

# FYI: An Update on Emerging Issues in Banking

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## U.S. Home Prices: Does Bust Always Follow Boom?

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U.S. home prices have boomed in recent years. Average U.S. home prices rose 13 percent in the year ending September 2004, and are up almost 50 percent over five years. In December 2004, the *Office of Federal Housing Enterprise Oversight* (OFHEO) noted, "The growth in home prices over the past year surpasses any increase in 25 years."<sup>2</sup> Because of this rapid growth, some have become concerned about the possibility of a home price collapse, either nationwide or in a number of major cities.

But before we evaluate the implications of the recent housing boom, it is useful to put it in a historical context. How extensive has the surge in home prices been in recent years? What can history tell us about the likelihood of "booms" to go "bust"? This issue of *FYI* examines the historical movement of home prices at the metro level to gain insight into the outlook for U.S. home prices. There is some evidence that home price booms can be followed by busts—although we find, at least by our criteria, that this pattern may be more the exception than the rule.

### An Overview of the Historical Home Price Data

To measure the extent of home price booms and busts, this paper uses home price data from the House Price Index (HPI) published by OFHEO. The HPI is published on a quarterly basis and tracks average house price changes in repeat sales or refinancings of the same set of single-family properties. OFHEO's index is based on data that was obtained from mortgages sold to Fannie Mae and Freddie Mac and includes more than 28.8 million transactions over the past 29 years. OFHEO analyzes the combined mortgage record of these two government-sponsored enterprises, which form the nation's largest database of mortgage transactions.<sup>3</sup>

As of third quarter 2004, OFHEO published home price data for 361 metropolitan areas of varying sizes. Full data for *all* of these cities is available only since the mid-1990s, although 90 percent of cities in the data set have history going back to 1990. The longest data series in the OFHEO data set go back to 1975, but this lengthy history is only available for 13 major cities. Between 1980 and 1990, quarterly data are available for just 133 cities, or slightly more than one-third of the cities covered by the HPI. This limited history constrains our ability to get a complete sense of the prevalence of booms and busts prior to 1990. Nevertheless, we feel there is sufficient information in the OFHEO data set and that this data set is the most appropriate one for our purposes.

### Defining a Housing "Boom"

In order to examine the historical evidence of home price booms and busts, we first need to arrive at some definition of a "boom." Although there are many possible ways to approach this issue, we chose a fairly simple definition based on a cursory examination of cities that have exhibited some of the strongest home price cycles in recent decades. We define a "boom" simply as a 30 percent or greater increase in inflation-adjusted (or real) home prices during any three-year period. For our "1/3 in 3" rule, we adjust the nominal home price series that is published by OFHEO using the Bureau of Labor Statistics consumer price index (CPI) less the price of shelter, which is used by OFHEO to adjust home price changes for inflation.



price declines. However, applying this approach proves to be too stringent a definition, resulting in the identification of only five metro-area price busts since 1978. The reason this measure proves to be too stringent is that home prices tend to adjust slowly (or be "sticky downward," in economists' terms) during a downturn. Unless homeowners have lost the means to maintain their mortgage payments, say through mass layoffs, or are forced to move due to some other circumstance, they typically have the option to withdraw their homes from the market—especially if they feel the price being offered by potential buyers is too low. Because prices are sticky downward, it will be necessary to define a price bust using a lower threshold and a longer time period, such as a real price decline of 15 percent or more in five years.

Applying a "15 in 5" definition of declining metro-area home prices, we find 142 metro areas where the average home price, adjusted for inflation, has declined by at least 15 percent over a five-year period. But is this definition now too lenient, resulting in the identification of too many cities? After all, what we are really saying is that the value of the average owner's home in these 142 metro areas simply failed to keep up with inflation during the five-year period and fell behind inflation by at least 15 percent. The price of their home in nominal terms may never have fallen at all. For example, the five-year change in the CPI less shelter index between 1978 and 1982 was 43 percent. A city such as Akron, Ohio, where homeowners saw the value of their homes rise by 12 percent during this period, would nonetheless be placed in the "bust" column under a "15 in 5" definition based on changes in real home prices.

