Joint Center for Housing Studies

Harvard University

The Financial Returns to Low-Income Homeownership

Eric S. Belsky, Nicolas P. Retsinas & Mark Duda

September 2005

W05-9

This paper was prepared for *Affordable Homeownership: Critical Perspectives*,
a symposium held at the University of North Carolina, Chapel Hill on March 6-8, 2003.

Introduction

Efforts to promote low-income homeownership have intensified over the past ten years.[1] Under both regulatory and market pressures, the mortgage finance industry has responded by expanding mortgage credit to low-income borrowers (Apgar et al. 2001). As a result, low-income homeownership increased over the course of the 1990s and the first three years of this decade.

Homeownership is being actively promoted because it is seen as a way to help low-income households build assets.[2] After more than three decades in which poverty policy focused on income support, some poverty analysts and advocates began in the 1990s to espouse strategies designed to help low-income households build wealth, to complement the emphasis on work embodied in the Personal Responmsibility and Work Oportunity Reconcilation Act of 1996 (Blank 2002).

Housing figures prominently in such strategies because home equity is the cornerstone of household wealth for most Americans. According to the Federal Reserve Board's Flow of Funds report, home equity constituted 19 percent of household wealth at the end of 2003—nearly as great as the share of stocks and mutual funds combined. Even though stocks and mutual funds now rival the amount of home equity held by the household sector, home equity is much more broadly distributed. And it is especially vital to low-income households. According to the Survey of Consumer Finances, fully half all households in the bottom income quintile owned a home in 2001, for example, but under 5 percent held stocks or mutual funds. Furthermore, the median net wealth of low-income homeowners is dramatically higher than the median net wealth of low-income renters. For example, in 2001 the median net wealth of households with less than $20,000 of income was $72,750 but of renters in was only $900. Though this reflects to some degree the greater concentration of income-poor but housing wealth endowed elderly, even among those under 65 the difference is dramatic.

It is small wonder that housing plays such a large role in the acquisition of wealth among low-income households. Investing in a home is so attractive because the alternatives do not

[1] Signs of this heightened interest abound. Congress established affordable lending goals for Fannie Mae and Freddie Mac in 1991, the Clinton Administration set a national homeownership goal in 1996, the Neighborhood Reinvestment Corporation launched a national campaign to lift low-income homeownership rates in 1998, and the Bush campaign made a low-income homeownership tax credit the centerpiece of its housing policy.

[2] Expanding homeownership appears in President George W. Bush's 'Record of Acheivement' (http://www.whitehouse.gov/infocus/achievement/chap7.html) and the White House website contains and extensive list of policy goals and accomplishments designed to increase the rate of ownership among low-income and minority citizens (http://www.whitehouse.gov/infocus/homeownership/).

allow households to leverage small amounts of money to acquire costly assets. Low-income families with only several thousands of dollars to invest can get a loan for as much as 95, 97, or even 100 percent of the value of the home they are purchasing. Even homebuyers that put 10 percent down receive a 10 percent return on their investment for every 1 percent increase in the home's value. In addition, part of their mortgage payment goes to paying down the principal on the loan. Thus, for those that remain in their home for a long time, they not only pay off all or most of the principal but stand to benefit from any appreciation in the value of the home as well. Add to that the fact that capital gains on homes in most cases escape taxation and it becomes clear why the promotion of homeownership holds so much appeal.

Nevertheless, investing in a home involves risks. First among them is the risk of defaulting on a loan if the borrower cannot keep up with payments as a result of an income shock (lost wages, hours, or job) or a budget shock (major repair or replacement expense on the home or major medical bills). Households that default on their mortgages ruin their credit records. This in turn restricts their access to credit in the future and increases their future borrowing costs.

However, homeowners also can—and many historically have—lost money on their homes. Homeownership usually works to build assets for those who hold on to their homes long enough to benefit from paying down principal and long enough to see at least some price appreciation. But homeownership can result in losses for those who sell so quickly that they do not recoup the steep transaction costs of buying and selling a home, those who sell their home for less than the price of the home when they bought it, or those forfeit any rights to the value of the property by defaulting on their loan. In addition, under some circumstances renting and investing the equivalent of the downpayment in an alternative investment can earn a better return even though some equity would have built by owning instead of renting anyway.

Thus the stakes associated with homeownership are high. Yet, there are few studies of the financial returns to homeownership in general or to low-income homeownership in particular (DeGiovanni 2002). Available evidence indicates that returns to low-income homeowners are heavily dependent upon the direction of home prices and rents after purchase (Belsky and Duda 2002). However, whether low-income homeowners would benefit by renting instead depends not only on house price and rent movements, but also on the interest rate and terms of their mortgage, whether they refinance when it would be in their interest to do so, when in the price and rent cycle they buy and sell, and how long they hold the home (Haurin and Gill 2002).

This paper has two goals. The first is to explore what little is known or has been conjectured about the financial returns to low-income homeowners and the key factors that influence them. The second is to simulate the returns to low-income homeownership compared to renting since 1983 in four metropolitan areas under a range of mortgage interest rate, refinance, and tax scenarios. The returns earned by low-income homeowners are best viewed in relation to the costs of renting because even owners that earn positive returns may have been better off had they invested their downpayment elsewhere and rented instead (Goodman 1998). Thus, the simulations treat the financial returns to homeownership as the difference between the "costs" of owning, on the one hand, and renting but investing the downpayment in an alternative financial instrument, on the other.

The results underscore that mortgage interest rates, refinance behavior, and tax benefits all exert significant influences on the returns earned by low-income homeowners. Estimates of the impact of these factors are important because low-income homeowners are more likely than others to take out loans with higher interest rates, less likely to refinance, and seldom able to take advantage of mortgage interest and property tax deductions.[3]

The tendency for larger shares of low-income homeowners, and especially those purchasing homes in low-income areas, to take out higher interest rate mortgages is a relatively recent development. Prior to the 1990s, access to mortgage credit was governed almost exclusively by rigid underwriting standards. Mortgage borrowers either got credit at a predetermined and single interest rate or did not. Within a product line, such as a 30-year fixed rate mortgage, there was very little variation among lenders and across places in that single price during the 1980s.

During the 1990s, however, more lenders began relaxing credit standards. Instead of rationing credit on the basis of meeting minimum standards, lenders began to price for greater risk. In effect, this has shifted the governor of access to credit from the ability to meet uniform standards to the willingness of borrowers to pay higher interest rates in return for more liberal standards. These developments were fuelled by the development of a secondary mortgage market

[3] Low-income homeowner average returns are also influenced by their tendency to take out loans with higher loan-to-value ratios. When prices appreciate strongly, this often benefits homeowners. Even though they pay higher capital costs as a result of required mortgage insurance premiums on loans with less then 20 percent down, in return they are more highly leveraged. That higher leverage is what allows them to benefit proportionally more when prices appreciate. Whether it is enough to offset the higher capital costs depends on magnitude of the appreciation net of transaction costs of selling. Higher leverage also limits losses in the event of default.

in these so-called subprime, higher-priced loans. Finance companies originated loans and sold them to investment banks that packaged them as securities and sold them to other investors. Expanded use of information technologies has increased lender confidence that they can correctly price riskier loans and opportunities for higher returns in the subprime market have helped attract more lenders.

Although the incidence of subprime home purchase and refinance loans is only slightly higher for low-income (less than 80 percent of area median) than high-income (greater than 120 percent of area median) borrowers, the rate of increase in low-income subprime loans was much higher in the 1990s. Between 1993 and 2001, the number of subprime home purchase loans made to moderate and high-income borrowers (more than 80 percent of area median) increased about 7½ fold and of subprime refinance loans about 5 fold. Among low-income borrowers (less than 80 percent of area median), the number of subprime home purchase loans increased more than 9 fold and of refinance loans by 11 fold. Furthermore, by 2001 incidences of subprime loans were sharply higher in low-income areas. The subprime share of home purchase loans reached 10.3 percent in low-income areas but only 5.1 percent in high-income areas. Subprime refinance loans stood at 20.8 percent in low-income areas but only 6.6 percent in high-income. In predominantly minority low-income neighborhoods, the subprime share was even higher still (Joint Center for Housing Studies 2003) . Thus, returns to homeownership increasingly depend on the prevailing prime and subprime mortgage interest rates in the year a buyer purchases.

Low-income homeowners are also less likely to refinance when it would be advantageous for them to do so, and more likely to take out a subprime mortgage if they do (Van Order and Zorn 2002). The reasons for these behaviors are not well understood. It appears they have less to do with differences in appetite for refinancing and more to do with special constraints some borrowers face (Archer, Ling, and Mc Gill 2002). These include reductions in incomes, house prices, or credit scores between time of purchase and the opportunity to refinance that may preclude borrowers from refinancing at all or at prime rates. In the case of refinancing subprime loans, reasons for not refinancing may extend to prepayment penalties. The remarkable surge in subprime refinances indicates that many refinances may now increase rather than reduce the costs of homeownership to the borrowers.

Finally, low-income homeowners typically do not benefit from mortgage and property tax deductions because the value of the standard deduction exceeds the value of these itemized

deductions to them. In fact, only 3 percent of homeowners with incomes under $20,000 and 16 percent with incomes between $20,000 and $29,000 itemized their deductions in 1998 (Bourassa and Grigsby 2000). In contrast, 86 percent of homeowners with incomes above $75,000 itemized. And even among low-income homeowners that do itemize, the value of the mortgage interest deduction is lower because their marginal tax rates are lower.

Drivers of Financial Returns to Low-Income Homeownership

The financial returns of low-income homeowners depend on a range of variables that, when aggregated over time, result in a frequency (density) distribution of actual returns. The variables that drive differences in returns the most are house price changes, mortgage interest rates and fees, mortgage terms, marginal tax rates, size of the mortgage relative to house value, maintenance and improvement expenses, property tax rates, returns on alternative investments, and holding periods (cf. Goetzmann and Spiegel 2002, Flavin and Yamshita 2002, Poterba 1992, Case and Mayer 1995, 1996, Collins 2002).

