



# Hitting Bottom?

## An Updated Analysis of Rents and the Price of Housing in 100 Metropolitan Areas

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## Executive Summary

It has been two years since the housing bubble began to deflate. In this time, home prices in major metropolitan areas have fallen more than 32.3 percent<sup>1</sup> and the woes in the housing sector have spread to the broader economy. Where is the housing market today? Have we hit bottom?

By comparing home prices to rents, as suggested by basic economic theory, this paper finds that while most of the nation's metropolitan housing bubbles have deflated and many markets never had one to contend with, there is the possibility of a persistent housing slump in the years ahead. An appropriate response to this problem involves:

- 1) Stimulating the fundamental demand for housing through acting to lower unemployment and raise wages;
- 2) Recognizing a leading role for rental housing in federal foreclosure mitigation and neighborhood stabilization policy, including allowing foreclosed homeowners to remain in their homes as renters; and
- 3) Adequately funding the National Housing Trust Fund to capitalize on current low prices, ensure long-term affordability in a recovery, absorb excess housing, and stimulate employment.

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<sup>1</sup> The data is attained from the May 2009 release of the S&P/Case-Shiller 20-City Composite Index for the period from the peak in the second quarter of 2006 to May 2009.

## Introduction

As explained in our earlier papers<sup>2</sup>, home prices have typically risen at approximately the rate of overall inflation over the course of the last century. Keeping with economic theory, which contends that a home's sale price is derived from the rents it can generate, home prices in the United States have also moved in line with rental prices. Beginning in 1995, however, this seemingly stable relationship between home prices, rents, and inflation radically diverged from the historical trend. Home prices shot up while rents continued to move in line with inflation. Where the ratio of median sales price to median annual rent had hovered close to 15 to 1 in recent decades (i.e. it took \$150,000 to buy a house that would rent for roughly \$10,000 per year) at the peak of the bubble in 2007, it went above 25 to 1 in many inflated markets.

For purposes of analysis, this paper treats a home price that is 15 times the annual rent of a comparable home for rent as being at an equilibrium sale price,<sup>3</sup> and defines a bubble market as one in which the ratio of price to annual rent exceeds 18 to 1. The paper also compares the current monthly costs of owning and renting.

Based on this measure as well as fairly conservative mortgage underwriting and rental market assumptions, this paper seeks to provide insight into two important questions:

1. After two years of decline in real estate markets, has the monthly cost of a modest home purchased *today* reached a level that is comparable to the historical cost of renting? and
2. Can a household that buys a moderately-priced home *today* expect to gain equity within five years?

## Ownership and Rental Costs in 2009

With the bursting of the housing bubble nationally, there continues to be a general trend of drastically falling home prices. According to the Federal Housing Finance Agency's House Price Index, prices have declined in 79 of the 100 metropolitan areas studied. Due to this continuing trend in housing prices, 14 of the 27 cities that would have been considered bubbles in April 2008 using the methods in this paper have seen their home price to annual rent ratios fall back below the 18 to 1 threshold as of April of this year (see **Table 1**). Four of these former bubble cities rank among the markets with the largest declines in estimated monthly ownership costs, including a drop of more than 20 percentage points in Stockton, CA. Thirteen cities remained over-inflated in April, though all of these bubble markets have also seen reduced prices and ownership costs.

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<sup>2</sup> Baker, Dean, Danilo Pelletiere, and Hye Jin Rho, 2008. "The Cost of Maintaining Ownership in the Current Crisis," Washington, D.C.: Center for Economic and Policy Research; Rho, Hye Jin, Danilo Pelletiere, and Dean Baker, 2009. "The Changing Prospects for Building Home Equity," Washington, D.C.: Center for Economic and Policy Research.

<sup>3</sup> This historically derived rule of thumb would indicate, for example, that in a balanced market a rental unit comparable in quality to a home purchased for \$150,000 should rent for roughly \$10,000 a year or \$833 a month. In other words, it takes \$15 of sales price for every dollar of annual rent to be at the equilibrium level and the ratio of home price to annual rent would be 15 to 1.

The bubble markets have the largest discrepancy between monthly ownership and rental costs. Even in the low-cost scenario, rental units are much less costly for tenants in these markets. For example, in San Jose – the most over-inflated market – the difference between low-cost ownership and rental costs is close to \$2,000. By contrast, the gaps are very small in non-bubble markets. (See **Appendix Table 1** for a fuller treatment of ownership and rental costs.)

**TABLE 1**  
**Changing Status of Bubble Markets**

Metropolitan Statistical Areas (MSAs)	Home Price to Annual Rent Ratios		
	April 2008	July 2008	April 2009
Boise City-Nampa, ID	<b>18.1</b>	<b>19.0</b>	16.4
Boston-Cambridge-Quincy, MA-NH	<b>18.1</b>	17.6	17.5
Poughkeepsie-Newburgh-Middletown, NY	<b>18.2</b>	18.0	16.9
Providence-New Bedford-Fall River, RI-MA	<b>18.5</b>	17.5	17.9
Salt Lake City, UT	<b>18.5</b>	<b>20.3</b>	<b>18.5</b>
Phoenix-Mesa-Scottsdale, AZ	<b>18.6</b>	16.7	14.4
Worcester, MA	<b>18.8</b>	17.6	17.9
Baltimore-Towson, MD	<b>18.9</b>	<b>18.7</b>	17.6
Miami-Fort Lauderdale-Pompano Beach, FL	<b>18.9</b>	16.6	12.0
Las Vegas-Paradise, NV	<b>18.9</b>	16.2	12.5
Riverside-San Bernardino-Ontario, CA	<b>20.1</b>	16.6	13.7
Washington-Arlington-Alexandria, DC-VA-MD-WV	<b>20.8</b>	<b>19.5</b>	<b>21.5</b>
Fresno, CA	<b>21.4</b>	<b>18.8</b>	15.8
Honolulu, HI	<b>21.4</b>	<b>21.8</b>	<b>21.3</b>
Bakersfield, CA	<b>21.6</b>	<b>19.0</b>	14.7
New York-Northern NJ-Long Island, NY-NJ-PA	<b>21.9</b>	<b>21.7</b>	<b>20.9</b>
Modesto, CA	<b>22.7</b>	<b>18.4</b>	15.0
Portland-Vancouver-Beaverton, OR-WA	<b>23.1</b>	<b>24.5</b>	<b>21.9</b>
Sacramento-Arden-Arcade-Roseville, CA	<b>24.0</b>	<b>20.8</b>	<b>18.1</b>
Seattle-Tacoma-Bellevue, WA	<b>24.4</b>	<b>25.0</b>	<b>22.7</b>
San Diego-Carlsbad-San Marcos, CA	<b>24.5</b>	<b>21.8</b>	<b>19.3</b>
Stockton, CA	<b>24.7</b>	<b>18.5</b>	14.2
Oxnard-Thousand Oaks-Ventura, CA	<b>26.3</b>	<b>23.6</b>	<b>20.0</b>
Bridgeport-Stamford-Norwalk, CT	<b>27.2</b>	<b>25.8</b>	<b>24.3</b>
San Francisco-Oakland-Fremont, CA	<b>27.3</b>	<b>25.9</b>	<b>23.7</b>
Los Angeles-Long Beach-Santa Ana, CA	<b>28.1</b>	<b>25.1</b>	<b>21.5</b>
San Jose-Sunnyvale-Santa Clara, CA	<b>35.0</b>	<b>33.2</b>	<b>29.4</b>

Source: Census Bureau, HUD, and authors' calculations

Note: Bubble markets are indicated by **bold** text. Calculations based on 75 percent of median house sale price.

## The Prospects for Accumulating Equity

Building housing wealth is a possible advantage of homeownership and is often used to justify higher monthly costs. Therefore, in addition to looking at current costs, the relative merit of owning or renting a home is examined by projecting the equity a new home buyer can expect to accumulate

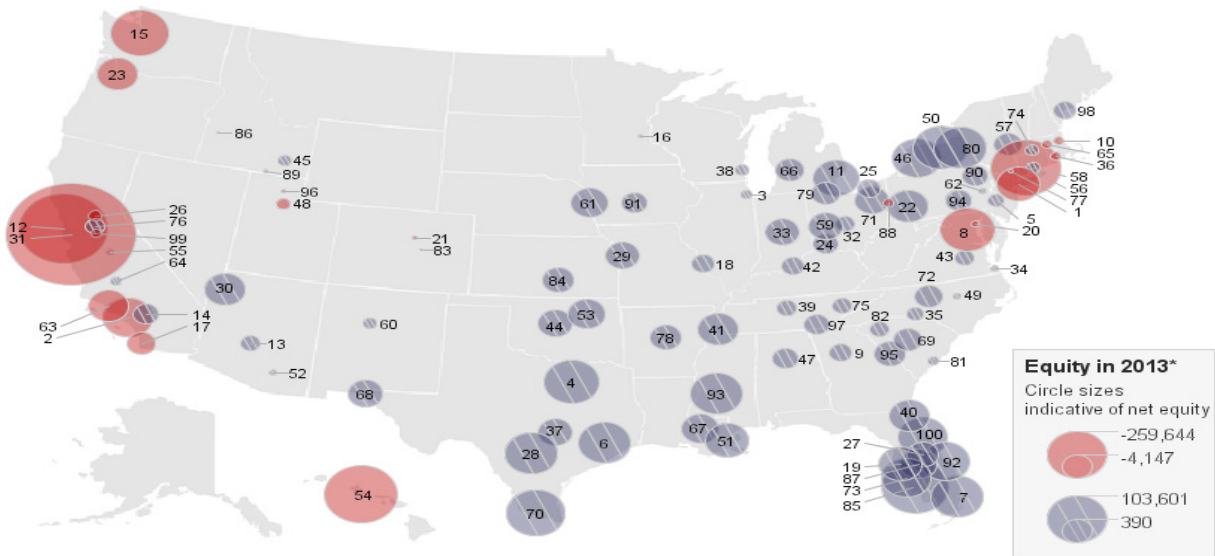
after the purchase. It is also possible that a home will become a growing liability, a clear concern in the current market.

