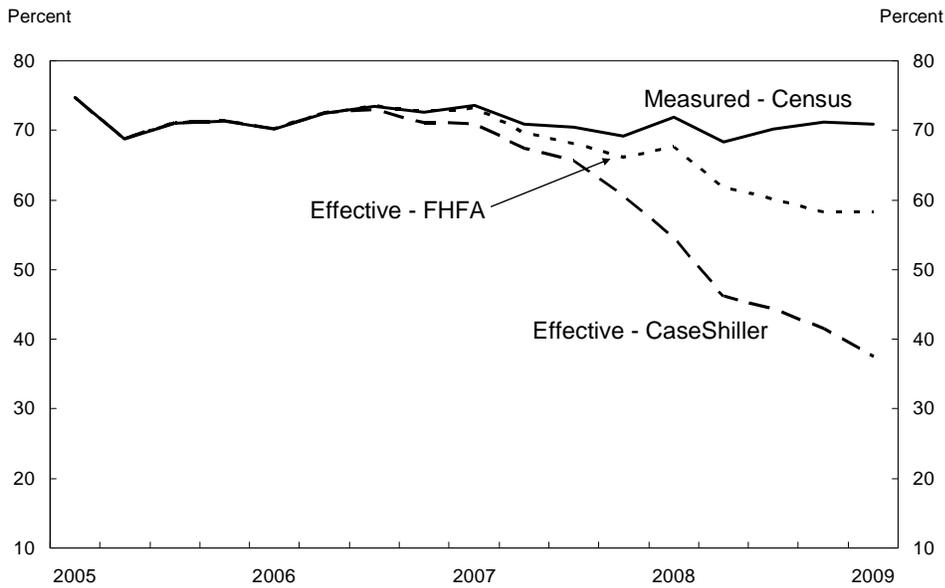
Los Angeles :



Miami:



Phoenix:



Source: Current Population Survey, LPS Applied Analytics and LP data, authors calculations