Because low-income and high-income homeowners can be expected to differ in systematic ways on several of these variables, one can also expect that their financial returns from homeownership will vary systematically as well. As noted, low-income homeowners have lower marginal tax rates and are more likely to have subprime mortgages. They are also more likely to have longer holding periods. Consider the cohort of home buyers from 1984 and 1985. According to the American Housing Survey, 4 years later only a fifth of low-income homeowners had moved but a quarter of high-income homeowners had moved. Ten years later, only about one-third of low-income homeowners had moved but nearly half of high-income homeowners had moved.

While these differences between low-income and high-income homeowners are well established, others are less so. Despite more than a dozen studies of the differences in appreciation rates between low-cost homes and higher cost homes, there is no consensus on what drives these differences when they are found (Case and Maryenchenko 2002). Nor is there much evidence on differences in maintenance and improvement spending as a share of house value by income level. Reported maintenance and improvement expenditures as a share of house value in the American Housing Survey are postively related to income. According to the 2001 AHS, more than half of homeowners with incomes of under $20,000 did not spend any money on home

improvements in the prior 2-year period. Among those with incomes between $20,000 and $40,000, the median amount spent expressed as a share of $1,000 of house value was only 1.0 percent but for those with incomes of $40,000 to $60,000 it was 3.2 percent and over 5 percent for those earning between $80,000 and $120,000. Even median maintenance expenditures were lower for lower income homeowners, with the median reported spending expressed as a share of $1,000 in value standing at about 0.65 percent for those incomes under $20,000 but about 1 percent for other income groups. Furthermore, low-income homeowners that purchase poorer quality homes are apparently forced to spend more on maintenance relative to the value of their homes than those who purchase better quality units. But they also spend less on improvements, presumably because they do not expect to recoup much of their investment.

Distribution of Capital Gains and Losses

Financial returns to homeownership are the product of multiple factors. Unfortunately, there are no studies that have estimated the frequency distributions of actual historical returns to homeowners in general or low-income homeowners in particular. The study that comes closest examines the actual prices at which owners of low, moderate, and higher-valued homes bought and sold their homes in Boston, Chicago, Denver and Philadelphia between 1982 and 1999 (Belsky and Duda 2003). In this study, estimated transaction costs were netted out from the gross gain or losses on sales and then were expressed as a percentage of initial down payments. The study concluded that: "Contrary to the general public perception that low cost homeowners are more likely to experience real losses when they resell, findings reported here suggest that losses are generally less common and less severe among those who purchased homes that would have been affordable to low-income households at the time of purchase. Nevertheless, for all groups, real losses are remarkably common (p. 209)."

The authors attributed the lower loss probabilities of low-cost homeowners to differences in price appreciation rates among the value segments and in the timing of purchases and sales. Of the two, the timing of purchases and sales were central. High-valued homes were more likely to be purchased near price peaks, and holding periods were shorter on average for higher-valued than lower-valued homes. As one example, buyers of low-cost homes in Denver accounted for fully 38 percent of buyers during the house price cycle trough but only 4 percent of the buyers at the peak. In the 3 metropolitan areas in which prices cycled (they did not in Chicago), the higher

home prices at the peaks apparently discouraged or excluded homebuyers from purchasing lower cost homes. Equally important, low-cost homeowners were less likely to sell during downturns. Those that did sell during a downturn in prices were more likely not to suffer a loss because of the timing of their initial purchase. With the significant expansion of mortgage credit to low-income borrowers throughout the 1990s and the decline in mortgage interest rates in recent years, however, it is possible that this time around low-income homeowners will account for larger shares of homes bought at or near the peak of cycles (Duda and Belsky 2002).

Even though owners of low-cost homes did better, even among those who both bought and sold low-cost homes, a significant fraction suffered capital losses. Between 1982 and 1999, the share of owners of low-cost homes that suffered capital losses over 5½ to 8½ year holding periods amounted to about 52 percent in Philadelphia, 31 percent in Chicago, 28 percent in Boston, and 13 percent in Denver (Chart 1).[4] It is important to keep in mind, however, that the available data restricted the study to examining holding periods of 8½ years or less. Because about two-thirds of low-income homeowners are likely to own their homes for more than 10 years, it is likely that far smaller shares of all low-income owners ended up selling at a loss.

While the study provides compelling evidence that owners of lower-valued homes may do better than owners of higher-valued homes with respect to gains on sale, it falls short of providing a complete picture of the share that would have done better renting. To do that would have required estimating the alternative return on the down payment if it was invested elsewhere and comparing the operating costs of owning and renting.

Apart from this study, there are only a handful of other studies that touch on aspects of the financial experiences of low-income homeowners. These may usefully be divided into those that examine the house price appreciation of low-valued homes, the implications of electing to buy a home rather than rent from an asset allocation perspective, the prevalence of subprime lending in low-income areas and to low-income borrowers, and differences in refinance behavior by borrower income.

[4] An important caveat is that the transactions evaluated were for single family homes only and were net of defaulted loans. Thus, the actual shares with losses may be higher.

House Price Appreciation

Several studies have compared house price movements of low-cost properties to those of higher-cost properties in the same metropolitan area. As noted, the findings from these studies are inconsistent and inconclusive. Both Kiel and Carson (1990) and Pollakowski, Stegman, and Rohe (1992) found little significant difference between the rates of home price appreciation of lower and higher priced units in a variety of different metropolitan areas. In contrast, Smith and Teserak (1991) found that higher priced homes appreciated more rapidly during the Houston price expansion and declined more precipitously during the contraction. Seward, Delaney, and Smith (1992), on the other hand, found that higher priced homes appreciated faster during the expansion in St. Petersburg Florida but contracted at about the same rate during the downturn. Quercia et al. (2000) found that prices in underserved areas in Dade County appreciated at least as much as prices in areas not defined as underserved but had greater volatility in both positive and negative directions. Simulating returns in these areas over 5-year holding periods between 1971 and 1989, they found returns were likely negative in 11 of the 18 periods in low-income areas compared to 9 in other areas. Li and Rosenblatt (1997) found that local median incomes appreciated as fast as general prices during 1987 to 1989 in Anaheim-Santa Ana and Los Angeles-Long Beach but declined more during the 1990-1994 contraction. They also found median income was negatively correlated with house price volatility.

Porterba (1991) found that higher-valued properties appreciated faster than lower-valued properties from 1970 to 1986 in Atlanta, Chicago, Dallas and Oakland. He attributed the difference to high marginal tax rates and inflation expectations. With the drop in the marginal tax rates on the highest brackets and reductions in inflation expectations, however, it is possible that appreciation rates might be equal or greater for low-valued homes in the current environment. Furthermore, Mayer (1993) using the same data, challenged Porterba's findings. He concluded that house prices were in fact more volatile at the high end than the low end but that in the long run they move together.

Smith and Ho (1996) posited that monetary shocks widen price differentials between higher and lower priced homes, while fiscal shocks narrow them. Inflation causes a larger change in real demand for higher priced homes while rising incomes lift demand for lower priced homes. Evidence from Toronto house price changes supports their conclusion. Case and Shiller (1994) reached a similar conclusion when examining what drove prices up higher in the lower than the

higher end of the price distribution in Boston and Los Angeles, attributing the better appreciation of low-cost properties to income growth in the lower end of the income distribution. Real income growth among lower income quintiles was unusually rapid during the 1990s as was the expansion of credit to low-income home buyers so there is reason to believe appreciation rates may have accelerated for low-valued relative to higher-valued homes in many places during the 1990s.

Lastly, Case and Marynchenko (2002) concluded that the patterns of price of changes in the three metropolitan areas they studied—Boston, Chicago, and Los Angeles—were complex and defied generalization. However, they reached the tentative conclusion that places with concentrated poverty fared the worst in terms of home price appreciation while places with high home prices and low poverty tended to fare the best.

Portfolio Allocations

The literature on the value of alternative investment choices open to low-income households is small. Ambrose and Goetzmann (1998) investigate the optimal investment choice of low-income households by using a Markowitz asset-allocation framework. This framework estimates a set of portfolios that yield the maximum return for a given level of risk on an after-tax basis. They conclude that investing more than 34 percent of total assets in housing in Atlanta, assuming that low-cost homes appreciated at the market-wide average, is not optimal.

Goetzmann and Spiegel (2002) similarly conclude that low-income households run the risk of investing more in housing than they should given its risk-return characteristics and correlation with returns to other assets. They also underscore the importance of federal tax policy to the decision to own or rent and the value of choosing one over the other. Remarking on the higher marginal tax rates of higher income homeowners and the fact that many low-income people have an effective tax rate of zero, they conclude that it will take a significant change in tax law or more direct subsidies to make homeownership financially desirable for most low-income households.

Sub-prime Lending

The literature on sub-prime lending reveals that larger shares of loans to low-income than high-income homeowners are originated by sub-prime lenders or are sub-prime loans. The major

federal dataset that contains information of loan originations, the Home Mortgage Disclosure Act, does not contain information on the interest rates and fees charged on loans, only the size of the loan, its location, and the income and (in some cases) the race or ethnicity of the borrower. As a result, sub-prime loans cannot be observed directly but instead must be inferred from the type of lender that originated the loan.[5]

Nevertheless, the evidence is compelling that low-income borrowers are more likely than higher income borrowers to receive sub-prime loans, especially those who purchase in lower income neighborhoods (Joint Center for Housing Studies 2000). Focusing on Atlanta, Baltimore, Chicago, Los Angeles, and New York, HUD found that subprime loans were three times more common in lower income neighborhoods than higher income neighborhoods (HUD 2000). Another found that subprime borrowers are less knowledgeable about the mortgage process, are less likely to search for lower mortgage rates, and less likely to be offered alternative mortgage products (Courchane, Surette, and Zorn 2003).

There is little information on the typical rates and fees charged on sub-prime loans but what evidence there is suggests that these rates and fees vary widely. Cutts and Van Order (2003) report that the average APR (annual percentage rate) mortgage interest rate in 2001 on 30-year fixed rate mortgages ranged from 7.2 percent on the highest quality sub-prime loan (often called Alt-A) to 12.75 percent for the lowest (CC or D). They report that the average rate was 9.83 percent or about 2½ to 3 percentage points higher than a prime loan rate. These rates include the effect of points and fees rolled into principal loan amounts. These fees are often several percentage points of the loan amount. Paying 3, 4, or more points is relatively common in the sub-prime market but uncommon in the prime market (Lax et al. 2000).