A period of true distress for homeowners and lenders might be better defined in terms of a large decline in nominal prices. Since mortgage debt is taken on and paid off in nominal dollars, a decline of more than 15 percent in nominal home values could push the value of many properties below what homeowners owe on their mortgages. If homeowners had no choice but to sell in this type of situation, they could be forced to bring a sizeable personal check to the closing. Such a large decline in nominal home values would reduce the incentive of homeowners to repay their mortgages to protect their equity stake, since equity tends to evaporate with a decline in prices. This is why we feel that a better measure of distress in metro-area housing markets would be to define a bust as an average decline in nominal home prices of at least 15 percent over five years, or a nominal "15 in 5" rule.

Using our criteria, some 21 cities can be defined as having experienced a housing bust at some point during the past 25 years. Table 1 highlights these cities in red and shows two major episodes of home price busts.<sup>4</sup> The first began in the mid-1980s in the "oil patch" cities of Texas, Oklahoma, Louisiana, and some of the western states. This episode includes the most severe price declines of our entire sample, with nominal prices in one city falling by as much as 40 percent over a five-year period. Another episode of large nominal price declines occurred in selected metro areas of the Northeast and California beginning in the early 1990s.<sup>5</sup> Other cities that met our criterion but were not associated with these two major episodes included Peoria during the mid-1980s and Honolulu, where nominal prices declined for six straight years through 2001.

### **Must Bust Always Follow Boom?**

Before going further and analyzing the historical evidence for booms gone bust, it should be noted that most U.S. cities have demonstrated fairly stable home price trends over time. Table 1 includes only 74 markets. So by our criteria, only 20 percent of the 361 cities for which OFHEO currently publishes an HPI have ever witnessed either boom or bust.

Table 1 also tells us something of the relative frequency of booms versus busts. A quick glance at the table shows much more green than red. Taking Table 1 in its entirety, we find that 63 cities have seen at least one home price boom. This breaks down into 39 cities that saw only one boom, 18 that had two, and just 6 (all of them in California) with three booms over the past 25 years. But many of these booms have been too recent to know if they might eventually end in busts. As of 2003, 33 cities were meeting our boom criteria. Additionally, 6 more cities saw prices boom between 1999 and 2002 but were no longer considered to be in a boom as of 2003. No cities are currently witnessing home price busts, though Honolulu is just a few years out of one. If history is any guide, we will not know for a few years yet whether these recent post-boom cities have safely avoided a bust.

To better get a sense for the frequency of booms relative to busts, we limit our view to the 20 years prior

to 1998. During that time, we count 46 cities that witnessed home price booms—and some more than once. What about busts? In all of Table 1, there are only 21 instances of home price busts, with no city having more than one bust in its history. This finding of booms outnumbering busts also holds true when we count individual episodes of booms and busts, regardless of what city they are in. Looking again to Table 1, before 1998 we count 54 unique episodes of home price booms. The number of busts does not change, because no city witnessed more than one.

So, must a bust always follow a boom? Based on our look at history, our answer must be "no." Only infrequently do home price booms lead to busts, at least by our criteria. According to the evidence in Table 1, in just 9 of 54 unique boom episodes prior to 1998, or roughly 17 percent of all such events, did a bust subsequently occur within a five-year window. Clearly, the lion's share of home price booms have *not* ended in busts historically. Some might argue that our low percentage of booms gone bust is understated, particularly given our data limitations for the oil patch cities. For some of these cities, though, we can examine an alternative, albeit spotty, median home price data series available from the *National Association of Realtors*. However, this analysis provides no evidence that these markets would have met our "1/3 in 3" rule. For example, Houston's cumulative real home price appreciation topped out at 7 percent between 1977 and 1980, the only three-year window of growth in the early 1980s and well below our 30 percent requirement. In Anchorage, the peak three-year gain in real median home prices was 9 percent in 1982.<sup>6</sup>

### **How Do Booms Typically End?**

If it is relatively rare for housing booms to result in a price bust, how do booms usually end? Our look at history suggests that stagnation in home prices is often the most likely outcome. Of the 54 boom episodes prior to 1998, 45 did not see a subsequent bust. In these cases, nominal home prices rose by an average of 2 percent per year during the five years after the boom ended. The equivalent figure for real home prices was a modest 2 percent per year decline. So for 83 percent of our post-boom cities, nominal prices continued to inch up and any declines after inflation were very modest. Home prices in these markets simply stagnated, or stalled out, following their booms rather than going bust.