Another long-standing rule of thumb in the home-buying process has been that once the costs of purchase and resale are accounted for, it takes five years for a first-time homebuyer to begin accruing equity in a home. Our calculations (see **Appendix Table 2**) indicate that new homeowners in 21 markets, particularly the 13 bubble markets, will not have positive equity by 2013 if the home is purchased in the current market. Only three of these markets, however, are predicted to have larger losses in equity relative to last year (Providence-New Bedford-Fall River, RI-MA; Washington-Arlington-Alexandria, DC-VA-MD-WV; and Worcester, MA). In the remaining 18 markets, homebuyers this year can expect to see less loss of value than homebuyers last year. Yet, even accounting for the improving equity outlook over the next four years, renting continues to be a more attractive option for homeowners in these markets.

Meanwhile, in non-bubble markets, homeowners can have a more optimistic outlook for accumulating equity. A first-time homebuyer in 79 out of 87 markets can expect to accrue equity in four years. In five markets, where we projected that a household purchasing a modestly-priced house last year would fail to accumulate equity within four years, a household purchasing the same home at today's prices is now projected to have equity by 2013.

**Figure 1** shows the updated projections of accumulated equity a household will have four years after purchasing a home at 75 percent of the median price in the 100 largest metropolitan areas. Blue, striped circles indicate positive equity, while red, solid circles indicate negative equity. The numbers in Figure 1 correspond to the population rank of Metropolitan Statistical Areas (MSAs) listed in Appendix Table 2. Many more cities appear to have greater equity-building prospects in the figure below, compared to our earlier projections.

**FIGURE 1**  
**Housing Equity Prospects in 100 Cities**



Notes: Census Bureau and CEPR/NLIHC calculations. \*Map based on mid-housing cost scenario. Numbers indicate population size. See Appendix Table 3 for a comprehensive list of equity prospects.

## Accounting for Equity in a Changing Economy

The first part of this paper and the earlier iterations of this analysis ignore the impact of the bursting housing bubble on the trend in rents or the broader economy. While housing prices fall, it is assumed that rents rise at their historical trend, raising the price floor and bringing closer the day when the housing market is in balance. For the four-year equity analysis above and our previous analyses, we have used a historically-based, national projection factor used by HUD.

Our analysis is predicated on the belief that rents are a fundamentally more sound measure of the strength of the economy than are home prices, which are prone to speculation. By using this HUD factor we are also assuming that the underlying economy will continue to grow at an undiminished rate. However, recent economic data have shown declining rates of growth and there is a strong likelihood of a jobless recovery with limited economic growth.<sup>4</sup>

Rising unemployment and declining incomes generally dampen the demand for housing: fewer new households form, households combine, immigration declines, and some households become homeless. Though on average rents will likely continue to increase,<sup>5</sup> the trend has been moderating, and in some of the hardest hit cities, average rents are showing a decline as the middle and upper ends of the markets become soft with increasing supply.<sup>6</sup>

In an effort to illustrate the impact of recent developments in local economies on our analysis, in this section we turn to 2009 rent projections published by Marcus & Millchap in place of HUD's projection factor.<sup>7</sup> The Marcus & Millchap projections are based on current local economic data such as employment and rental vacancy rates and vary according to these factors across housing markets. For illustration purposes these one-year projections are used to project equity accumulation over the entire period and compared to our previous analysis.

## Recent Rental Trends in 40 Cities

The Marcus & Millchap analysis looks at apartment asking rents in 43 markets. Among these, only Washington-Arlington-Alexandria, San Diego-Carlsbad-San Marcos, San Francisco-San Mateo-Redwood City, New Haven-Milford, and Austin-Round Rock are projected to see rent increases that exceed the HUD projection of 3 percent. Even in these markets, annual projected rent growth in 2009 is lower than previously projected in 2007 and 2008. Eight markets are predicted to see

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<sup>4</sup> The economy shrank very rapidly in the fourth quarter of 2008 and the first quarter of 2009. Economic projections of the Federal Reserve Governors and Reserve Bank Presidents, June 2009, indicate that growth will continue to contract through the end of 2009 (decrease of GDP from 1.0% to 1.5%).

<http://www.federalreserve.gov/monetarypolicy/files/fomcminutes20090624.pdf> (Table 1)

<sup>5</sup> According to the most recent Housing Vacancy Survey, nationally asking rents increased from \$678 to \$715 in constant terms from the second quarter of 2008 to the second quarter of 2009.

<http://www.census.gov/hhes/www/housing/hvs/qtr209/q209ind.html> (Table 8)

<sup>6</sup> Yu, H. (July 8, 2009) Apartment Vacancy at 22-Year High in U.S., Says Reis (Update1). Bloomberg.com. Retrieved July 29, 2009 from <http://www.bloomberg.com/apps/news?pid=20601103&sid=aSospcz2XsYw>

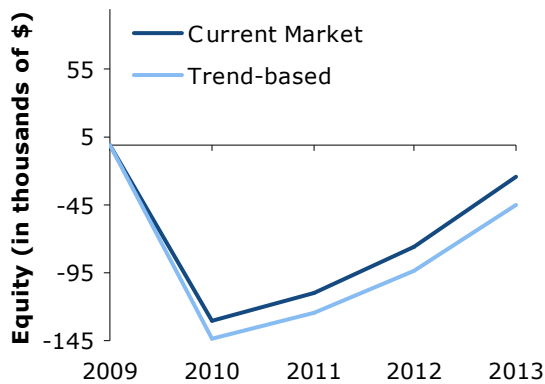
<sup>7</sup> Marcus & Millchap, 2009. "Real Estate Investment Research: 2009 National Apartment Report," Phoenix, AZ: Marcus & Millchap Research Services. Available at <http://www.marcusmillchap.com/Services/Research/>.

declining rents this year, an unusual event for any city or rent series. The average projected change for these 43 cities is 1.28 percent.

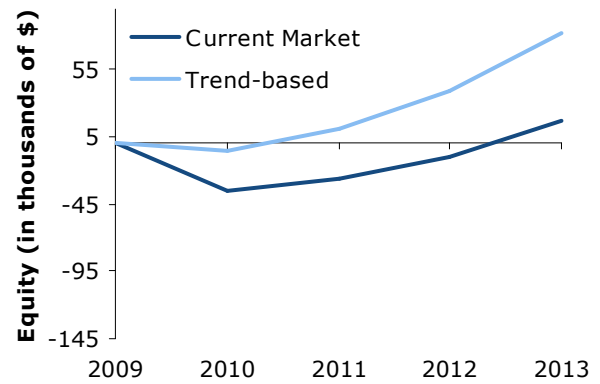
In the comparative analysis (see **Appendix Table 3**) we focus on 40 cities where the HUD and Marcus & Millichap geographic area definitions are fundamentally similar. In this analysis, a few groups of cities stand out.

As suggested by the list of places where Marcus & Millichap predict rates of rental price growth greater than 3 percent, we see our estimates of liability shrink. In Washington, D.C., this reduces the estimated decline in housing values and the amount of liability a household buying a modest home with low-cost financing today can expect at the end of year four shrinks by \$60,257, from \$81,281 to \$21,024 (**Figure 2**). Demand for housing in the Washington metro area, and perhaps other areas such as those mentioned above, is expected to stay strong in the recession. More generally, this illustrates that beyond housing market interventions, greater-than-expected economic growth and rising incomes will lead to a quicker-than-expected recovery of housing markets nationwide.

**FIGURE 2**  
Changing Equity in 2013 (Washington MSA)



**FIGURE 3**  
Changing Equity in 2013 (Miami MSAD)

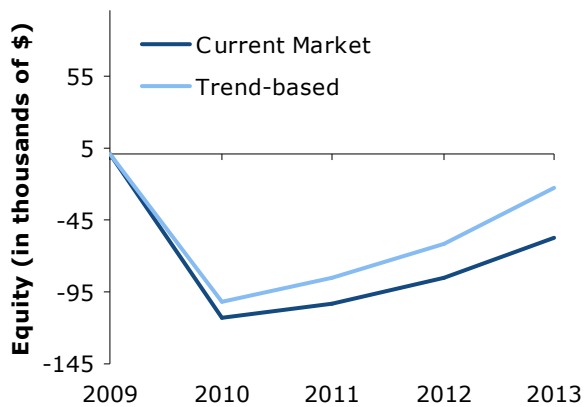


In general, however, the alternative projections for rental growth still lead to increases in equity but at a lower rate, leaving homeowners in a similar situation but worse off. Miami, an oft-cited foreclosure hotspot, is an excellent example. Under the original trend assumption, a household purchasing a home this year might expect to start accruing positive equity at some point next year. Under the alternative assumptions, however, this date is pushed off to some point in 2012 (**Figure 3**).