The impact of higher interest rates on the cost of owning a home is profound (Chart 2). A homebuyer putting 5 percent down on a $90,000 home (the median home price of low-income homebuyers nationally in 2000-2001) with a 7 percent 30-year fixed rate mortgage, for example, would spend $122 less a month than a homebuyer with a 9 percent mortgage, and $317 less than a home buyer with a 12 percent mortgage. Over a 15-year period, the buyer with a 7 percent interest rate would spend $135,646 on interest, the 9 percent buyer 179,629, and the 12 percent

[5] The Department of Housing and Urban Development maintains a list of subprime lending specialist that it makes available to the public. It defines subprime lending specialists as those with 50 percent or more subprime loan originations. With the rapid growth of subprime lending and mergers, acquisitions, and consolidation in the subprime industry, identifying subprime loans using the list has become prone to greater error over time.

buyer $249,709. The reduction in wealth is dramatic—more than $70,000 over 15 years between the 7 and 12 percent case.

The impact of rolling fees into mortgage balances is also wealth reducing. Packing fees into the loan amount adds to interest costs. The difference in monthly costs between financing one percentage point of the mortgage balance and five when a borrower has a 7 percent interest rate and a 5 percent down payment is $25 and about $4,500 in interest costs over 15 years. With a 12 percent interest rate, the difference in monthly costs is $38 and $10,000 in interest costs over 15 years.

Even though rolling fees into the mortgage reduces the amount of equity accumulated, it nevertheless allows households unable to cover upfront costs to obtain a loan when they would not otherwise have been able to get one. It therefore provides renters with a chance to build equity through homeownership.

But such methods can be abused when used by unscrupulous lenders. In fact, abuses by predatory lenders that use methods that have a legitimate purpose for nefarious ends are increasingly coming to light. These lenders intentionally pressure, mislead, or defraud borrowers in an effort to earn excess fees or to strip them of their home equity. They strip away home equity either through repeated refinances that keep rolling more and more fees into the loan amount or by setting up borrowers to fail in making payments and then ruthlessly foreclosing on them. The full extent of predatory lending is unknown but the number of victims of these malicious tactics coming forward to community organizations and legal aid groups suggests that its occurrence is not trivial.

These lenders prey on the poor, the elderly, and minorities more so than others because these populations have fewer options and often less information to defend themselves against the tactics used against them. Though clearly distinct from subprime lenders that provide people with access to credit that would otherwise be denied by charging rates and fees that reflect the higher expected costs of lending to riskier populations, predatory lending more easily thrives in an environment in which mortgage interest rates and fees range widely and fees are often rolled into mortgages.

Refinance Behavior

Refinancing behavior also influences wealth accumulation because substituting an initially higher cost mortgage with a lower cost one when rates fall reduces the long-term capital costs of homeownership. Most examinations of refinance behavior model it as part of loan prepayment behavior. Prepayments include both mortgage refinances (refinancing a pre-existing loan on a property by replacing it with a new one) and prepayments of loans when a home is sold. Thus, prepayments include both loan repayments triggered by a move and refinances of loans by owners that do not move.

The propensity of low-income borrowers to prepay their mortgages is slightly lower than for high-income borrowers for all racial and ethnic groups, but sharply lower for minorities than for whites. Using all the 30-year fixed rate loans purchased by Freddie Mac between 1993 and 1997, Van Order and Zorn (2002) found that only 29 percent of black and 31 percent of Hispanic low-income borrowers prepaid their mortgages, compared to 42 percent of low-income white borrowers. Furthermore, in the cases of both blacks and Hispanics there was a five percentage point difference in the prepayment rates of low-income and high-income borrowers. In the case of whites, the gap was 7 percentage points.

More troubling, Van Order and Zorn found that prepayment speed differences were more pronounced during periods of interest rates declines when refinancing would have been advantageous than in periods when rates were flat or rising. Thus, low-income homeowners are even less likely to refinance during periods when doing so would lower their monthly carrying costs and hence lift their financial returns from homeownership. Put another, what principally drives the lower prepayment speeds of low-income, especially minority, borrowers is their tendency not to capture the benefits of lower rates by replacing higher cost mortgages with lower cost loans.

Simulating Financial Returns to Homeownership

The general lack of information on the actual financial returns to low-income homeowners is a gap that needs to be filled. As a step forward in that direction, we simulate average homeownership experiences of low-income homeowners in Boston, Chicago, Denver, and Washington DC over the course of the 1980s and 1990s. Our purposes are 1) to simulate the impact of local house price and rent movements on actual returns and 2) to simulate the impact

of tax policy, subprime lending, and refinances on whether it makes better financial sense for low-income homeowners to own or rent over different holding periods.

Financial comparisons are made on a user cost of capital basis for a typical household owning or renting the same home. The user cost framework is an all-in comparison of the net cost of pursuing each tenure option. Homeowners, for example, incur costs not paid by renters for things such as transaction costs associated with buying and selling the home, the cost of maintaining the home, the costs of property taxes and insurance, and the costs of servicing the mortgage net of any tax benefits. In contrast, both owners and renters or an equivalent home typically pay utilities so these are assumed to net out.

Because owners' user costs also include the capital gains or losses upon sale of the home, renters are assumed to invest an amount equivalent to the downpayment in an alternative investment vehicle.[6] To the extent that owners reap gains from house price appreciation, they only serve to make owning financially superior to renting if these gains exceed what could have been earned by a renter household invested in the alternative over the same period. Ultimately, the user cost framework makes it possible to compare the financial position of owners and renters of an identical dwelling over various holding periods in order to determine which was a better investment.

Short of obtaining detailed information on all these variables for individual households in a variety of different neighborhoods and metropolitan areas, it is possible to simulate the experience of a typical homeowner in different metropolitan areas at different points in time.

Doing so, however, requires several simplifying assumptions, some of which could be relaxed with the availability of appropriate data.[7] The relative cost of owning compared to

---

[6] Mathematically, the user cost of capital (U_C) for homeownership over n years is:

$$\sum_{i=0}^{n} Uc = \sum_{i=0}^{n} \{(1-t)[m_i + P_i(pr)_i] + P_i(d_i + op_i) + P_0(1-\alpha)(a)_i + pmi_i\} + P_i(tr_0 + tr_n) + B_r(tr_r) - [g + t(nhd)]$$

Where P_i = house value in year 'i'; G= ($P_n - P_0$) = house value in sale year minus house value in purchase year; T= owner's marginal tax rate; M= mortgage interest paid annually; Pr= annual local property tax rate; D= annual depreciation rate; Op= operating cost (maintenance + insurance); Pmi= annual cost of mortgage insurance; B= outstanding balance of mortgage; Tr_0= transactions costs as share of house value in year of purchase; tr_n= transactions costs as share of house value in year of sale; tr_r= transactions costs as share of house value in year of refinance; A= rate of return on alternative investment; α= the fraction of house value financed;and Nhd= non-housing deductions taken by owners.

[7] In this case, we assume that home price and rent appreciation rates within a metropolitan area are the same across all value segments. Of course we know that this is often not the case, and the analysis could be extended by using information on the actual appreciation rates of different value segments, in different cost areas, or matched repeat sales data for purchasers of low-cost homes. We also assume that all borrowers finance with a 30-year fixed rate

renting is estimated for four metropolitan areas based on information on metropolitan house prices, rents, and property tax and insurance rates from 1982 to 2001. The four cases were selected to represent differing combinations of house price volatility and absolute price gains because house price changes are a dominant force in determining whether owning is more desirable than renting. Boston is a high volatility/high house price gain area, Chicago a low volatility/moderate gain area, and Denver and Washington DC are moderate volatility/moderate gain areas over our study period (Table 3).

The financial attractiveness of owning versus renting is influenced by several factors that, as noted above, may vary with the income of the household. While we assume that house appreciation rates, leverage ratios, and transaction costs and maintenance costs as a fraction of home values are the same regardless of the income of the homeowners, we vary other factors to simulate their effects. Tax effects are simulated by assuming mortgage interest payments are deductible and then assuming they are not (because deductions are not itemized by most low-income homeowners). Sub-prime lending effects are simulated by assuming interest rates are prime or prime plus some additional percentage points. Refinance behavior is simulated by assuming homeowners refinance at prime interest rates when it is advantageous to do so in 1986 or 1993 and then assuming they do not.

Results are expressed in two ways. One is the probability of buying in a year in which owning would be more financially advantageous to renting. This probability is simply the number of years during the study period that the user cost of owning was lower than the user cost of renting. Our data run from 1983 to 2001, which allows us to examine 16 holding periods beginning 1983-1998 for 3-year holders, 14 holding period beginning 1983-1996 for 5-year holders, and 12 holding periods beginning 1983-1994 for 7-year holders. More detailed results expressed in terms of the dollar difference in the returns from owning and renting are presented in the Appendix.

---

mortgage, put 10 percent down, incur the same average transaction costs as a share of home value, spend the same fraction of house value on maintenance, do not pay capital gains, and pay the same metropolitan average property tax and property insurance rates.In order to compare the user cost of owning to the costs of renting and investing the downpayment elsewhere, we further simplify by assuming that the downpayment would in all cases be invested in Treasuries that match the holding period. Finally, we estimate the difference between owning and renting a comparable unit in a particular year and metropolitan area, and then advance the prices by the Freddie Mac Conventional Mortgage House Price Index (adjusted for presumed overstatement of gains as per Abraham and Schaumann 1991) and the rents by the BLS's Owner's Equivalent Rent Index, respectively.

As shown in Chart 4, the simulation is conducted for six scenarios. A "base case" assumes that mortgage interest and property taxes are deducted at the effective tax rate of taxpayers earning the median household income in each of the four metropolitan areas. It assumes that the benefit of the mortgage interest and property taxes deducted are over and above the standard deduction. It further assumes the buyer is purchasing a home at half of the median home price. That was $41,000 in Boston in 1983 and $139,000 in 2001, $36,000 in Chicago in 1983 and $97,000 in 2001, $48,000 in Denver in 1983 and $103,000 in 2001 and $51,000 in Washington DC in 1983 and $113,000 in 2001.