### **Why Do Home Prices Bust?**

#### **Two Case Studies: The Oil Patch and the 1990s Bi-Coastal Collapse**

If a home price boom is not a sufficient condition to cause a home price bust, as our look at history suggests, what is? Clearly one suspect is the overall economic health of these cities during their home price busts. In fact, the two major regional episodes of U.S. home price busts since 1978 were associated with rather severe, localized economic shocks that tended to affect major employers.<sup>7</sup>

This association between localized economic stress and a home price bust is best illustrated in the case of the oil patch cities during the mid-1980s. When oil prices surged in the late 1970s, the oil-producing areas of Texas, Oklahoma, Louisiana, Colorado, Wyoming, and Alaska began experiencing an economic boom and population inflows. As the economies in these cities accelerated and their populations surged, demand for housing naturally boomed. While the available OFHEO data do not allow a complete view of home price trends prior to the mid-1980s busts, some of these markets may have witnessed strong price gains. In the case of Houston and San Antonio, we can look at median home price data that is published for selected cities by the *National Association of Realtors*. Both of these markets posted double-digit home price appreciation in 1980 and 1981. Again, it is by no means clear, after adjusting for inflation and applying our "1/3 in 3" criteria, that any of the oil patch cities would have qualified for a boom.

| Table 2. Change in Economic Activity from Previous Year |      | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| <b>Oil Patch cities*</b>                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Employment  | 5.1  | 7.0  | 3.7  | -1.3 | 3.9  | -1.7 | -3.1 | 1.2  | 2.5  | 2.5  | 3.7  | 2.5  | 0.8  | 2.9  | 3.3  | 3.6  | 3.0  | 4.1  | 4.4  | 2.0  | 3.0  |      |
| Population  | 4.0  | 3.8  | 5.7  | 3.5  | 1.2  | -1.1 | 1.3  | -1.1 | -0.2 | 1.1  | 2.0  | 2.5  | 2.6  | 2.2  | 2.1  | 1.9  | 2.0  | 2.1  | 2.3  | 2.3  | 2.1  |      |
| <b>California cities*</b>                               |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Employment  | 1.5  | 1.2  | -1.5 | 2.1  | 4.8  | 3.8  | 3.3  | 4.1  | 4.4  | 2.5  | 2.0  | -1.7 | -2.9 | -0.8 | 0.5  | 2.4  | 1.6  | 1.1  | 3.9  | 2.5  | 2.7  |      |
| Population  | 2.1  | 1.8  | 2.4  | 2.2  | 2.0  | 2.3  | 3.0  | 2.8  | 2.5  | 2.7  | 2.2  | 1.5  | 1.5  | 0.8  | 0.4  | 0.5  | 0.7  | 1.1  | 1.4  | 1.6  | 1.2  |      |
| <b>New England cities*</b>                              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Employment  | 2.0  | 0.9  | 0.0  | 2.2  | 5.6  | 3.8  | 3.7  | 2.9  | 2.9  | -0.5 | -1.7 | -4.2 | -0.8 | 0.9  | -0.3 | 1.8  | 1.7  | 1.6  | 1.6  | 1.7  | 2.1  |      |
| Population  | 0.5  | 0.5  | 0.4  | 0.8  | 0.7  | 0.8  | 0.8  | 0.8  | 0.8  | 0.3  | 0.3  | 0.3  | 0.0  | 0.3  | 0.3  | 0.3  | 0.5  | 0.5  | 0.6  | 0.7  | 0.8  |      |
| <b>Peoria</b>   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Employment  | -1.1 | -1.6 | -6.9 | -5.3 | 3.8  | -0.7 | 0.5  | 1.5  | 4.3  | 3.2  | 2.1  | 0.1  | -0.5 | 1.9  | 2.8  | 1.4  | 3.9  | 1.7  | 2.0  | 0.2  | 1.0  |      |
| Population  | 0.9  | -0.2 | -0.9 | -1.4 | -1.7 | -2.0 | -1.6 | -0.8 | 0.6  | 0.8  | 0.6  | 0.7  | 0.2  | 0.1  | 0.1  | 1.0  | 0.0  | 0.0  | 0.1  | 0.2  | -0.2 |      |
| <b>Honolulu</b>   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Employment  | 3.1  | -1.2 | -0.7 | 1.2  | 1.0  | 2.2  | 2.1  | 4.7  | 3.2  | 3.1  | 3.2  | 2.0  | 0.2  | -0.6 | -1.0 | -0.9 | -0.5 | -0.4 | -0.2 | -0.9 | 2.4  |      |
| Population  | 0.7  | 1.1  | 1.1  | 1.7  | 1.1  | 0.8  | 0.8  | 1.0  | 0.7  | 0.9  | 0.9  | 1.4  | 1.6  | 0.7  | 0.9  | 0.3  | 0.2  | 0.4  | 0.0  | -0.9 | -0.4 |      |
| <b>U.S.</b>   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Employment  | 0.4  | 0.9  | -1.5 | 0.8  | 4.7  | 2.6  | 1.8  | 2.8  | 2.9  | 2.4  | 1.2  | -1.3 | 0.5  | 1.8  | 2.4  | 2.4  | 1.9  | 2.3  | 2.6  | 2.3  | 2.1  |      |
| Population  | 1.0  | 1.0  | 1.0  | 0.9  | 0.9  | 0.9  | 0.9  | 0.9  | 0.9  | 0.9  | 1.1  | 1.3  | 1.4  | 1.3  | 1.2  | 1.2  | 1.2  | 1.2  | 1.2  | 1.2  | 1.1  |      |