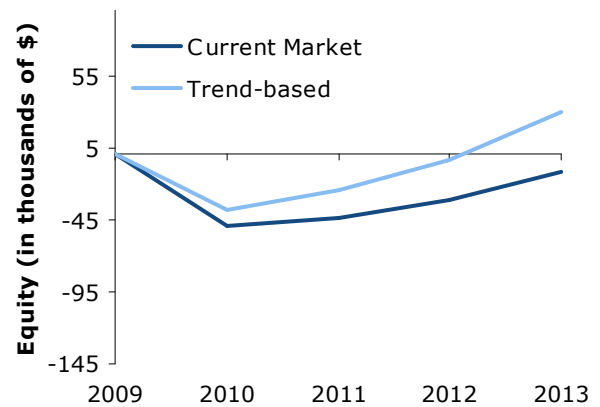
In Sacramento, CA, under both sets of assumptions the homebuyer who purchases a home remains in negative territory four years out (**Figure 4**). While the situation is bad under the status quo assumptions (a deficit of \$22,919) under the alternative assumptions the accumulated liability is \$57,446. The day when the homeowner is above water, owning a home that is worth more than the loan balance, is much further off.



**FIGURE 4**  
Changing Equity in 2013 (Sacramento MSA)



**FIGURE 5**  
Changing Equity in 2013 (Phoenix MSA)



Finally, this exercise illustrates the real possibility that homeowners expecting gains in equity, even modest increases, may find themselves in negative territory when the worsening economic situation is accounted for. From a policy perspective, identifying these areas is perhaps more important than identifying all areas with potential declines in equity. The most obvious examples in this illustration are in Arizona, where the economy which boomed with housing is now perceived to be in a free fall. In Phoenix, accounting for this decline in economic activity means a new homebuyer moves from expecting a gain in equity of \$31,307 in four years, with the assumption of a 3 percent increase in annual rent, to facing a liability of \$10,246 if rents decline throughout the period at the 1.41 percent rate predicted for 2009 by Marcus & Millchap (**Figure 5**). Tucson is similarly hard hit. A household in that city buying a modestly-priced home sees an expected positive balance in four years of \$13,578 turn to a loss of \$12,147. A similar, though less dramatic, pattern is seen in Midwestern cities such as Chicago (\$19,653 to -\$1,754) and Minneapolis (\$6,386 to -\$4,210).

It is important to note that we are not arguing that falling rents are causing home prices to fall. The broader recession that began in the collapse of the housing market has led to increases in unemployment and reductions in hours and wages, which in turn have led to a deterioration in what many families can afford to pay for housing, to rent or to own. This decline in ability to pay is the cause of rental price growth moderation in many markets and also contributes to falling home prices. Here this is represented as slowing the rate at which the floor that rental prices place under for-sale residential real estate is rising. In some cases the floor appears to actually be falling. Only the households with incomes that increase relative to rents and home prices see an improvement in housing affordability in such an environment. In general, demand for rental housing is expected to increase, however, primarily for lower-priced units or shared housing.

## Conclusion

The purpose of this analysis is to inform policy and illustrate with simple methods the significant local variation in current real estate markets, the trend in prices and equity, and the potential impact of a protracted recession and slow recovery.

This analysis indicates that in a growing number of metropolitan housing markets, the costs of homeownership are falling back into their historical relationship with rents. As this occurs, it seems likely that housing values have or will soon reach bottom and stabilize. This analysis also illustrates, however, that in order to expect this market stabilization to occur and to be able to achieve increases in affordability (a potential upside from a declining real estate market), the broader economy must also recover. In essence, we should be wary of a false bottom to the housing market and with this in mind, not wait to see if a reversal in home prices is sufficient to pull up the rest of the economy.

Since prices appear to be bottoming out, the most sustainable housing market recovery will come from making certain the floor under prices does not falter. This is done most directly by stimulating demand for housing through increasing employment and incomes. This will lead to the creation of new households and the reformation of independent households to absorb excess housing, be it for rental or ownership. At this point in the downturn, trying to stimulate the economy by incentivizing existing home purchases through homebuyers' tax credits is at best putting the cart before the horse and at worst rearranging the deck chairs on the Titanic, to use the clichés.

In many communities, existing homeowners will continue to be underwater, owing more on their home than it is worth, for some time to come. Negative equity and high loan-to-value ratios in general are logically and empirically the best predictor of foreclosures we have. While in some instances this may be corrected by existing refinancing efforts, given the lack of success thus far, the size of the problem, and the potential for stagnation or even further decline in the economy, coupled with the fact that many markets clearly remain inflated, policies should be enacted that emphasize the avoidance of displacement as well as foreclosure.

When foreclosure cannot be avoided, homeowners should be given an option to remain in their homes as tenants at a fair market rent, for a substantial period of time (e.g. five to ten years) to preserve community continuity and stability, as well as minimize the disruption to the market caused by vacant and abandoned buildings. The Right to Rent would provide homeowners facing foreclosures in hard-hit areas an important degree of housing security and stability in the neighborhoods as a whole.<sup>8</sup>

Policy makers must also find ways to transition households with few options in the private market into permanent affordable rental housing, including additional housing vouchers. Not only will new affordable rental options be necessary to ease the burden of households caught in foreclosure and the recession, but even if housing markets stabilize and the economy broadly improves, rising property prices and rents will be part of any such recovery. In this regard, the bottom of the crash is likely a good time to lock in affordable prices and establish long-term affordability to address the long-term affordable housing crisis that has only been exacerbated by the most recent boom and bust cycle. With state and local coffers empty, the National Housing Trust Fund<sup>9</sup> should be funded to enable the purchase and preservation of affordable housing for those who will continue to need this assistance even after a recovery such as the elderly, the disabled, and low wage workers. This is also the sort of investment that will provide jobs and absorb excess housing, further accelerating the recovery.

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<sup>8</sup> For more information on Right to Rent, see: <http://www.cepr.net/index.php/publications/reports/the-right-to-rent-plan/> and <http://www.cepr.net/documents/publications/gains-right-to-rent-2009-07.pdf>.

<sup>9</sup> See <http://www.nhtf.org>.

## Appendix

The comparable rental costs used in this paper are Fiscal Year 2009 Fair Market Rents (FMR) for two- and three-bedroom units as determined by the Department of Housing and Urban Development. FMRs are produced by the Department of Housing and Urban Development as “the amount that would be needed to pay the gross rent (shelter rent plus utilities) of privately owned, decent, and safe rental housing of a modest (non-luxury) nature with suitable amenities.”<sup>10</sup> An important way this measure differs from other measures of typical rents is that it is based on the rents paid by recent movers. 2009 FMRs are calculated by adjusting 2006 American Community Survey data to 2006-2007 local CPI factor and to 2007-2009 trend factor of 3 percentage points for 1.25 years.<sup>11</sup>

Data on current market asking rents can be found in Marcus & Millchap 2009 National Apartment Report.<sup>12</sup> Marcus & Millchap publishes estimates and forecasts of asking rents in 2008 and 2009, respectively, based on the most up-to-date market data available as of October 2008. For a comparable current market trend in 2009, FMR data in 2008 are updated based on the rate of change in 2008-2009 M&M asking rents. 2008 FMRs are calculated by adjusting 2005 American Community Survey data to 2005-2006 local CPI factor and to 2006-2008 trend factor for 1.25 years.

The source for the median house sale prices is the Census Bureau’s 2007 American Community Survey, data profile tables for metropolitan statistical areas.<sup>13</sup> The median sale price reported for 2007 was adjusted by the change in the Federal Housing Finance Agency (FHFA) House Price Index, as previously published under the Office of Federal Housing Enterprise Oversight (OFHEO), for the metropolitan area from the second quarter of 2007 to the first quarter of 2009 using quarterly change estimates.<sup>14</sup> These data appear in the OFHEO release of HPI data for the second quarter of 2008,<sup>15</sup> and in the FHFA release of HPI data for the third and fourth quarters of 2008, and first quarter of 2009.<sup>16</sup> Seventy-five percent of home values are used to represent a level of for-sale housing similarly “of a modest (non-luxury) nature with suitable amenities.”

The calculations in the low-, middle-, and high-cost scenarios use the monthly payment on a 30-year fixed rate mortgage at 6 percent, 7 percent, and 8 percent interest rates, respectively, for 75 percent of the median house price for each metropolitan area. The scenarios assume alternative property tax rates of 0.75 percent, 1.0 percent, and 1.5 percent. State and local property tax collections for fiscal year 2004-2005 (the most recent year for which data is available) were equal to approximately 1.2 percent of the combined value of residential real estate owned by households, and real estate owned

<sup>10</sup> Notice of Final Fair Market Rents for Fiscal Year 2008 available at [http://www.huduser.org/datasets/fmr/fmr2008f/FR\\_Preamble\\_FY2008F.pdf](http://www.huduser.org/datasets/fmr/fmr2008f/FR_Preamble_FY2008F.pdf).

<sup>11</sup> For more information on how FMRs are calculated, review the available documentation at <http://www.huduser.org/datasets/fmr.html>.