A second, "no MID," case assumes that mortgage interest and property taxes are not deducted and so there is no marginal tax benefit to owning other than the waiver of capital gains taxes upon sale. A third case, "prime plus 2," assumes that the owner pays an interest rate of 2 percentage points above whatever the average prime rate was in the year of purchase. It also assumes no deduction benefits. A fourth "prime plus 5" case is the same as the "prime plus 2" but with a higher cost loan. The fifth and sixth cases repeat the "prime plus 2" and "prime plus 5" cases but assume that borrowers do not refinance when doign so is in the money.[8]

Results

The results for the base case make plain that the volatility and level of house price gains in a market play an important role in determining the odds of buying in a year in which it ultimately pays off to own. Boston's volatility results in the greatest chance of coming out ahead by buying in one year and then selling three years later. There, buying in two-thirds of the years

[8] There are five principal drawbacks to these scenarios. First, interest rates vary significantly over the course of a year. Thus, actual rates at which owners would have purchased their homes would have deviated from these averages. Second, the holding periods are short while a significant fraction of low-income home owners hold for longer periods. This means that the potential impact of failure to refinance when it is advantageous to do so would be significantly greater for longer holding periods. Third, home price appreciation rates are assumed to be uniform within each metropolitan area when in fact neighborhood differences in price appreciation rates are common. Fourth, we examine only single spells of homeownership. Many who buy and then re-buy may lose money on one home but more than make it up on another.
Finally, the maximum holding period we look at is 7 years. The odds of benefiting from homeownership are likely much higher over longer holding periods. Longer holding periods (of 15 to 30 years) increase the chances that owning will be a better choice for several reasons. First, it increases the chances that interest rates will decline enough to make a refinance advantageous. Second, it increases home equity because principal balances are paid down at faster rates later into the term of the mortgage. Third, home prices in most places increase at or above the positive real rate of income growth over the long run (Case and Schiller 2003). Still, there are places, such as Houston, where even holding periods of 15 years or more are insufficient to overcome an ill-timed purchase. In Houston, inflation-adjusted home prices still stand below where they stood in 1985.

between 1993 and 1998 and then selling after three years would have been a better choice than renting (Chart 4). However, the higher volatility of home prices in Boston increased the chances of selling during a downslide for the longer 5- and 7-year holding periods, thereby reducing the chances of succeeding over renting relative to shorter holding periods.

A similar trend holds for Denver, where 3-year holds and 7-year holds result in the same 50/50 chance of coming out ahead by owning. In contrast, in Chicago and Washington DC, longer holding periods resulted in greater likelihood than shorter periods of buying in a year in which owning would have been the better financial choice. This is especially true for Chicago where steady, moderate gains lifted the chances of coming out ahead by buying and holding for 7 years to fully 10 of the 12 possible years between 1983 and 1994. Overall, renting would have produced a better result than buying a home in each of the four metropolitan areas in many years and for many different holding periods.

In terms of the size of the positive or negative returns associated with buying or renting a low-cost home in the four metro areas, in the base case the odds of earning larger positive payoffs lean slightly towards owning over renting in all four metros (Appendix). The higher volatility of home prices in Boston elevates the financial stakes involved in the tenure decision.

Thus, whether owning or renting makes sense for low-income homeowners, in the first instance, depends critically on what happens to home prices over the period they own the home, which in turn is correlated with price movements in the metropolitan area. Because the future course of home prices is uncertain and may not be well predicted by past trends, there is an inevitable and large financial uncertainty in opting to own or rent.

The inability to deduct mortgage interest and property taxes over and above the standard deduction reduces the chances that low-income home buyers come out ahead of renting only in Boston over 3- and 5-year holding periods and Washington over 3-year holding periods. The impact of both not being able to deduct mortgage interest and paying higher than prime rates, however, is more dramatic. A two percentage point higher interest rate and no value to the tax deductions dramatically drives down the odds of coming out ahead by owning in Chicago where volatility was low and gains moderate. In the other metropolitan areas the impact is smaller because in far fewer years was the choice between owning and renting so close in terms of financial returns. But at five percentage point higher interest rates, the share of years in which owning comes out ahead of renting is driven down in all four metropolitan areas and across all

holding periods. In fact, it reduces the chances of buying in a year in which owning yields a positive return relative to renting to a high of just 37.5 percent in Boston for three-year holding periods to a low of none of the time in Chicago for 5- and 7-year holds and for Washington in 7-year holds. Failure to refinance when the option is in the money further reduces the potential benefits of owning over 5 and 7-year holds in several of the metropolitan areas.

These simple simulations reveal just how dramatically mortgage terms, tax policy, and refinance behavior negatively affect the returns to low-income homeownership. Unless low-income homebuyers received prime loans, they stood a strong chance of being better off renting in many of the years they might have decided to buy. Unable to take advantage of the mortgage interest deduction, low-income homeowners who paid rates even two percentage points over prime and did not refinance when interest rates fell would have done better renting far more than half the time for 3-, 5-, and 7-year holding periods in all four metropolitan areas studied. This stands in stark contrast to the much higher likelihood of benefiting from owning even without benefit of the mortgage interest deduction when borrowing at a prime rate and refinancing when it is advantageous to do so at prime rates.

Conclusions

Low-income homeowners typically gain less from owning than high-income owners who buy and sell in the same years because they get no additional value from deducting mortgage interest and property taxes. Those who end up with subprime loans benefit far less than owners who do not. And those who miss opportunities to refinance to lower prime rates for whatever reason come out further behind still.

Given these findings, the importance of helping low-income homeowners avoid subprime loans and terms and take advantage of opportunities to refinance become apparent. Also apparent is the fact that the failure of the tax code to bring comparable benefits to non-itemizing homeowners and itemizing homeowners leaves the latter less advantaged. In addition, given the considerable number of years during the study period when renting was a better option than owning over a variety of shorter holding periods, the constant drum beat for expanded low-income homeownership should be carefully and discriminatingly evaluated.

Low-income homeownership has a lot of appeal especially for those who intend to remain in their homes for a long time, but it also entails substantial risks. Faced with a choice of

investing small amounts of money in other ways such as Treasuries and indexed stock funds or investing the same amount in housing on a highly leveraged basis, investing in a home is undeniably attractive, though perhaps not the ideal risk diversification strategy. The payoffs can be huge and favor homeownership asymmetrically to the payoffs from renting, especially if the owner defaults rather than covers the full loss on the home. This is largely because few low-income people are unable to make other investments on such a leveraged basis.

Thus, the real question is not only whether we should promote low-income homeownership. The real questions should be what can be done to help inform all interested homebuyers—low-income individuals among them—so that they make the choice best suited to them, as well as what can be done to ensure that those who select homeownership do so at the lowest possible cost and with the greatest chances of maximizing their risk-adjusted returns (Wiranowski 2003). The new measures of success should include be: 1) increasing the share of low-income borrowers that get the lowest cost credit they qualify for, 2) the share of low-income borrowers who are coached to improve their credit histories so that they can qualify for lower cost credit, 3) the share of borrowers who have funds to fall back on in emergencies, and 4) the share of borrowers who refinance their mortgages when it would benefit them to do so. To achieve these goals will require financial education, help for low-income borrowers to save enough to have cash cushions against budget and income shocks, and products that help them mitigate risks such as house price declines and income disruptions by making up mortgage payments they would otherwise be temporarily forced to miss.

Acting on these new goals will take a material realignment of the efforts of community organizations in low-income areas that are dedicated to serving their constituents. Presently most of these community-based organizations are focused on serving homebuyers by connecting them with down-payment assistance programs, low-cost mortgages, and homebuyer education. They serve a very small number of homebuyers in their communities and are not oriented to reaching out to existing homeowners in addition to buyers. Yet around them mortgage brokers offer a wide range of loan products designed to meet the credit needs of those who fail to qualify for the special mortgage programs community groups offer or who opt not to work through community groups.

Community groups could expand their influence and serve greater shares of their constituents if they offered broader financial literacy courses and marketed them to existing

homeowners as well as homebuyers. These courses would advise participants on how to select loan products, help them assess the lowest cost product than can qualify for, and explain to them when they should consider refinancing their mortgage. In addition, community groups could help low-income individuals understand the importance of their credit histories, how they can improve them, and how they can obtain information on their current credit score.

But for community groups to play such an expanded role they will need expanded financial support. Homebuyer education is costly and even lenders prepared to pay a fee for the service seldom provide enough to cover the cost of quality education. Imagine, then, expanding these programs to reach out beyond homebuyers to current homeowners and to provide an enriched curriculum. The costs would escalate dramatically and exceed the already insufficient funds available for homebuyer education from the Department for Housing and Urban Development. The government and lenders must therefore step up to the plate in ways that have not before to support the public good of educated homebuyers and homeowners.

Although not considered in this analysis, others have pointed to the importance fo reserve funds for helping to ensure that homeowners have adequate funds to deal with emergencies after a home is bought. Lenders must consider whether it is sound for them to waive the requirement that buyers have cash reserves on hand equal to at least two months of mortgage payments when they close on a home sale. But all lenders cannot be counted on to do this even if some choose to do so. Undoubtedly, absent legislation that requires it, some lenders will offer products that waive all cash reserve requirements. Therefore, community organizations ought to consider establishing emergency reserve escrow accounts on behalf of homeowners that can only be tapped to fix a home or to avert a loan default. To encourage homeowners to save, these same groups could provide some form of match akin to the matches now used to encourage the use of Individual Development Accounts.

Of course beyond this, the government could take actions to offer comparable tax benefits to low-income homeowners who do not now benefit from the mortgage interest deduction. And the government could regulate financial institutions in ways that help increase the chances that low-income homeowners will succeed. But the prospects for the government extending greater tax benefits to all low-income homeowners are poor, and regulations intended to help can end up restricting credit or adding to its costs in unpredictable ways.