\* Changes in employment and population are shown as weighted average for "bust" cities in these regions.  
Note: The red and green shading in this table corresponds to the boom and bust periods depicted in Table 1, where at least one city is shaded.  
Source: FDIC FYI "U.S. Home Prices: Does Bust Always Follow Boom?" February 10, 2006. (Bureau of Economic Analysis; Economy.com; U.S. Census Bureau).

Table 2: Change in Economic Activity from Previous Year

The local economic booms in the oil patch cities began to unwind, however, as oil prices started to weaken. After surging 250 percent between 1978 and 1980, crude oil prices began a six-year decline that culminated with a 46 percent price drop in 1986.<sup>8</sup> Table 2 shows that while the eleven oil patch cities saw their combined job growth surge an average of 5 percent annually from 1980 to 1982, this string of strong gains began to unravel beginning in 1983. The economic stress resulting from the decline in oil prices is evident in the intermittent job loss and population outflows that characterized the oil patch cities until 1989. This economic stress in turn weighed heavily on the housing markets in these cities. In the worst cases, nominal home prices fell by 40 percent and 33 percent in Lafayette, Louisiana, and Casper, Wyoming, respectively, between 1983 and 1988.

Population outflows were perhaps the most detrimental factor weighing on housing in these cities. Not long after population growth slowed sharply in these markets, and even for several years after their average populations started growing again, home prices were in decline. One of the worst years of population loss for these cities was 1987, when Anchorage lost 2 percent of its residents, Odessa-Midland's population dropped 5.4 percent, and Casper saw a net outflow of nearly 7 percent of its residents. Population outflows are extremely harmful to housing markets, because they both depress demand for homes and raise the number of homes on the market. This combination of falling demand and surging supply can wreak havoc on home prices, as the figures in Table 1 support.

The busts in California and the Northeast have been widely studied.<sup>2</sup> They too featured some common elements of economic stress, including the early 1990s recession, massive defense downsizing after the end of the Cold War, a significant commercial real estate collapse, and either a sharp downturn in population growth or outright population loss. As was the case in the oil patch, the last factor, population weakness, was probably one of the most significant elements affecting price declines in these markets.