<sup>12</sup> Marcus & Millchap, 2009. “Real Estate Investment Research: 2009 National Apartment Report,” Phoenix, AZ: Marcus & Millchap Research Services. Available at <http://www.marcusmillchap.com/Services/Research/>.

<sup>13</sup> Available at [http://factfinder.census.gov/servlet/ADPGeoSearchByListServlet?ds\\_name=ACS\\_2007\\_1YR\\_G00\\_&\\_lang=en&\\_ts=242219279757](http://factfinder.census.gov/servlet/ADPGeoSearchByListServlet?ds_name=ACS_2007_1YR_G00_&_lang=en&_ts=242219279757)

<sup>14</sup> McAllen-Edinburg-Mission, TX MSA is the only exception to this methodology. McAllen median sales price reported by 2007 ACS was adjusted by the FHFA index from the first quarter of 2007 to the first quarter of 2009, using 1-year change estimates.

<sup>15</sup> Available at <http://www.fhfa.gov/webfiles/1167/2q08hpi.pdf>.

<sup>16</sup> Available at <http://www.fhfa.gov/Default.aspx?Page=84>.

by both non-financial non-farm corporate and non-corporate businesses. Data on property tax collections for 2004-2005 (\$335.7 billion) can be found in the 2008 Economic Report of the President, Table B-86.<sup>17</sup> Data on the value of residential real estate at the end of 2004 (\$16.7 billion) can be found in the Federal Reserve Board's Flow of Funds Accounts, Table B.100, Line 4; data on the value of the real estate held by non-farm non-financial corporate businesses (\$5.9 trillion) is available in Table B.102, Line 3; and data for the value of the real estate held by non-farm non-financial non-corporate businesses (\$5.6 trillion) is available in Table B.103, Line 3.<sup>18</sup>

The low-, middle-, and high-cost scenarios assume combined maintenance and insurance costs of 0.75 percent, 1.0 percent, and 1.5 percent of the sale price, respectively. Implicitly, the maintenance costs should also include some utilities to be fully comparable to the rental cost figure, since most market rents include the cost of at least some utilities.

The calculations for equity after four years assume that the house price adjusts over this period to a trend value that is pegged at 15 times the annual rent of the property. The annual rent is assumed to be approximately 1.333 times the median rent for the city, based on a four-year inflation estimates by Congressional Budget Office.<sup>19</sup> This figure is further adjusted upward by a factor of 12.55 percent, which would be the rent in four years, assuming an average annual rental inflation rate of 3.0 percent.

The calculation of net equity assumes that the seller incurs total sales cost equal to 6.0 percent of the sale price. This is subtracted from the sale price as calculated above. The net equity in the low, middle, and high scenarios is then the difference between this amount and the balance outstanding on alternatively, a 6.0 percent, 7.0 percent, and 8.0 percent 30-year fixed rate mortgage.

Metropolitan statistical areas used in this paper are established by U.S. Office of Management and Budget (OMB).<sup>20</sup> Census Bureau and FHFA use OMB definitions of metropolitan statistical areas when defining housing markets, except in a few cases where FHFA instead uses smaller metropolitan divisions (MSAD) within the larger geographical boundaries of MSAs: Boston, Charleston, Dallas, Detroit, Los Angeles, Miami, New York, Philadelphia, San Francisco, and Seattle.

HUD redefines metropolitan areas in some cases where OMB-defined statistical areas are larger than HUD-defined housing market areas. HUD-defined metro areas typically exclude one or more smaller counties incorporated by OMB (Baltimore, Indianapolis, and Los Angeles, for example) or separate large MSAs into smaller metropolitan divisions as defined by OMB (Boston, Chicago, and New York, for example).<sup>21</sup> For purposes of analyses in this paper, the most closely comparable metropolitan areas are used to match those used by Census Bureau.

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<sup>17</sup> Available at <http://www.gpoaccess.gov/eop/tables08.html>.

<sup>18</sup> Available at <http://www.federalreserve.gov/releases/z1/Current/z1r-5.pdf>.

<sup>19</sup> Available at [http://www.cbo.gov/ftpdocs/99xx/doc9957/Winter09\\_TableC-1\\_Hist.xls](http://www.cbo.gov/ftpdocs/99xx/doc9957/Winter09_TableC-1_Hist.xls).

<sup>20</sup> The geographical breakdowns of each metropolitan area are available at <http://www.whitehouse.gov/omb/bulletins/fy2008/b08-01.pdf>.

<sup>21</sup> More information on HUD definition of specific metro areas is available at <http://www.huduser.org/datasets/fmr.html>.

**APPENDIX TABLE 1**  
**Owning vs. Renting in 100 Metropolitan Areas**

State	Metropolitan Statistical Area (MSA)	July 2009					October 2008					% Change in Monthly Ownership Costs
		Monthly Ownership Costs			Monthly Rental Costs		Monthly Ownership Costs			Monthly Rental Costs		
		Low	Middle	High	FMR Two Bedroom	FMR Three- Bedroom	Low	Middle	High	FMR Two Bedroom	FMR Three- Bedroom	
AL	Birmingham-Hoover	\$751	\$857	\$1,009	\$698	\$886	\$750	\$856	\$1,008	\$695	\$883	0.1
AR	Little Rock-North Little Rock-Conway	\$679	\$774	\$912	\$680	\$911	\$667	\$761	\$896	\$683	\$915	1.7
AZ	Phoenix-Mesa-Scottsdale	\$1,057	\$1,206	\$1,421	\$877	\$1,277	\$1,209	\$1,379	\$1,624	\$868	\$1,265	-12.5
	Tucson	\$967	\$1,104	\$1,300	\$743	\$1,070	\$1,036	\$1,182	\$1,392	\$775	\$1,118	-6.6
	Bakersfield†	\$902	\$1,029	\$1,212	\$736	\$1,064	\$1,088	\$1,242	\$1,462	\$684	\$988	-17.1
	Fresno†	\$1,108	\$1,264	\$1,489	\$842	\$1,225	\$1,273	\$1,452	\$1,710	\$811	\$1,180	-12.9
	Los Angeles-Long Beach-Santa Ana	\$2,445	\$2,790	\$3,286	\$1,361	\$1,828	\$2,742	\$3,129	\$3,685	\$1,310	\$1,759	-10.8
	Modesto†	\$1,086	\$1,239	\$1,460	\$864	\$1,239	\$1,338	\$1,526	\$1,798	\$870	\$1,248	-18.8
	Oxnard-Thousand Oaks-Ventura	\$2,515	\$2,870	\$3,380	\$1,502	\$2,152	\$2,828	\$3,227	\$3,800	\$1,433	\$2,053	-11.1
CA	Riverside-San Bernardino-Ontario	\$1,288	\$1,469	\$1,730	\$1,125	\$1,583	\$1,596	\$1,821	\$2,144	\$1,150	\$1,634	-19.3
	Sacramento-Arden-Arcade-Roseville	\$1,547	\$1,765	\$2,079	\$1,022	\$1,475	\$1,723	\$1,965	\$2,315	\$989	\$1,428	-10.2
	San Diego-Carlsbad-San Marcos	\$2,281	\$2,603	\$3,065	\$1,418	\$2,067	\$2,484	\$2,834	\$3,338	\$1,365	\$1,991	-8.2
	San Francisco-Oakland-Fremont	\$3,279	\$3,741	\$4,406	\$1,658	\$2,213	\$3,471	\$3,961	\$4,664	\$1,604	\$2,141	-5.5
	San Jose-Sunnyvale-Santa Clara	\$3,283	\$3,746	\$4,412	\$1,338	\$1,924	\$3,611	\$4,120	\$4,852	\$1,303	\$1,873	-9.1
	Stockton†	\$1,130	\$1,289	\$1,518	\$950	\$1,304	\$1,425	\$1,626	\$1,915	\$921	\$1,264	-20.7
CO	Colorado Springs	\$1,105	\$1,261	\$1,485	\$796	\$1,136	\$1,123	\$1,281	\$1,508	\$803	\$1,145	-1.6
	Denver-Aurora	\$1,276	\$1,456	\$1,715	\$891	\$1,265	\$1,276	\$1,455	\$1,714	\$883	\$1,253	0.04
	Bridgeport-Stamford-Norwalk	\$2,460	\$2,807	\$3,305	\$1,214	\$1,451	\$2,543	\$2,901	\$3,417	\$1,180	\$1,409	-3.3
CT	Hartford-West Hartford-East Hartford	\$1,309	\$1,493	\$1,758	\$1,021	\$1,226	\$1,333	\$1,520	\$1,791	\$992	\$1,192	-1.8
	New Haven-Milford	\$1,383	\$1,578	\$1,859	\$1,101	\$1,316	\$1,422	\$1,622	\$1,911	\$1,150	\$1,377	-2.7
DC*	Washington-Arlington-Alexandria, DC-VA-MD	\$2,036	\$2,323	\$2,736	\$1,131	\$1,647	\$2,175	\$2,482	\$2,923	\$1,334	\$1,721	-6.4
	Cape Coral-Fort Myers	\$801	\$914	\$1,076	\$984	\$1,337	\$998	\$1,138	\$1,340	\$893	\$1,213	-19.7
	Deltona-Daytona Beach-Ormond Beach	\$824	\$940	\$1,107	\$896	\$1,159	\$925	\$1,055	\$1,243	\$851	\$1,101	-10.9
	Jacksonville	\$922	\$1,052	\$1,239	\$907	\$1,138	\$995	\$1,135	\$1,337	\$822	\$1,032	-7.4
	Lakeland-Winter Haven	\$688	\$785	\$925	\$784	\$994	\$744	\$849	\$999	\$751	\$952	-7.5
FL	Miami-Fort Lauderdale-Pompano Beach	\$1,154	\$1,317	\$1,551	\$1,156	\$1,479	\$1,447	\$1,651	\$1,944	\$1,043	\$1,334	-20.2
	Orlando-Kissimmee	\$1,025	\$1,170	\$1,378	\$985	\$1,233	\$1,155	\$1,318	\$1,552	\$922	\$1,155	-11.3
	Palm Bay-Melbourne-Titusville	\$787	\$898	\$1,058	\$866	\$1,167	\$876	\$999	\$1,177	\$821	\$1,106	-10.1
	Sarasota-Bradenton-Venice	\$930	\$1,061	\$1,249	\$1,059	\$1,352	\$1,050	\$1,198	\$1,411	\$1,009	\$1,289	-11.5
	Tampa-St. Petersburg-Clearwater	\$852	\$972	\$1,145	\$946	\$1,199	\$922	\$1,052	\$1,239	\$890	\$1,127	-7.6
GA*	Atlanta-Sandy Springs-Marietta	\$1,037	\$1,183	\$1,393	\$878	\$1,069	\$1,017	\$1,160	\$1,366	\$830	\$1,010	1.9
	Augusta-Richmond County, GA-SC	\$635	\$725	\$853	\$646	\$865	\$634	\$723	\$852	\$659	\$883	0.2
HI	Honolulu	\$2,898	\$3,306	\$3,894	\$1,631	\$2,367	\$2,991	\$3,413	\$4,019	\$1,642	\$2,395	-3.1
IA	Des Moines-West Des Moines	\$793	\$905	\$1,066	\$727	\$931	\$796	\$908	\$1,070	\$737	\$945	-0.4