As for future research, the next step in extending this analysis would be to develop addition simulations that examine the possible financial trajectories of households with varyiing housing endowments and investment behaviors. Ideally, the volatility of home prices in such a model would reflect the volatility observed among low-income homeowners or in low-income areas within particular metropolitan areas rather than for each metropolitan area as a whole, as is done in this paper. The review of the literature suggests that intra-metropolitan variations in price volatility can be significant.

Another direction for future research is to explore the possibility of using the American Housing Survey to create a frequency distribution of low-income, middle-income, and high-income returns to homeownership. The AHS contains information on many of the important drivers of homeownership returns including price at time of purchase and sale, mortgage terms, insurance payments, property tax payments, refinance behavior, and repair and remodeling expenditure. While it does not contain information on transaction costs and alternative investments of down-payment funds, these could be estimated, as could the rent changes for roughly comparable homes. While still estimated, such a study would move us closer to an understanding of the historical experience of low-income homeowners that could help inform future policy.

Chart 1

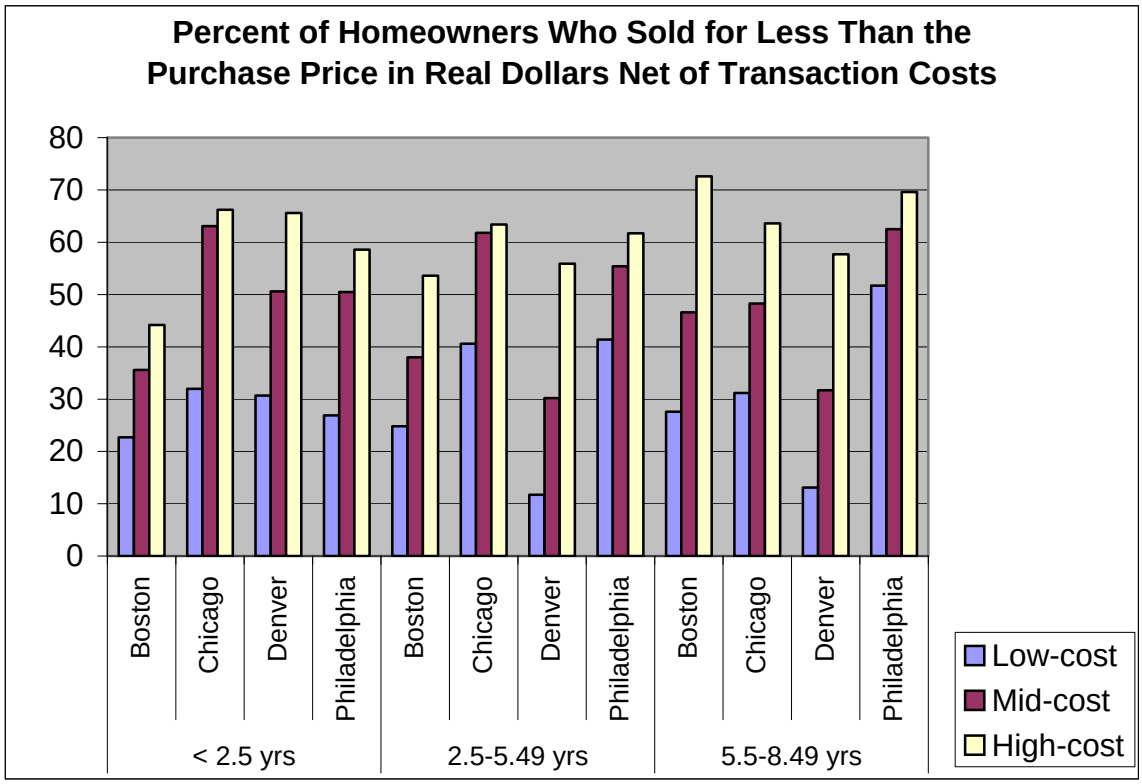


Chart 2

Impact of Interest Rate and Mortgage Insurance Premiums on Debt Service

IR	MIP	LTV*	Starting Balance	Monthly Payment**	Total Interest***	Qualifying Income	Down payment	Taxes and Insurance (1.5%)	Taxes monthly
7%									
		80%	$ 72,000	$479	$100,445	$20,692	$18,000	$1,080.00	$ 90.00
	0.52	90%	$ 81,000	$567	$123,294	$24,317	$ 9,000	$1,215.00	$ 101.25
	0.78	95%	$ 85,500	$614	$135,646	$26,225	$ 4,500	$1,282.50	$ 106.88
	0.96	100%	$ 90,000	$658	$146,837	$28,014	$ -	$1,350.00	$ 112.50
9%									
		80%	$ 72,000	$579	$136,556	$24,339	$18,000	$1,080.00	$ 90.00
	0.52	90%	$ 81,000	$682	$164,626	$28,492	$ 9,000	$1,215.00	$ 101.25
	0.78	95%	$ 85,500	$736	$179,629	$30,667	$ 4,500	$1,282.50	$ 106.88
	0.96	100%	$ 90,000	$787	$193,368	$32,715	$ -	$1,350.00	$ 112.50
12%									
		80%	$ 72,000	$741	$194,619	$30,204	$18,000	$1,080.00	$ 90.00
	0.52	90%	$ 81,000	$866	$230,650	$35,163	$ 9,000	$1,215.00	$ 101.25
	0.78	95%	$ 85,500	$931	$249,709	$37,745	$ 4,500	$1,282.50	$ 106.88
	0.96	100%	$ 90,000	$993	$267,382	$40,192	$ -	$1,350.00	$ 112.50

Impact of Interest Rate and Financing Points on Debt Service

IR	MIP	Points financed	Starting Balance	Monthly Payment*****	Total Interest***	Qualifying Income****		Taxes and Insurance (1.5%)	Taxes monthly
7%									
	0.78	1	$ 86,355	$620	$137,005	$26,487		$1,295.33	$ 107.94
	0.78	3	$ 88,065	$633	$139,714	$27,012		$1,320.98	$ 110.08
	0.78	5	$ 89,775	$645	$142,434	$27,536		$1,346.63	$ 112.22
	0.78	7	$ 91,485	$657	$154,142	$28,061		$1,372.28	$ 114.36
9%									
	0.78	1	$ 86,355	$744	$181,416	$30,974		$1,295.33	$ 107.94
	0.78	3	$ 88,065	$759	$185,006	$31,587		$1,320.98	$ 110.08
	0.78	5	$ 89,775	$773	$188,615	$32,200		$1,346.63	$ 112.22
	0.78	7	$ 91,485	$788	$192,207	$32,813		$1,372.28	$ 114.36
12%									
	0.78	1	$ 86,355	$940	$252,208	$38,123		$1,295.33	$ 107.94
	0.78	3	$ 88,065	$959	$257,212	$38,878		$1,320.98	$ 110.08
	0.78	5	$ 89,775	$978	$262,177	$39,633		$1,346.63	$ 112.22
	0.78	7	$ 91,485	$996	$267,181	$40,388		$1,372.28	$ 114.36

Notes

* Assumes the following mortgage premia: 90% LTV =.52 ; 95% LTV =.78:100% LTV =.96

** Assumes a 30-year fixed rate mortgage

*** Assumes a 15 year holding period

**** Assumes 33 percent debt-to-income ratio and a home price of $90,000--the median for low-income borrowers aged 25-44.

***** Assumes a mortgage premium of .78 for a 95% LTV

Chart 3

	Housing Market Price Trend Characteristics, 1983-2000				
Small Gain	**St. Deviation**	**Average**	**Minimum**	**Maximum**	**Range**
Houston	12.0	95.4	75.5	127.5	51.9
New Orleans	19.7	115.5	94.6	160.8	66.2
Kansas City	25.0	134.9	100.0	197.2	97.2
Miami	28.1	133.5	96.2	192.5	96.3
St. Louis	28.9	152.6	100.0	218.3	118.3
Minneapolis	30.4	134.7	97.0	217.3	120.3
Atlanta	30.4	149.5	100.0	223.2	123.2
Moderate Gain					
Pittsburgh	34.4	154.0	100.0	215.6	115.6
Denver	35.4	127.2	96.3	225.8	129.5
Washington	36.3	171.1	100.0	235.4	135.4
Los Angeles	39.1	169.0	100.0	228.4	128.4
Cleveland	41.2	159.2	100.0	235.2	135.2
Philadelphia	42.1	187.3	100.0	251.3	151.3
Chicago	51.2	187.1	100.0	285.8	185.8
Large Gain					
New York	54.3	228.8	100.0	345.8	245.8
Boston	56.5	228.8	100.0	375.1	275.1
Detroit	56.6	176.4	99.4	298.7	199.3
Portland	58.4	158.5	95.1	260.9	165.8
Seattle	61.0	181.2	100.0	306.6	206.6
San Francisco	64.5	201.1	100.0	379.3	279.3