In one way, the figures in Table 1 and Table 2 offer some reassurance that many of today's home price booms may not necessarily be followed by busts. Based on our sense of economic history, it seems that while significant economic distress may be a "necessary condition" for sizeable home price declines to occur, a prior home price boom may not be. However, it is likely that the longer and higher home prices rise, the more they may become out of line with economic fundamentals, which could make them more vulnerable to economic shocks. Should a shock occur, it seems reasonable to expect that home prices would be more likely to decline, and perhaps even bust, in those markets where prices have recently boomed.

#### **Economic Shocks Drive Home Price Busts**

Between 1983 and 1990, the United States experienced one of its longest periods of post-war economic expansion. Even so, different regions of the country endured localized blows during that period or shortly after, with repercussions that rocked their economies and housing markets. All of the cities identified in Table 1 as experiencing home price busts share common factors of having undergone local or regional economic shocks. In all of these cases, the shocks were severe enough to significantly impact employment opportunities and affect population change, resulting in spillover effects on the cities' housing markets and home prices.

In the beginning of the 1980s, cities in the "oil patch" (so-called because of their extensive oil and gas industry activity) struggled to accommodate surging growth in the booming energy industry. By the mid- to late-1980s, however, oil prices had plunged, and thousands of jobs were lost. In the early- to mid-1990s, many cities in California and New England experienced significant economic downturns due to the convergence of several critical factors: the recession of 1990-91, a sharp deterioration in commercial real estate, and reductions in defense-related spending. The end of the Cold War cost California a huge portion of its defense-related employment; as many as 150,000 jobs disappeared in the early 1990s.

Peoria and Honolulu stand outside any regional framework, but these cities also felt deep economic blows. The global recession of the early 1980s severely affected Peoria-based Caterpillar, the world's largest manufacturer of construction equipment, the second largest U.S. exporter of industrial goods, and the city's largest employer. Job losses, salary cuts, and finally a strike in 1982 led to the city's depressed industrial economy in the 1980s. In the 1990s, much of the reason for Honolulu's weakness stemmed from outside factors. Hawaii's tourism industry felt the backlash of California's early 1990s recession, while slow growth during most of the 1990s in Japan and the 1997 Asian financial crisis further hurt visitor counts. Hawaii's economy shrank by about 1½ percent from 1991 to 1998.

#### **What Does History Suggest about the Current Situation?**

This paper has suggested three facts about home price booms and busts. First, home price booms do not last forever. Between 1978 and 2003, the nationwide HPI grew an average of 5 percent per year in nominal terms. Even after allowing for strong local population or economic growth that could temporarily boost home price appreciation, the 20 to 25 percent price gains that have been witnessed in some cities in recent years clearly are not sustainable over the long term. Second, we have seen that most booms usually do not go bust but instead tend to result in a period of price stagnation. Finally, busts do sometimes follow booms. In those instances, severe economic shocks—often including a net outflow of population—appear to be a key factor in pushing nominal home prices sharply lower. Home price declines do not occur simply because home prices have boomed, and they do not occur independently of local economic conditions.

#### **Why History Might Not Be Applicable to Today's Booms**

Some analysts and market watchers have suggested that the United States has been experiencing a nationwide home price "bubble" in recent years.<sup>10</sup> As Table 1 shows, the run-up in real home prices since the late 1990s has been quite pronounced, spanning the nation's largest cities and a good number of metro areas in California. Our count of 33 boom markets in 2003 is the highest witnessed at one time during the past 25 years—1988 ranks second, with 24 booms. The fact that housing booms have become

so widespread may contribute to the impression that this is a nationwide phenomenon (see [note 1](#)).

Although this paper demonstrates that relatively few metro area housing booms have ended in busts, there are reasons to think that history might be an imperfect guide to the present situation. Foremost among these are changes in credit markets that are pushing homeowners—and housing markets—into uncharted territory. A major financial development in the 1990s was the emergence and rapid growth of subprime mortgage lending.<sup>11</sup> Subprime mortgage loan originations surged by a whopping 25 percent per year between 1994 and 2003, resulting in a nearly ten-fold increase in the volume of these loans in just nine years.<sup>12</sup> Subprime mortgages currently account for just over 10 percent of all mortgage debt outstanding. While the growth in subprime lending has made home ownership an option for millions of households who could not qualify for conventional loans, it has also been associated with higher levels of delinquency and foreclosure. There is also evidence that subprime borrowers may be particularly vulnerable to problems servicing their debt when interest rates rise or when the borrower is exposed to economic stresses, such as job loss.<sup>13</sup>