ID	Boise City-Nampa†	\$989	\$1,129	\$1,330	\$722	\$1,050	\$1,053	\$1,202	\$1,415	\$665	\$967	-6.1
IL*	Chicago-Naperville-Joliet, IL-IN-WI	\$1,300	\$1,483	\$1,747	\$1,004	\$1,227	\$1,348	\$1,538	\$1,811	\$951	\$1,163	-3.5
IN	Indianapolis-Carmel	\$756	\$862	\$1,016	\$745	\$964	\$754	\$860	\$1,013	\$731	\$946	0.3
KS	Wichita	\$606	\$692	\$815	\$632	\$808	\$600	\$684	\$806	\$627	\$802	1.1
KY*	Louisville-Jefferson County, KY-IN	\$760	\$867	\$1,021	\$680	\$950	\$764	\$872	\$1,027	\$668	\$933	-0.5
LA	Baton Rouge	\$780	\$891	\$1,049	\$788	\$1,005	\$781	\$891	\$1,049	\$764	\$973	-0.1
	New Orleans-Metairie-Kenner	\$943	\$1,075	\$1,266	\$949	\$1,219	\$957	\$1,091	\$1,285	\$997	\$1,280	-1.5
	Springfield	\$1,082	\$1,234	\$1,454	\$874	\$1,046	\$1,111	\$1,268	\$1,493	\$850	\$1,017	-2.6
MA*	Worcester	\$1,379	\$1,574	\$1,853	\$922	\$1,103	\$1,433	\$1,635	\$1,926	\$972	\$1,163	-3.8
	Boston-Cambridge-Quincy, MA-NH	\$1,965	\$2,242	\$2,640	\$1,345	\$1,609	\$2,009	\$2,292	\$2,700	\$1,363	\$1,630	-2.2
MD	Baltimore-Towson†	\$1,522	\$1,737	\$2,045	\$1,037	\$1,315	\$1,597	\$1,822	\$2,146	\$1,021	\$1,311	-4.7
ME	Portland-South Portland-Biddeford	\$1,266	\$1,444	\$1,701	\$1,042	\$1,313	\$1,272	\$1,451	\$1,709	\$1,044	\$1,315	-0.5
MI	Detroit-Warren-Livonia	\$738	\$843	\$992	\$809	\$968	\$795	\$907	\$1,069	\$811	\$970	-7.2
	Grand Rapids-Wyoming	\$728	\$831	\$979	\$698	\$879	\$750	\$856	\$1,008	\$707	\$903	-2.9
MN*	Minneapolis-St. Paul-Bloomington, MN-WI	\$1,190	\$1,357	\$1,598	\$873	\$1,143	\$1,233	\$1,407	\$1,657	\$854	\$1,118	-3.5
MO*	St. Louis	\$829	\$946	\$1,114	\$737	\$949	\$838	\$956	\$1,126	\$716	\$923	-1.1
	Kansas City	\$818	\$934	\$1,100	\$791	\$1,070	\$835	\$953	\$1,122	\$760	\$1,028	-2.0
MS	Jackson	\$644	\$735	\$865	\$784	\$943	\$645	\$736	\$866	\$753	\$906	-0.1
	Greensboro-High Point	\$740	\$844	\$994	\$699	\$886	\$742	\$846	\$997	\$724	\$918	-0.3
NC*	Raleigh-Cary	\$1,037	\$1,184	\$1,394	\$795	\$999	\$1,040	\$1,187	\$1,397	\$803	\$1,009	-0.3
	Charlotte-Gastonia-Concord, NC-SC	\$907	\$1,035	\$1,219	\$757	\$954	\$918	\$1,047	\$1,233	\$745	\$939	-1.1
NE*	Omaha-Council Bluffs, NE-IA	\$741	\$846	\$996	\$757	\$1,011	\$747	\$852	\$1,003	\$715	\$955	-0.7
NM	Albuquerque	\$930	\$1,062	\$1,250	\$753	\$1,096	\$951	\$1,085	\$1,278	\$766	\$1,115	-2.1
NV	Las Vegas-Paradise	\$1,054	\$1,203	\$1,417	\$1,013	\$1,408	\$1,355	\$1,546	\$1,821	\$1,003	\$1,392	-22.2
	Albany-Schenectady-Troy	\$977	\$1,115	\$1,313	\$868	\$1,039	\$979	\$1,117	\$1,315	\$857	\$823	-0.1
	Buffalo-Niagara Falls	\$590	\$673	\$792	\$723	\$894	\$578	\$659	\$776	\$709	\$877	2.0
NY*	Poughkeepsie-Newburgh-Middletown	\$1,581	\$1,804	\$2,125	\$1,117	\$1,369	\$1,669	\$1,905	\$2,243	\$1,111	\$1,362	-5.3
	Rochester	\$647	\$738	\$869	\$797	\$957	\$650	\$742	\$874	\$779	\$935	-0.6
	Syracuse	\$589	\$672	\$792	\$754	\$965	\$588	\$671	\$790	\$718	\$920	0.3
	NY-Northern NJ-Long Island, NY-NJ-PA	\$2,291	\$2,614	\$3,078	\$1,313	\$1,615	\$2,405	\$2,744	\$3,232	\$1,328	\$1,633	-4.8
	Akron	\$758	\$865	\$1,019	\$754	\$959	\$769	\$878	\$1,034	\$749	\$952	-1.4
	Cleveland-Elyria-Mentor	\$764	\$872	\$1,027	\$694	\$890	\$780	\$890	\$1,048	\$730	\$936	-2.0
	Columbus	\$874	\$997	\$1,174	\$740	\$931	\$871	\$994	\$1,170	\$723	\$910	0.3
OH*	Dayton	\$667	\$760	\$896	\$687	\$925	\$672	\$767	\$903	\$683	\$920	-0.8
	Toledo	\$673	\$768	\$904	\$656	\$846	\$674	\$769	\$906	\$661	\$852	-0.2
	Cincinnati-Middletown, OH-KY-IN	\$811	\$925	\$1,090	\$733	\$981	\$813	\$928	\$1,093	\$731	\$979	-0.3
	Youngstown-Warren-Boardman, OH-PA	\$524	\$598	\$704	\$588	\$740	\$529	\$603	\$710	\$591	\$744	-0.9
OK	Oklahoma City	\$660	\$754	\$888	\$686	\$926	\$662	\$755	\$889	\$646	\$871	-0.2
	Tulsa	\$660	\$753	\$887	\$707	\$934	\$655	\$748	\$881	\$671	\$887	0.7
OR*	Portland-Vancouver-Beaverton, OR-WA	\$1,481	\$1,689	\$1,989	\$809	\$1,178	\$1,558	\$1,778	\$2,094	\$763	\$1,110	-5.0