Freddie Mac Conventional Home Price Index

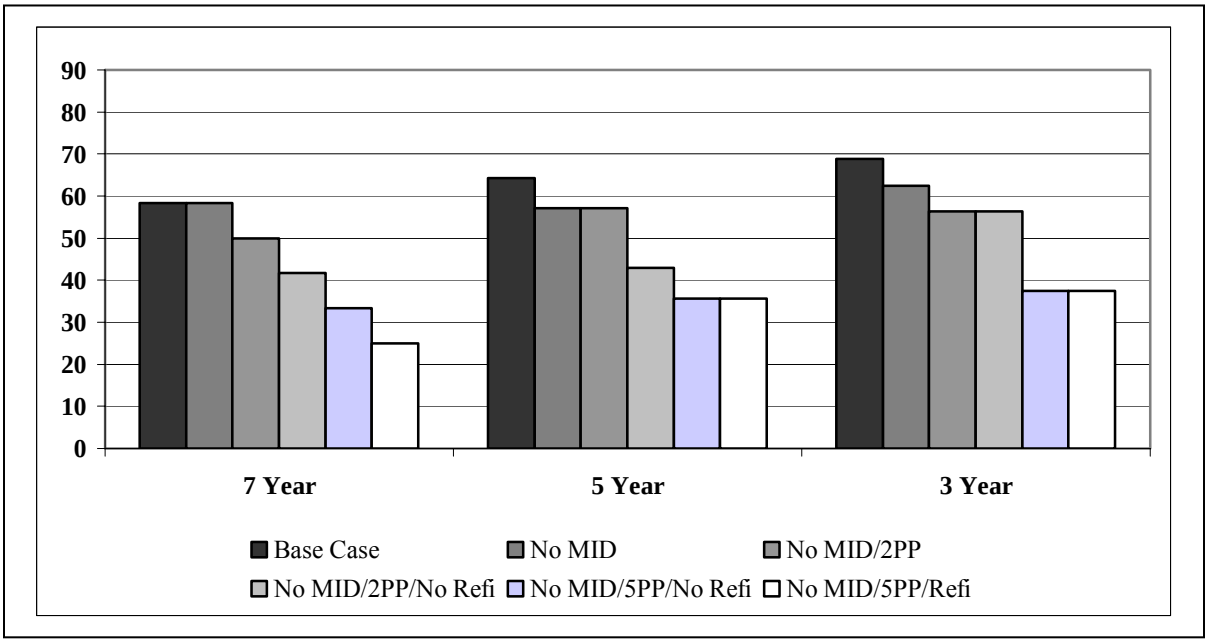
Chart 4

Share of Times Owning is Superior by MSA by Holding Period, 1983-1994 (percent)						
	TABLE 3			TABLE 6		
	3 Year Holders	5 Year Holders	7 Year Holders	3 Year Holders	5 Year Holders	7 Year Holders
Base Case						
Boston	58.3	58.3	58.3	68.8	64.3	58.3
Chicago	50.0	75.0	83.3	50.0	78.6	83.3
Denver	33.3	50.0	50.0	50.0	57.1	50.0
Washington	41.7	41.7	58.3	43.8	50.0	58.3
No MID						
Boston	50.0	50.0	58.3	62.5	57.1	58.3
Chicago	50.0	75.0	83.3	50.0	78.6	83.3
Denver	33.3	50.0	50.0	50.0	57.1	50.0
Washington	33.3	41.7	58.3	37.5	50.0	58.3
No MID/2PP						
Boston	41.7	50.0	50.0	56.3	57.1	50.0
Chicago	33.3	33.3	66.7	31.3	35.7	66.7
Denver	33.3	41.7	50.0	43.8	50.0	50.0
Washington	33.3	33.3	41.7	37.5	35.7	41.7
No MID/5PP						
Boston	25.0	25.0	33.3	37.5	35.7	33.3
Chicago	8.3	0.0	0.0	6.3	0.0	0.0
Denver	8.3	8.3	25.0	18.8	21.4	25.0
Washington	25.0	16.7	0.0	25.0	14.3	0.0
No MID/2PP/No Refi						
Boston	41.7	33.3	41.7	56.3	42.9	41.7
Chicago	33.3	25.0	41.7	31.3	28.6	41.7
Denver	33.3	33.3	33.3	43.8	42.9	33.3
Washington	33.3	33.3	41.7	37.5	35.7	41.7
No MID/5PP/No Refi						
Boston	25.0	25.0	25.0	37.5	35.7	25.0
Chicago	8.3	0.0	0.0	6.3	0.0	0.0
Denver	8.3	8.3	25.0	18.8	21.4	25.0
Washington	25.0	0.0	0.0	25.0	0.0	0.0

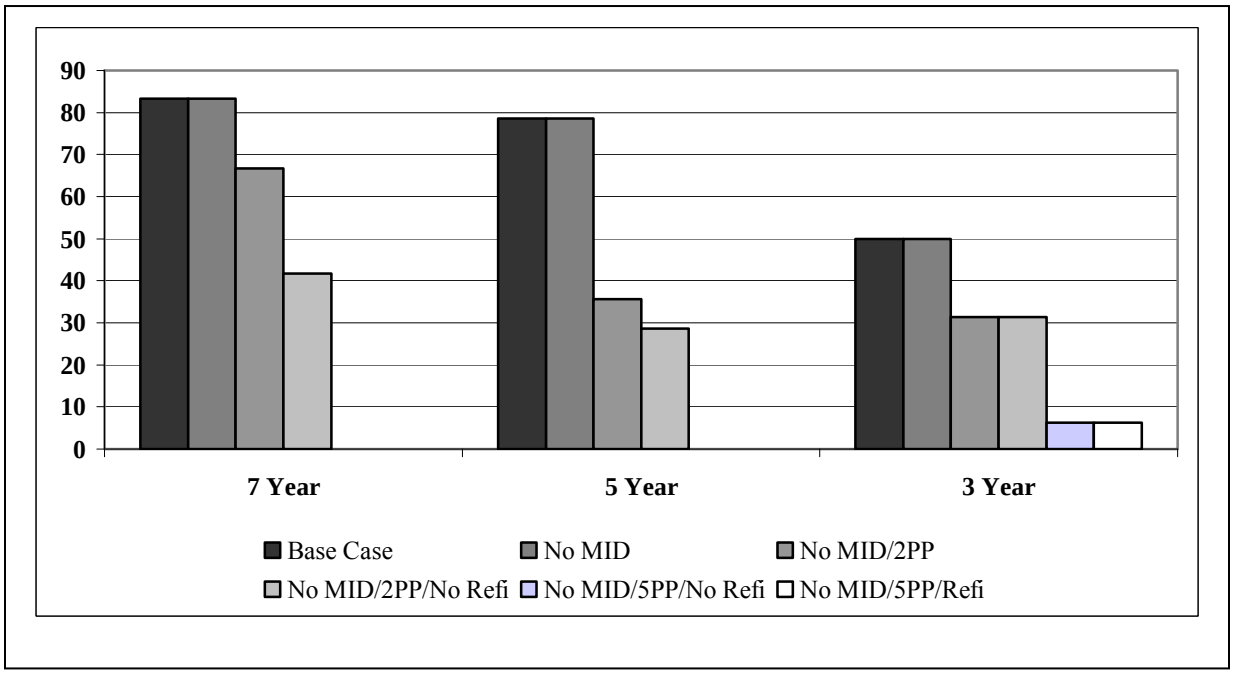
Note: Opportunity cost calculated at 10 year treasury.
For Table 6 three, five, and seven year holds are based on 16, 14, and 12 possible periods.
Periods began 1983-1998 for 3 years holders, 1983-1996 for five year holders, and 1983-1994 for seven year holders.