Home buyers are also increasingly availing themselves of higher-leverage mortgage products. In 2003, loans exceeding 80 percent of the home purchase price accounted for 30 percent of all purchase mortgages underwritten. In a few cities, this share exceeded 50 percent.<sup>14</sup> In addition, more borrowers are taking on second mortgages at closing. One method of doing so involves "piggyback" loans, which combine a first mortgage, usually for 80 percent of the value of the home, with a "piggyback" second mortgage amounting to 10 to 15 percent or more of the value of the home. The effect of this structure is to raise the total loan amount to a level very near the value of the home, which may make borrowers more likely to default in the event of a housing market downturn. An increased incidence of default and foreclosure could, in turn, contribute to downward pressure on home prices as distressed properties are liquidated by lenders. However, little is known as yet about the effects these credit-market changes might have on the dynamics of boom-bust cycles, making them promising areas for future research.

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## Endnotes

<sup>1</sup> The original FYI stated, "the 2003 boom markets account for roughly 40 percent of the nation's population base, contributing to the impression that this is a nationwide phenomenon." This estimate was based upon the share of the nation's population accounted for by the *states* in which most of the 2003 boom markets resided, not strictly the cities themselves. Refining these estimates to the metropolitan level, we estimate the population in these markets comprised at least 14 percent of the U.S. population in 2003, although this remains a rough estimate due to the lack of population data for some smaller cities..

<sup>2</sup> OFHEO House Price Index quarterly news release, December 1, 2004.

<sup>3</sup> Ibid.

<sup>4</sup> While every city shaded red met the "15 in 5" criterion, we extended the red shading to include all contiguous years during which nominal home prices declined (by any amount) over the prior five years.

<sup>5</sup> It should be noted that our quick "rules of thumb" are just one set of test criteria that could be applied to history. For instance, one could argue that the "15 in 5" rule is too stringent a definition for a bust, as it fails to flag Boston, where nominal home prices fell 11 percent from 1988 to 1992, or New York City, where nominal prices fell 9 percent between 1988 and 1991. Even so, we feel that our definitions are a useful test and appear to capture the nation's major regional home price events during the past 25 years (see Table 1).

<sup>6</sup> Median home price data for Anchorage are not available in 1980 and 1981, but even at their 1984 peak, Anchorage's real median home prices were just 14 percent above their 1979 level—only half of our 30 percent hurdle.

<sup>7</sup> Christian L. Redfearn, "The Composition of Metropolitan Employment and the Correlation of Housing Prices Across Metropolitan Areas," University of California, Berkeley, December 6, 1999.

<sup>8</sup> Based on annual average spot price of West Texas intermediate crude oil.

<sup>9</sup> Cynthia Angell, "Housing Bubble Concerns and the Outlook for Mortgage Credit Quality," *FDIC Outlook*, Spring 2004, <http://www.fdic.gov/bank/analytical/regional/index.html>; Karl E. Case and Robert J. Shiller, "Is There a Bubble in the Housing Market?" *Brookings Papers on Economic Activity*, 2004-I, 299-362; and "A Decade of Boom and Bust in the Prices of Single-Family Homes: Boston and Los Angeles, 1983 to 1993," *New England Economic Review*, March/April 1994.

<sup>10</sup> Population figures based on U.S. Census Bureau and Economy.com estimates for 2003.

<sup>11</sup> "Subprime" refers to mortgages made to borrowers with limited or impaired credit histories.

<sup>12</sup> Edward M. Gramlich, "Subprime Mortgage Lending: Benefits, Costs, and Challenges," at the Financial Services Roundtable Annual Housing Policy Meeting, Chicago, Illinois, Federal Reserve, May 21, 2004.

<sup>13</sup> Cynthia Angell, "Housing Bubble Concerns and the Outlook for Mortgage Credit Quality," *FDIC Outlook*, Spring 2004, <https://www.fdic.gov/bank/analytical/regional/index.html>.