	Harrisburg-Carlisle	\$835	\$953	\$1,122	\$764	\$964	\$840	\$958	\$1,128	\$727	\$918	-0.5
	Pittsburgh	\$632	\$721	\$849	\$710	\$883	\$626	\$714	\$841	\$671	\$834	1.0
PA*	Scranton-Wilkes-Barre	\$667	\$761	\$897	\$635	\$805	\$663	\$757	\$892	\$632	\$801	0.6
	Allentown-Bethlehem-Easton, PA-NJ	\$1,117	\$1,275	\$1,501	\$853	\$1,104	\$1,147	\$1,309	\$1,541	\$822	\$1,064	-2.6
	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	\$1,237	\$1,411	\$1,662	\$1,005	\$1,203	\$1,262	\$1,440	\$1,696	\$939	\$1,124	-2.0
RI*	Providence-New Bedford-Fall River, RI-MA	\$1,430	\$1,631	\$1,921	\$956	\$1,142	\$1,503	\$1,714	\$2,019	\$1,028	\$1,230	-4.8
	Charleston-North Charleston-Summerville	\$1,010	\$1,152	\$1,357	\$787	\$1,025	\$1,060	\$1,209	\$1,424	\$829	\$1,080	-4.7
SC	Columbia	\$743	\$848	\$999	\$710	\$877	\$739	\$843	\$993	\$697	\$861	0.6
	Greenville-Mauldin-Easley	\$761	\$868	\$1,022	\$656	\$866	\$752	\$858	\$1,011	\$654	\$863	1.1
	Knoxville	\$768	\$877	\$1,032	\$667	\$894	\$761	\$869	\$1,023	\$638	\$854	0.9
TN*	Nashville-Davidson-Murfreesboro-Franklin	\$888	\$1,013	\$1,193	\$761	\$987	\$895	\$1,022	\$1,203	\$728	\$945	-0.9
	Chattanooga, TN-GA	\$713	\$814	\$958	\$666	\$820	\$723	\$825	\$972	\$644	\$793	-1.4
	Memphis, TN-MS-AR	\$688	\$785	\$925	\$746	\$994	\$698	\$796	\$938	\$749	\$997	-1.4
	Austin-Round Rock	\$980	\$1,118	\$1,317	\$912	\$893	\$973	\$1,110	\$1,307	\$942	\$885	0.8
	Dallas-Fort Worth-Arlington	\$781	\$892	\$1,050	\$905	\$1,201	\$775	\$884	\$1,041	\$877	\$1,165	0.9
TX	El Paso	\$529	\$603	\$711	\$595	\$853	\$526	\$600	\$707	\$571	\$819	0.6
	Houston-Sugar Land-Baytown	\$759	\$865	\$1,019	\$866	\$1,154	\$740	\$845	\$995	\$858	\$1,144	2.4
	McAllen-Edinburg-Mission	\$376	\$429	\$505	\$639	\$766	\$359	\$410	\$482	\$614	\$735	4.8
	San Antonio	\$640	\$730	\$860	\$792	\$1,022	\$647	\$739	\$870	\$786	\$1,013	-1.1
UT	Ogden-Clearfield	\$1,020	\$1,164	\$1,370	\$717	\$986	\$1,048	\$1,196	\$1,408	\$697	\$959	-2.7
	Salt Lake City	\$1,237	\$1,412	\$1,662	\$802	\$1,128	\$1,288	\$1,469	\$1,730	\$760	\$1,069	-3.9
VA*	Richmond	\$1,130	\$1,289	\$1,518	\$925	\$1,234	\$1,155	\$1,317	\$1,551	\$876	\$1,170	-2.2
	Virginia Beach-Norfolk-Newport News, VA-NC	\$1,203	\$1,373	\$1,617	\$904	\$1,236	\$1,240	\$1,414	\$1,666	\$911	\$1,256	-2.9
WA	Seattle-Tacoma-Bellevue	\$1,873	\$2,137	\$2,517	\$987	\$1,395	\$1,981	\$2,260	\$2,661	\$949	\$1,341	-5.4
WI	Madison	\$1,153	\$1,315	\$1,549	\$846	\$1,135	\$1,166	\$1,330	\$1,567	\$813	\$1,091	-1.2
	Milwaukee-Waukesha-West Allis	\$1,050	\$1,198	\$1,410	\$839	\$1,057	\$1,066	\$1,217	\$1,433	\$801	\$1,009	-1.6

Note: \*One or more MSAs in these states incorporate cities in nearby states. Bubble markets highlighted in Gray. MSAs whose bubble has deflated have red text and are marked with †.

Source: Census Bureau, HUD, and authors' calculations.

**APPENDIX TABLE 2**  
**Housing Equity Prospect in 2013**

State	Rank by Population	Metropolitan Statistical Area (MSA)	Housing Equity in 2013 (Current Projection)			Housing Equity in 2012 (2008 Projection)		
			Low	Middle	High	Low	Middle	High
AL	47	Birmingham-Hoover	\$41,322	\$40,122	\$39,084	\$40,689	\$39,490	\$38,453
AR	78	Little Rock-North Little Rock-Conway	\$49,820	\$48,735	\$47,797	\$52,681	\$51,615	\$50,693
AZ	13	Phoenix-Mesa-Scottsdale	\$31,307	\$29,618	\$28,157	\$1,743	-\$188	-\$1,858
	52	Tucson	\$13,578	\$12,033	\$10,696	\$9,283	\$7,629	\$6,197
CA	64	Bakersfield†	\$23,649	\$22,208	\$20,962	-\$23,266	-\$25,005	-\$26,509
	55	Fresno†	\$13,226	\$11,456	\$9,924	-\$24,411	-\$26,444	-\$28,203
	2	Los Angeles-Long Beach-Santa Ana	<b>-\$96,958</b>	<b>-\$100,865</b>	<b>-\$104,245</b>	-\$163,689	-\$168,069	-\$171,859
	99	Modesto†	\$22,792	\$21,057	\$19,555	-\$21,087	-\$23,224	-\$25,073
	63	Oxnard-Thousand Oaks-Ventura	<b>-\$73,824</b>	<b>-\$77,842</b>	<b>-\$81,319</b>	-\$148,076	-\$152,594	-\$156,503
	14	Riverside-San Bernardino-Ontario	\$52,617	\$50,560	\$48,780	\$3,306	\$756	-\$1,450
	26	Sacramento-Arden-Arcade-Roseville	<b>-\$20,448</b>	<b>-\$22,919</b>	<b>-\$25,057</b>	-\$60,550	-\$63,302	-\$65,683
	17	San Diego-Carlsbad-San Marcos	<b>-\$52,806</b>	<b>-\$56,450</b>	<b>-\$59,603</b>	-\$102,905	-\$106,873	-\$110,307
	12	San Francisco-Oakland-Fremont	<b>-\$172,399</b>	<b>-\$177,638</b>	<b>-\$182,170</b>	-\$220,943	-\$226,489	-\$231,287
	31	San Jose-Sunnyvale-Santa Clara	<b>-\$254,399</b>	<b>-\$259,644</b>	<b>-\$264,182</b>	-\$322,626	-\$328,394	-\$333,385
CO	76	Stockton†	\$36,728	\$34,923	\$33,362	-\$24,094	-\$26,370	-\$28,340
	83	Colorado Springs	\$2,155	\$390	<b>-\$1,138</b>	\$708	-\$1,086	-\$2,637
CT	21	Denver-Aurora	<b>-\$4,715</b>	<b>-\$6,753</b>	<b>-\$8,517</b>	-\$6,781	-\$8,819	-\$10,582
	56	Bridgeport-Stamford-Norwalk	<b>-\$136,913</b>	<b>-\$140,843</b>	<b>-\$144,243</b>	-\$160,609	-\$164,671	-\$168,186
DC*	45	Hartford-West Hartford-East Hartford	\$22,428	\$20,338	\$18,529	\$10,798	\$8,670	\$6,828
	58	New Haven-Milford	\$29,224	\$27,014	\$25,102	\$34,766	\$32,494	\$30,529
FL	8	Washington-Arlington-Alexandria, DC-VA-MD	<b>-\$81,281</b>	<b>-\$84,533</b>	<b>-\$87,348</b>	-\$54,948	-\$58,422	-\$61,429
	85	Cape Coral-Fort Myers	\$104,880	\$103,601	\$102,494	\$46,082	\$44,489	\$43,110
	100	Deltona-Daytona Beach-Ormond Beach	\$78,383	\$77,067	\$75,928	\$48,733	\$47,255	\$45,976
	40	Jacksonville	\$63,422	\$61,949	\$60,675	\$28,622	\$27,032	\$25,657
	87	Lakeland-Winter Haven	\$74,503	\$73,403	\$72,452	\$55,940	\$54,752	\$53,724
	7	Miami-Fort Lauderdale-Pompano Beach	\$84,595	\$82,751	\$81,156	\$2,862	\$551	-\$1,449
	27	Orlando-Kissimmee	\$64,557	\$62,919	\$61,502	\$24,961	\$23,116	\$21,519
	92	Palm Bay-Melbourne-Titusville	\$77,394	\$76,136	\$75,048	\$49,992	\$48,593	\$47,383
	73	Sarasota-Bradenton-Venice	\$100,624	\$99,138	\$97,853	\$66,204	\$64,526	\$63,074
	19	Tampa-St. Petersburg-Clearwater	\$86,023	\$84,662	\$83,485	\$58,999	\$57,526	\$56,252
GA*	9	Atlanta-Sandy Springs-Marietta	\$35,333	\$33,677	\$32,244	\$26,763	\$25,138	\$23,733
	95	Augusta-Richmond County, GA-SC	\$49,079	\$48,064	\$47,186	\$52,577	\$51,564	\$50,688
HI	54	Honolulu	<b>-\$110,266</b>	<b>-\$114,895</b>	<b>-\$118,900</b>	-\$124,357	-\$129,135	-\$133,270
IA	91	Des Moines-West Des Moines	\$41,030	\$39,763	\$38,666	\$43,173	\$41,901	\$40,801
ID	86	Boise City-Nampa†	\$4,249	\$2,668	\$1,300	-\$21,784	-\$23,467	-\$24,923