Chart 4 : Highlights

BOSTON



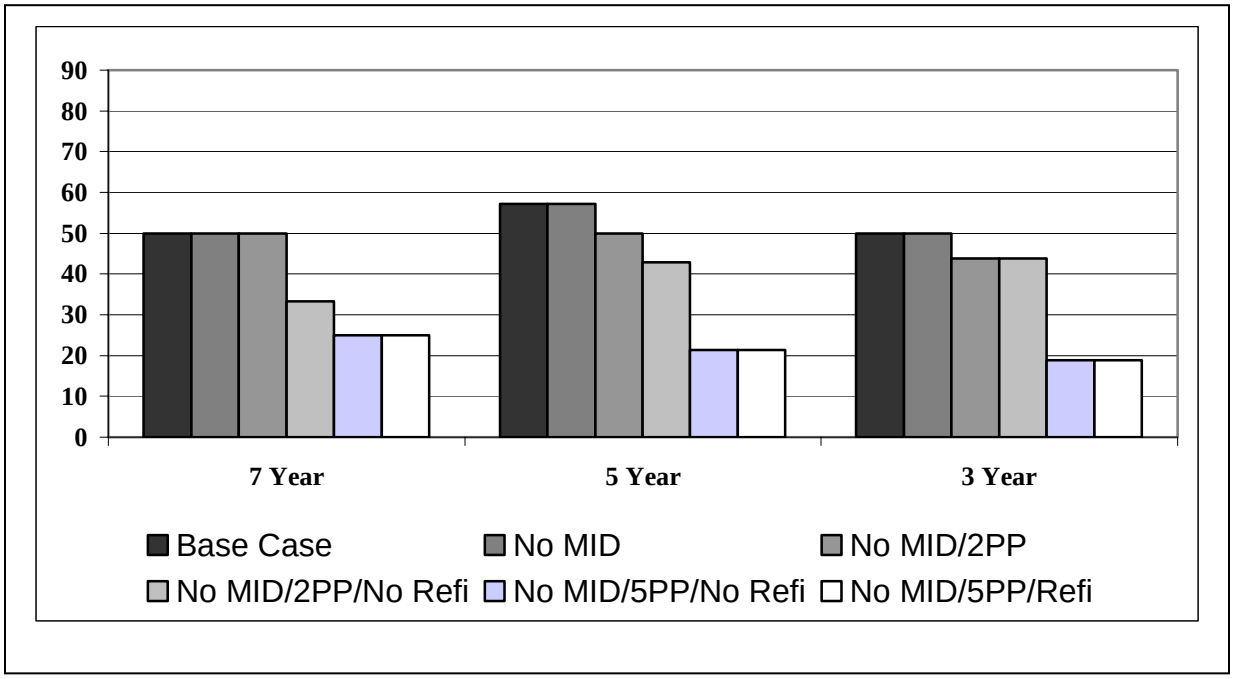
CHICAGO



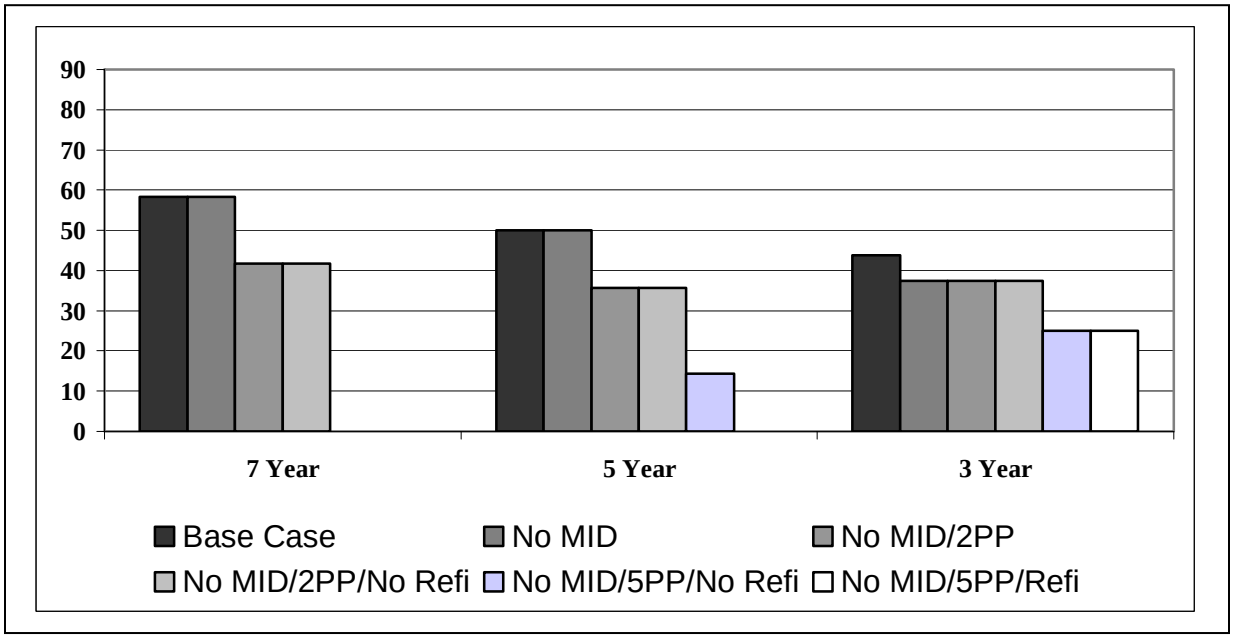
Note: Opportunity cost calculated based on returns to renters holding 10 year Treasuries Periods began 1983-1998 for 3 years holders, 1983-1996 for five year holders, and 1983-1994 for seven year holders

Chart 4 Highlights (continued)

DENVER



WASHINGTON



Note: Opportunity cost calculated based on returns to renters holding 10 year Treasuries Periods began 1983-1998 for 3 years holders, 1983-1996 for five year holders, and 1983-1994 for seven year holders.

Appendix: Number of Years by Annual Average Difference Between Costs of Owning and Renting

Base Case											
3 Year Hold	OWNING SUPERIOR					Neutral	Renting Superior				
	> $10,000	$5,000 to $10,000	$2,500 to $5,500	$1,000 to $1,500	$500 to $1,000	+/-$500	$500 to $1,000	$1,000 to $2,500	$2,500 to $5,000	$5,000 to $10,000	> $10,000
Boston	1	5	1	3	0	1	0	2	2	1	0
Chicago	0	0	1	5	1	5	3	1	0	0	0
Denver	0	1	1	4	2	1	0	3	4	0	0
Washington	0	2	2	2	1	2	0	3	4	0	0
5 Year Hold	OWNING SUPERIOR					Neutral	Renting Superior				
	> $10,000	$5,000 to $10,000	$2,500 to $5,500	$1,000 to $1,500	$500 to $1,000	+/-$500	$500 to $1,000	$1,000 to $2,500	$2,500 to $5,000	$5,000 to $10,000	> $10,000
Boston	0	3	3	2	0	1	1	2	2	0	0
Chicago	0	0	0	4	4	5	1	0	0	0	0
Denver	0	0	2	4	1	1	0	5	1	0	0
Washington	0	0	4	2	1	1	2	2	2	0	0
7 Year Hold	OWNING SUPERIOR					Neutral	Renting Superior				
	> $10,000	$5,000 to $10,000	$2,500 to $5,500	$1,000 to $1,500	$500 to $1,000	+/-$500	$500 to $1,000	$1,000 to $2,500	$2,500 to $5,000	$5,000 to $10,000	> $10,000
Boston	0	2	2	2	1	2	0	3	0	0	0
Chicago	0	0	0	4	5	3	0	0	0	0	0
Denver	0	0	2	2	1	3	0	4	0	0	0
Washington	0	0	0	5	2	0	2	3	0	0	0
No MID											
3 Year Hold	OWNING SUPERIOR					Neutral	Renting Superior				
	> $10,000	$5,000 to $10,000	$2,500 to $5,500	$1,000 to $1,500	$500 to $1,000	+/-$500	$500 to $1,000	$1,000 to $2,500	$2,500 to $5,000	$5,000 to $10,000	> $10,000
Boston	1	4	2	2	1	1	0	1	2	2	0
Chicago	0	0	1	4	1	7	2	1	0	0	0
Denver	0	1	1	4	2	1	1	2	4	0	0
Washington	0	1	3	1	1	1	2	3	4	0	0
5 Year Hold	OWNING SUPERIOR					Neutral	Renting Superior				
	> $10,000	$5,000 to $10,000	$2,500 to $5,500	$1,000 to $1,500	$500 to $1,000	+/-$500	$500 to $1,000	$1,000 to $2,500	$2,500 to $5,000	$5,000 to $10,000	> $10,000
Boston	0	3	3	2	0	1	0	2	3	0	0
Chicago	0	0	0	3	5	4	2	0	0	0	0
Denver	0	0	2	4	1	1	0	3	3	0	0
Washington	0	0	0	6	1	0	1	3	3	0	0

7 Year Hold	OWNING SUPERIOR					Neutral	Renting Superior				
	> $10,000	$5,000 to $10,000	$2,500 to $5,500	$1,000 to $1,500	$500 to $1,000	+/-$500	$500 to $1,000	$1,000 to $2,500	$2,500 to $5,000	$5,000 to $10,000	> $10,000
Boston	0	2	2	2	0	1	1	3	1	0	0
Chicago	0	0	0	3	6	3	0	0	0	0	0
Denver	0	0	2	3	1	2	0	3	1	0	0
Washington	0	0	0	5	0	2	0	3	2	0	0
No MID/2PP/No Refi											
3 Year Hold	OWNING SUPERIOR					Neutral	Renting Superior				
	> $10,000	$5,000 to $10,000	$2,500 to $5,500	$1,000 to $1,500	$500 to $1,000	+/-$500	$500 to $1,000	$1,000 to $2,500	$2,500 to $5,000	$5,000 to $10,000	> $10,000
Boston	0	4	2	1	1	1	1	1	2	3	0
Chicago	0	0	0	2	1	4	2	7	0	0	0
Denver	0	0	2	2	2	2	1	1	6	0	0
Washington	0	0	2	2	0	2	1	2	4	3	0
5 Year Hold	OWNING SUPERIOR					Neutral	Renting Superior				
	> $10,000	$5,000 to $10,000	$2,500 to $5,500	$1,000 to $1,500	$500 to $1,000	+/-$500	$500 to $1,000	$1,000 to $2,500	$2,500 to $5,000	$5,000 to $10,000	> $10,000
Boston	0	2	3	1	0	2	0	1	3	2	0
Chicago	0	0	0	0	2	7	2	3	0	0	0
Denver	0	0	1	3	2	1	1	2	4	0	0
Washington	0	0	0	3	2	1	1	1	4	2	0
7 Year Hold	OWNING SUPERIOR					Neutral	Renting Superior				
	> $10,000	$5,000 to $10,000	$2,500 to $5,500	$1,000 to $1,500	$500 to $1,000	+/-$500	$500 to $1,000	$1,000 to $2,500	$2,500 to $5,000	$5,000 to $10,000	> $10,000
Boston	0	0	3	2	0	2	0	2	3	0	0
Chicago	0	0	0	0	1	8	3	0	0	0	0
Denver	0	0	1	3	0	2	0	3	3	0	0
Washington	0	0	0	0	3	2	2	2	3	0	0
No Mid/5PP/No Refi											
3 Year Hold	OWNING SUPERIOR					Neutral	Renting Superior				
	> $10,000	$5,000 to $10,000	$2,500 to $5,500	$1,000 to $1,500	$500 to $1,000	+/-$500	$500 to $1,000	$1,000 to $2,500	$2,500 to $5,000	$5,000 to $10,000	> $10,000
Boston	0	4	1	1	0	1	0	3	2	4	0
Chicago	0	0	0	0	0	2	4	2	8	0	0
Denver	0	0	1	1	0	2	2	3	6	1	0
Washington	0	0	0	3	0	1	1	2	3	6	0

5 Year Hold	OWNING SUPERIOR					Neutral	Renting Superior				
	> $10,000	$5,000 to $10,000	$2,500 to $5,500	$1,000 to $1,500	$500 to $1,000	+/-$500	$500 to $1,000	$1,000 to $2,500	$2,500 to $5,000	$5,000 to $10,000	> $10,000
Boston	0	0	3	1	1	1	0	2	2	4	0
Chicago	0	0	0	0	0	2	3	6	3	0	0
Denver	0	0	0	1	0	5	1	1	6	0	0
Washington	0	0	0	0	0	4	0	2	4	4	0
7 Year Hold	OWNING SUPERIOR					Neutral	Renting Superior				
	> $10,000	$5,000 to $10,000	$2,500 to $5,500	$1,000 to $1,500	$500 to $1,000	+/-$500	$500 to $1,000	$1,000 to $2,500	$2,500 to $5,000	$5,000 to $10,000	> $10,000
Boston	0	0	1	2	0	2	0	2	2	3	0
Chicago	0	0	0	0	0	2	3	7	0	0	0
Denver	0	0	0	1	2	1	2	2	4	0	0
Washington	0	0	0	0	0	1	3	2	3	3	0

No Mid/2PP

3 Year Hold	OWNING SUPERIOR					Neutral	Renting Superior				
	> $10,000	$5,000 to $10,000	$2,500 to $5,500	$1,000 to $1,500	$500 to $100	+/-$500	$500 to $1,000	$1,000 to $2,500	$2,500 to $5,000	$5,000 to $10,000	> $10,000
Boston	0	4	2	1	1	1	1	1	2	3	0
Chicago	0	0	0	2	1	4	2	7	0	0	0
Denver	0	0	2	2	2	2	1	1	6	0	0
Washington	0	0	2	2	0	2	1	2	4	3	0
5 Year Hold	OWNING SUPERIOR					Neutral	Renting Superior				
	> $10,000	$5,000 to $10,000	$2,500 to $5,500	$1,000 to $1,500	$500 to $100	+/-$500	$500 to $1,000	$1,000 to $2,500	$2,500 to $5,000	$5,000 to $10,000	> $10,000
Boston	0	1	4	1	0	1	1	1	3	2	0
Chicago	0	0	0	0	1	8	1	4	0	0	0
Denver	0	0	1	2	2	2	1	2	4	0	0
Washington	0	0	0	2	2	2	1	1	3	3	0
7 Year Hold	OWNING SUPERIOR					Neutral	Renting Superior				
	> $10,000	$5,000 to $10,000	$2,500 to $5,500	$1,000 to $1,500	$500 to $100	+/-$500	$500 to $1,000	$1,000 to $2,500	$2,500 to $5,000	$5,000 to $10,000	> $10,000
Boston	0	0	3	1	1	0	2	1	4	0	0
Chicago	0	0	0	0	1	7	1	3	0	0	0
Denver	0	0	1	2	1	2	0	3	3	0	0
Washington	0	0	0	0	0	5	2	0	5	0	0

All dollars are constant 2002.