IL*	3	Chicago-Naperville-Joliet, IL-IN-WI	\$19,653	\$17,576	\$15,779	-\$2,402	-\$4,554	-\$6,417
IN	33	Indianapolis-Carmel	\$52,360	\$51,152	\$50,107	\$49,310	\$48,106	\$47,065
KS	84	Wichita	\$50,716	\$49,748	\$48,909	\$50,530	\$49,571	\$48,742
KY*	42	Louisville-Jefferson County, KY-IN	\$35,132	\$33,918	\$32,868	\$31,326	\$30,105	\$29,049
LA	67	Baton Rouge	\$58,818	\$57,571	\$56,492	\$52,537	\$51,289	\$50,210
	51	New Orleans-Metairie-Kenner	\$70,367	\$68,861	\$67,559	\$80,104	\$78,576	\$77,254
MA*	74	Springfield	\$26,104	\$24,376	\$22,880	\$14,766	\$12,990	\$11,454
	65	Worcester	<b>-\$15,528</b>	<b>-\$17,731</b>	<b>-\$19,638</b>	-\$12,541	-\$14,830	-\$16,811
	10	Boston-Cambridge-Quincy, MA-NH	<b>-\$14,118</b>	<b>-\$17,258</b>	<b>-\$19,974</b>	-\$17,521	-\$20,731	-\$23,508
MD	20	<b>Baltimore-Towson†</b>	<b>-\$12,166</b>	<b>-\$14,598</b>	<b>-\$16,702</b>	-\$29,890	-\$32,441	-\$34,648
ME	98	Portland-South Portland-Biddeford	\$35,507	\$33,485	\$31,735	\$34,806	\$32,774	\$31,016
MI	11	Detroit-Warren-Livonia	\$71,758	\$70,579	\$69,558	\$61,960	\$60,689	\$59,590
	66	Grand Rapids-Wyoming	\$45,407	\$44,244	\$43,237	\$43,856	\$42,658	\$41,621
MN*	16	Minneapolis-St. Paul-Bloomington, MN-WI	\$6,386	\$4,486	\$2,841	-\$6,229	-\$8,198	-\$9,903
MO*	18	St. Louis	\$37,052	\$35,727	\$34,581	\$30,169	\$28,830	\$27,671
	29	Kansas City	\$52,720	\$51,413	\$50,282	\$41,697	\$40,362	\$39,208
MS	93	Jackson	\$82,510	\$81,482	\$80,592	\$74,359	\$73,328	\$72,437
	72	Greensboro-High Point	\$43,582	\$42,400	\$41,378	\$49,652	\$48,467	\$47,442
NC*	49	Raleigh-Cary	\$14,133	\$12,476	\$11,043	\$15,647	\$13,986	\$12,548
	35	Charlotte-Gastonia-Concord, NC-SC	\$28,026	\$26,577	\$25,323	\$23,218	\$21,752	\$20,484
NE*	61	Omaha-Council Bluffs, NE-IA	\$58,087	\$56,903	\$55,879	\$46,502	\$45,309	\$44,277
NM	60	Albuquerque	\$22,803	\$21,317	\$20,031	\$22,322	\$20,803	\$19,489
NV	30	Las Vegas-Paradise	\$66,394	\$64,710	\$63,252	\$9,490	\$7,325	\$5,451
NY*	57	Albany-Schenectady-Troy	\$43,494	\$41,933	\$40,582	\$40,577	\$39,014	\$37,661
	46	Buffalo-Niagara Falls	\$76,874	\$75,932	\$75,117	\$75,500	\$74,577	\$73,778
	77	Poughkeepsie-Newburgh-Middletown	<b>-\$2,569</b>	<b>-\$5,095</b>	<b>-\$7,281</b>	-\$19,955	-\$22,622	-\$24,929
	50	Rochester	\$85,337	\$84,304	\$83,411	\$79,987	\$78,947	\$78,048
	80	Syracuse	\$84,773	\$83,832	\$83,017	\$75,997	\$75,058	\$74,246
	1	NY-Northern NJ-Long Island, NY-NJ-PA	<b>-\$81,194</b>	<b>-\$84,853</b>	<b>-\$88,020</b>	-\$98,121	-\$101,964	-\$105,288
OH*	71	Akron	\$54,223	\$53,011	\$51,963	\$50,840	\$49,611	\$48,548
	25	Cleveland-Elyria-Mentor	\$37,890	\$36,669	\$35,613	\$44,282	\$43,036	\$41,958
	32	Columbus	\$29,750	\$28,354	\$27,146	\$26,051	\$24,659	\$23,456
	59	Dayton	\$53,801	\$52,736	\$51,815	\$51,790	\$50,717	\$49,788
	79	Toledo	\$44,755	\$43,680	\$42,750	\$45,738	\$44,661	\$43,729
	24	Cincinnati-Middletown, OH-KY-IN	\$39,320	\$38,024	\$36,903	\$38,524	\$37,225	\$36,101
88	Youngstown-Warren-Boardman, OH-PA	\$54,438	\$53,601	\$52,876	\$54,449	\$53,605	\$52,874	
OK	44	Oklahoma City	\$54,637	\$53,582	\$52,669	\$44,173	\$43,116	\$42,201
	53	Tulsa	\$60,053	\$58,999	\$58,087	\$51,736	\$50,689	\$49,783
OR*	23	Portland-Vancouver-Beaverton, OR-WA	<b>-\$62,516</b>	<b>-\$64,881</b>	<b>-\$66,927</b>	-\$88,355	-\$90,844	-\$92,998

	94	Harrisburg-Carlisle	\$42,825	\$41,491	\$40,336	\$32,716	\$31,375	\$30,214
	22	Pittsburgh	\$65,903	\$64,894	\$64,020	\$57,123	\$56,124	\$55,259
PA*	90	Scranton-Wilkes-Barre	\$40,478	\$39,412	\$38,490	\$40,296	\$39,236	\$38,319
	62	Allentown-Bethlehem-Easton, PA-NJ	\$14,374	\$12,589	\$11,045	\$1,170	-\$662	-\$2,247
	5	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	\$31,299	\$29,323	\$27,613	\$10,003	\$7,987	\$6,242
RI*	36	Providence-New Bedford-Fall River, RI-MA	<b>-\$16,017</b>	<b>-\$18,301</b>	<b>-\$20,277</b>	-\$11,006	-\$13,407	-\$15,484
	81	Charleston-North Charleston-Summerville	\$17,105	\$15,492	\$14,096	\$18,700	\$17,007	\$15,542
SC	69	Columbia	\$45,722	\$44,534	\$43,507	\$43,233	\$42,052	\$41,030
	82	Greenville-Mauldin-Easley	\$28,920	\$27,705	\$26,654	\$29,872	\$28,670	\$27,631
	75	Knoxville	\$30,299	\$29,071	\$28,009	\$24,144	\$22,928	\$21,875
TN*	39	Nashville-Davidson-Murfreesboro-Franklin	\$32,563	\$31,145	\$29,918	\$22,894	\$21,464	\$20,226
	97	Chattanooga, TN-GA	\$40,009	\$38,869	\$37,883	\$32,513	\$31,357	\$30,357
	41	Memphis, TN-MS-AR	\$64,845	\$63,745	\$62,794	\$63,712	\$62,597	\$61,632
	37	Austin-Round Rock	\$54,155	\$52,589	\$51,234	\$63,084	\$61,530	\$60,185
	4	Dallas-Fort Worth-Arlington	\$88,358	\$87,110	\$86,030	\$82,575	\$81,338	\$80,267
TX	68	El Paso	\$55,348	\$54,503	\$53,772	\$49,868	\$49,028	\$48,301
	6	Houston-Sugar Land-Baytown	\$82,592	\$81,380	\$80,332	\$83,918	\$82,735	\$81,711
	70	McAllen-Edinburg-Mission	\$94,177	\$93,577	\$93,057	\$90,795	\$90,222	\$89,725
	28	San Antonio	\$85,243	\$84,220	\$83,336	\$82,343	\$81,308	\$80,414
UT	96	Ogden-Clearfield	<b>-\$2,517</b>	<b>-\$4,147</b>	<b>-\$5,556</b>	-\$12,692	-\$14,366	-\$15,815
	48	Salt Lake City	<b>-\$20,247</b>	<b>-\$22,224</b>	<b>-\$23,934</b>	-\$40,169	-\$42,226	-\$44,006
VA*	43	Richmond	\$30,436	\$28,631	\$27,070	\$13,592	\$11,747	\$10,151
	34	Virginia Beach-Norfolk-Newport News, VA-NC	\$11,769	\$9,846	\$8,183	\$6,896	\$4,916	\$3,202
WA	15	Seattle-Tacoma-Bellevue	<b>-\$88,329</b>	<b>-\$91,321</b>	<b>-\$93,910</b>	-\$117,471	-\$120,635	-\$123,373
WI	89	Madison	\$6,229	\$4,388	\$2,795	-\$4,603	-\$6,465	-\$8,077
	38	Milwaukee-Waukesha-West Allis	\$23,068	\$21,392	\$19,941	\$10,362	\$8,658	\$7,184

Note: \*One or more MSAs in these states incorporate cities in nearby states. Bubble markets highlighted in Gray. MSAs whose bubble has deflated have red text and are marked with †. **Bolded** MSAs will have negative equity in 2013 in this calculation.

Source: Census Bureau, HUD, and authors' calculations.

**APPENDIX TABLE 3**  
**Changing Prospects for Equity in 2013 with Current Rental Trend**

Metropolitan Statistical Area (MSA)	2009 Rental Costs		Equity Prospects in 2013					
	Historical Trend (FMR)	Current Market Trend (M&M)	Historical Trend			Current Market Trend		
			Low	Middle	High	Low	Middle	High
Atlanta-Sandy Springs-Marietta, GA	\$878	\$830	\$35,333	\$33,677	\$32,244	\$4,850	\$3,194	\$1,761
Austin-Round Rock, TX	\$912	\$959	\$54,155	\$52,589	\$51,234	\$61,471	\$59,905	\$58,550
Boston-Cambridge-Quincy, MA-NH	\$1,345	\$1,380	<b>-\$14,118</b>	<b>-\$17,258</b>	<b>-\$19,974</b>	<b>-\$18,475</b>	<b>-\$21,614</b>	<b>-\$24,330</b>
Charlotte-Gastonia-Concord, NC-SC	\$757	\$749	\$28,026	\$26,577	\$25,323	\$13,458	\$12,009	\$10,755
Chicago-Naperville-Joliet, IL-IN-WI	\$1,004	\$962	\$19,653	\$17,576	\$15,779	<b>-\$1,764</b>	<b>-\$3,841</b>	<b>-\$5,638</b>
Cincinnati-Middletown, OH-KY-IN	\$733	\$737	\$39,320	\$38,024	\$36,903	\$30,056	\$28,761	\$27,639
Cleveland-Elyria-Mentor, OH	\$694	\$733	\$37,890	\$36,669	\$35,613	\$34,281	\$33,060	\$32,003
Columbus, OH	\$740	\$731	\$29,750	\$28,354	\$27,146	\$18,620	\$17,224	\$16,016
Denver-Aurora, CO	\$891	\$898	<b>-\$4,715</b>	<b>-\$6,753</b>	<b>-\$8,517</b>	<b>-\$7,148</b>	<b>-\$9,186</b>	<b>-\$10,950</b>
Detroit-Warren-Livonia, MI	\$809	\$808	\$71,758	\$70,579	\$69,558	\$51,229	\$50,049	\$49,028
Houston-Sugar Land-Baytown, TX	\$866	\$865	\$82,592	\$81,380	\$80,332	\$70,599	\$69,387	\$68,339
Indianapolis-Carmel, IN	\$745	\$736	\$52,360	\$51,152	\$50,107	\$38,196	\$36,989	\$35,944
Jacksonville, FL	\$907	\$819	\$63,422	\$61,949	\$60,675	\$20,699	\$19,227	\$17,952
Kansas City, MO-KS	\$791	\$764	\$52,720	\$51,413	\$50,282	\$33,217	\$31,910	\$30,779
Las Vegas-Paradise, NV	\$1,013	\$994	\$66,394	\$64,710	\$63,252	\$31,328	\$29,644	\$28,187
*Los Angeles-Long Beach-Glendale, CA (MSAD)	\$1,361	\$1,333	<b>-\$96,958</b>	<b>-\$100,865</b>	<b>-\$104,245</b>	<b>-\$110,686</b>	<b>-\$114,593</b>	<b>-\$117,973</b>
*Santa Ana-Anaheim-Irvine, CA (MSAD)	\$1,546	\$1,641	<b>-\$56,005</b>	<b>-\$59,965</b>	<b>-\$63,391</b>	<b>-\$57,577</b>	<b>-\$61,537</b>	<b>-\$64,963</b>
*Miami-Miami Beach-Kendall, FL (MSAD)	\$1,156	\$1,029	\$84,595	\$82,751	\$81,156	\$18,367	\$16,523	\$14,928
*Ft. Lauderdale-Pompano Bch.-Deerfield Bch., FL (MSAD)	\$1,313	\$1,200	\$133,254	\$131,487	\$129,959	\$76,376	\$74,610	\$73,081
*West Palm Beach-Boca Raton-Boynton Beach, FL (MSAD)	\$1,295	\$1,174	\$110,031	\$108,100	\$106,429	\$59,892	\$57,961	\$56,290
Milwaukee-Waukesha-West Allis, WI	\$839	\$810	\$23,068	\$21,392	\$19,941	\$6,939	\$5,262	\$3,812
Minneapolis-St. Paul-Bloomington, MN-WI	\$873	\$865	\$6,386	\$4,486	\$2,841	<b>-\$4,210</b>	<b>-\$6,110</b>	<b>-\$7,755</b>
New Haven-Milford, CT	\$1,101	\$1,161	\$29,224	\$27,014	\$25,102	\$29,797	\$27,587	\$25,676
Orlando-Kissimmee, FL	\$985	\$918	\$64,557	\$62,919	\$61,502	\$24,427	\$22,790	\$21,373
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	\$1,005	\$954	\$31,299	\$29,323	\$27,613	\$12,044	\$10,067	\$8,358
Phoenix-Mesa-Scottsdale, AZ	\$877	\$850	\$31,307	\$29,618	\$28,157	<b>-\$10,246</b>	<b>-\$11,935</b>	<b>-\$13,397</b>
Portland-Vancouver-Beaverton, OR-WA	\$809	\$776	<b>-\$62,516</b>	<b>-\$64,881</b>	<b>-\$66,927</b>	<b>-\$74,280</b>	<b>-\$76,645</b>	<b>-\$78,692</b>
Riverside-San Bernardino-Ontario, CA	\$1,125	\$1,127	\$52,617	\$50,560	\$48,780	\$8,175	\$6,118	\$4,338
Sacramento-Arden-Arcade-Roseville, CA	\$1,022	\$985	<b>-\$20,448</b>	<b>-\$22,919</b>	<b>-\$25,057</b>	<b>-\$54,975</b>	<b>-\$57,446</b>	<b>-\$59,584</b>
Salt Lake City, UT	\$802	\$771	<b>-\$20,247</b>	<b>-\$22,224</b>	<b>-\$23,934</b>	<b>-\$33,749</b>	<b>-\$35,725</b>	<b>-\$37,435</b>

San Antonio, TX	\$792	\$793	\$85,243	\$84,220	\$83,336	\$75,699	\$74,676	\$73,791
San Diego-Carlsbad-San Marcos, CA	\$1,418	\$1,402	<b>-\$52,806</b>	<b>-\$56,450</b>	<b>-\$59,603</b>	<b>-\$50,166</b>	<b>-\$53,810</b>	<b>-\$56,963</b>
*San Francisco-San Mateo-Redwood City, CA (MSAD)	\$1,658	\$1,648	<b>-\$172,399</b>	<b>-\$177,638</b>	<b>-\$182,170</b>	<b>-\$166,498</b>	<b>-\$171,736</b>	<b>-\$176,268</b>
*Oakland-Fremont-Hayward, CA (MSAD)	\$1,295	\$1,273	<b>-\$178,721</b>	<b>-\$183,201</b>	<b>-\$187,078</b>	<b>-\$187,164</b>	<b>-\$191,645</b>	<b>-\$195,522</b>
San Jose-Sunnyvale-Santa Clara, CA	\$1,338	\$1,322	<b>-\$254,399</b>	<b>-\$259,644</b>	<b>-\$264,182</b>	<b>-\$267,744</b>	<b>-\$272,989</b>	<b>-\$277,527</b>
Seattle-Tacoma-Bellevue, WA	\$987	\$967	<b>-\$88,329</b>	<b>-\$91,321</b>	<b>-\$93,910</b>	<b>-\$96,677</b>	<b>-\$99,669</b>	<b>-\$102,258</b>
St. Louis, MO-IL	\$737	\$719	\$37,052	\$35,727	\$34,581	\$19,282	\$17,957	\$16,811
Tampa-St. Petersburg-Clearwater, FL	\$946	\$876	\$86,023	\$84,662	\$83,485	\$36,883	\$35,522	\$34,345
Tucson, AZ	\$743	\$759	\$13,578	\$12,033	\$10,696	<b>-\$12,147</b>	<b>-\$13,692</b>	<b>-\$15,029</b>
Washington-Arlington-Alexandria, DC-VA-MD-WV	\$1,288	\$1,365	<b>-\$81,281</b>	<b>-\$84,533</b>	<b>-\$87,348</b>	<b>-\$21,024</b>	<b>-\$24,276</b>	<b>-\$27,090</b>

Note: \*For some metro areas, Marcus and Millchap uses metropolitan divisions (MSAD) instead of metropolitan statistical areas (MSA). For basis of comparison, matching FMR data for the specific MSADs were identified and used for equity calculations. Notice that these MSADs do not appear in 100 metro area analyses. Bolded MSAs will have negative equity in 2013 in this calculation.

Source: Census Bureau, HUD, Marcus & Millchap, and authors' calculations.