No Mid/5PP											
3 Year Hold	OWNING SUPERIOR					Neutral	Renting Superior				
	> $10,000	$5,000 to $10,000	$2,500 to $5,500	$1,000 to $1,500	$500 to $100	+/-$500	$500 to $1,000	$1,000 to $2,500	$2,500 to $5,000	$5,000 to $10,000	> $10,000
Boston	0	4	1	1	0	1	0	3	2	4	0
Chicago	0	0	0	0	0	2	4	2	8	0	
Denver	0	0	1	1	0	2	2	3	6	1	0
Washington	0	0	0	3	0	1	1	2	3	6	0
5 Year Hold	OWNING SUPERIOR					Neutral	Renting Superior				
	> $10,000	$5,000 to $10,000	$2,500 to $5,500	$1,000 to $1,500	$500 to $100	+/-$500	$500 to $1,000	$1,000 to $2,500	$2,500 to $5,000	$5,000 to $10,000	> $10,000
Boston	0	0	3	1	1	1	0	2	2	4	0
Chicago	0	0	0	0	0	1	3	6	4	0	0
Denver	0	0	0	1	0	4	1	2	5	1	0
Washington	0	0	0	0	0	3	1	2	4	4	0
7 Year Hold	OWNING SUPERIOR					Neutral	Renting Superior				
	> $10,000	$5,000 to $10,000	$2,500 to $5,500	$1,000 to $1,500	$500 to $100	+/-$500	$500 to $1,000	$1,000 to $2,500	$2,500 to $5,000	$5,000 to $10,000	> $10,000
Boston	0	0	1	2	0	1	1	1	3	3	0
Chicago	0	0	0	0	0	1	4	4	3	0	0
Denver	0	0	0	1	1	2	0	4	4	0	0
Washington	0	0	0	0	0	0	2	4	3	3	0

References

Abraham, J. and W. Schauman. 1991. New Evidence on Home Prices from Freddie Mac Repeat Sales. *AREUEA Journal* 19: 333-352.

Ambrose, Brent W., and William N. Goetzmann. 1998. "Risks and Incentives in Underserved Mortgage Markets." *Journal of Housing Economics* 7 (3): 274-85.

Apgar, W., et al. 2002. *The 25th Anniversary of the Community Reinvestment Act: Accessto Capital in an Evolving Financial Services System* CRA. Prepared for the Ford Foundation by The Joint Center for Housing Studies, Harvard University.

Archer, W. R. and Ling, D.C. and McGill, G. A. 2002. "Prepayment Risk and Lower-Income Mortgage Borrowers." *Low Income Homeownership: Examining the Unexamined Goal*. Washington, DC: Brookings Institution Press: 279-321.

Belsky, E. and M. Duda. 2002. "Asset Appreciation, Timing of Purchases and Sales, and Returns to Low-Income Homeownership." *Low Income Homeownership: Examining the Unexamined Goal*. Washington, DC: Brookings Institution Press: 208-238.

Blank, R.M. "Evaluating Welfare Reform in the United States." *Journal of Economic Literature* 40(4) : 1105-1166.

Bourassa, S. C., and W. G. Grigsby. 2000. "Income Tax Concessions for Owner-Occupied Housing." *Housing Policy Debate* 11 (3): 521-546.

Case, K. and C. Mayer. 1996. "Housing Price Dynamics within a Metropolitan Area." *Regional Science and Urban Economics* 26: 387-407.

Case, K. and C. Mayer. 1995. "Teh Housing Cycle in Eastern Massachusetts : Variations among cities and Towns." *New England Economic Review* (March/April): 24-40.

Case, K. and M. Marynchenko. 2002. "Home Price Appreciation in Low-and Moderate-Income Markets." *Low Income Homeownership: Examining the Unexamined Goal*. Washington, DC: Brookings Institution Press: 239-256.

Case, K., and R. Schiller. 1994. "A Decade of Boom and Bust in the Prices of Single Family Homes: Boston and Los Angeles: 1983-1993." *New England Economic Review* (March/April): 40-51.

Case, K., and R. Schiller. 2003. "Is There a Bubble in the Housing Market? An Analysis." Unpublished paper prepared for the Brookings Panel on Economic Activity.

Collins, M. 2002. Pursuing the American Dream : Homeownership and the Role of Federal Housing Policy. Report to the Millenial Housing Commission. Wshington DC.

Courchane, Marsha J., Brian J. Surette, and Peter M. Zorn. 2003. Subprime Borrowers: Mortgage Transitions and Outcomes, *Journal of Real Estate Finance and Economics*, forthcoming.

Cutts, Amy Crews and Robert A. Van Order. 2003. *On the Economic of Subprime Lending.* Paper published by Freddie Mac. Available at: http://www.freddiemac.com/news/analysis/pdf/subprime_050203.pdf

DeGiovanni, F. 2002. "Returns to Homeownership." *Low Income Homeownership: Examining the Unexamined Goal*. Washington, DC: Brookings Institution Press: 201-207.

Duda, M., E. Belsky, J. Goodman, and B. Kaul . "Owning Versus Renting: A User Cost of Comparison for Twenty US Metropolitan Areas, 1983-2000." Working Paper forthcoming. Joint Center for Housing Studies, Harvard University.

Duda, M. and E. Belsky. 2002. "Anatomy of the Low-Income Homeownership Boom in the 1990's." *Low Income Homeownership: Examining the Unexamined Goal*. Washington, DC: Brookings Institution Press: 15-63.

Flavin, M. and T. Yamashita. 2002. "Owner-Occupied Housing and the Composition of the household Portfolio." *American Economic Reveiw* 92(1) : 345-362.

Goetzmann, W. N. and M. Spiegel. 2002. "Policy Implications of Portfolio Choice in Underserved Mortgage Markets." *Low Income Homeownership: Examining the Unexamined Goal*. Washington, DC: Brookings Institution Press: 257-274.

Goodman, J. 1998. The Costs of Owning and Renting Housing: 1985-1995. (unpublished working paper)

Haurin, D. and H. Leroy Gill. 2002. "The Impact of Transaction Costs and the Expected Length of Stay on Homeownership." *Journal of Urban Economics* 51 :563-584.

Joint Center for Housing Studies. 2000. *The State of the Nation's Housing*. Harvard University.

Joint Center for Housing Studies. 2003. *The State of the Nation's Housing*. Harvard University.

Kiel, K. A., and R. T. Carson. 1990. "An Examination of Systematic Differences in the Appreciation of Individual Housing Units." *Journal of Real Estate Research* 5 (3): 301-17.

Lax, H., M. Manti, et al. (2000). Subprime Lending: An Investigation of Economic Efficiency. Freddie Mac Working Paper. McLean, VA.

Li, Y., and E. Rosenblatt. 1997. "Can Urban Indicators Predict Home Price Appreciation?" *Real Estate Economics* 25 (1): 81-104.

Mayer, Christopher. 1993. "Taxes, Income Distribution, and the Real Estate Cycle." *New England Economic Review* (May-June): 39-50.

Pollakowski, H. O., M. A. Stegman, and W. Rohe. 1992. "Rates of Return on Housing of Low and Moderate-Income Owners." Working Paper 92-4. Joint Center for Housing Studies, Harvard University.

Poterba, J. M. 1992. "Taxation and Housing : Old Questions, New Answers. " *American Economic Review* 82(2) : 237-242.

Poterba, J. M. 1991. "House Price Dynamics: the Role of Taxes and Demography." *Brookings Papers on Economic Activity* (2): 110-26.

Quercia, R. G., G. W. McCarthy, et al. (2000). "Spatio-Temporal Measurement of House Price Appreciation in Underserved Areas." *Journal of Housing Research* 11 (1): 1-28.

Seward, J. A., C. J. Delaney, and M. T. Smith. 1992. "An Empirical Analysis of Housing Price Appreciation in a Market Stratified by Size and Value of the Housing Stock." *Journal of Real Estate Research* 7 (2): 195-205.

Smith, B. A. and W. P. Tesarek. 1991. "House Prices and Regional Real Estate Cycles: Market Adjustment in Houston." *AREUEA Journal* 79 (1): 12-37.

Smith, L. B., and M. H. C. Ho. 1996 "The Relative Price Differential between Higher and Lower Price Homes." *Journal of Housing Economics* 5: 1-17.

U.S. Department of Housing and Urban Development and U.S. Treasury Department. 2000. *Curbing Predatory Home Mortgage Lending.* Washington, DC: U.S. Department of Housing and Urban Development.

Van Order, R. and P. Zorn. 2002. "Performance of Low-Income and Minority Mortgages." *Low Income Homeownership: Examining the Unexamined Goal*. Washington, DC: Brookings Institution Press: 322-347.

Wiranowski, M. 2003. "Sustaining Home Ownership Through Education and Counseling." Working Paper Special Fellowship Series. Neighborhood Reinvestment Corporation and The Joint Center for Housing Studies, Harvard University. (Summer)