<sup>14</sup> Federal Housing Finance Board, Monthly Interest Rate Survey, 2003.

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**Table 1. Historical Evidence of U.S. Home Price Booms and Bust, 1978-2003**

This table displays years of home price booms and busts in metropolitan areas during the period 1978 to 2003. Cities are grouped by geographic region.

| Region and City                       | Boom   |                             | Bust   |                               | Years Data Not Available |
|---------------------------------------|--|-----------------------------|--|-------------------------------|--------------------------|
|                                       | Years Where Real Home Home Prices Increased At Least 30 Percent From 3 Years Earlier | Maximum Real Price Increase | Years Where Nominal Home Prices Declined From 5 Years Earlier* | Maximum Nominal Price Decline |                          |
| <b>California</b>                     |  |                             |  |                               |                          |
| Chico, CA                             | 2003   | +41%                        |  |                               | 1978                     |
| Fresno, CA                            | 2003   | +37%                        |  |                               |                          |
| Los Angeles-Long Beach-Santa Ana, CA  | 1978, 1979   | +47%                        | 1994, 1995, 1996, 1997, 1998                                   | -19%                          |                          |
|                                       | 1988, 1989, 1990   | +48%                        |  |                               |                          |
|                                       | 2003   | +35%                        |  |                               |                          |
| Madera, CA                            | 2003   | +35%                        |  |                               | 1978-1984                |
| Merced, CA                            | 2002, 2003   | +40%                        |  |                               | 1978                     |
| Modesto, CA                           | 1990   | +32%                        |  |                               | 1978                     |
|                                       | 2002, 2003   | +44%                        |  |                               |                          |
| Napa, CA                              | 1990   | +34%                        |  |                               | 1978                     |
|                                       | 2000, 2001, 2002, 2003   | +46%                        |  |                               |                          |
| Oxnard-Thousand Oaks-Ventura, CA      | 1979   | +39%                        | 1994, 1995, 1996, 1997   | -17%                          |                          |
|                                       | 1988, 1989, 1990   | +50%                        |  |                               |                          |
|                                       | 2003   | +35%                        |  |                               |                          |
| Redding, CA                           | 2003   | +39%                        |  |                               | 1978-1980                |
| Riverside-San Bernadino-Ontario, CA   | 1979   | +40%                        | 1994, 1995, 1996, 1997, 1998                                   | -18%                          |                          |
|                                       | 2003   | +36%                        |  |                               |                          |
| Sacramento-Arden-Arcade-Roseville, CA | 1979   | +30%                        |  |                               |                          |
|                                       | 1990   | +32%                        |  |                               |                          |
|                                       | 2002, 2003   | +40%                        |  |                               |                          |
| Salinas, CA                           | 2000, 2001, 2002, 2003   | +49%                        |  |                               |                          |

|                                      |                        |      |                        |      |           |
|--------------------------------------|------------------------|------|------------------------|------|-----------|
| San Diego-Carlsbad-San Marcos, CA    | 1979                   | +45% |                        |      |           |
|                                      | 1989                   | +32% |                        |      |           |
|                                      | 2000, 2001, 2002, 2003 | +41% |                        |      |           |
| San Francisco-Oakland-Fremont, CA    | 1978, 1979             | +38% |                        |      |           |
|                                      | 1988, 1989, 1990       | +40% |                        |      |           |
|                                      | 2000, 2001, 2002       | +44% |                        |      |           |
| San Jose-Sunnyvale-Santa Clara, CA   | 1978, 1979             | +40% |                        |      |           |
|                                      | 1989, 1990             | +49% |                        |      |           |
|                                      | 1999, 2000, 2001, 2002 | +51% |                        |      |           |
| San Luis Obispo-Paso Robles, CA      | 1989, 1990             | +44% | 1994, 1995, 1996, 1997 | -16% |           |
|                                      | 2001, 2002, 2003       | +46% |                        |      |           |
| Santa Barbara-Santa Maria-Goleta, CA | 1989                   | +34% |                        |      |           |
|                                      | 2001, 2002, 2003       | +45% |                        |      |           |
| Santa Cruz-Watsonville, CA           | 1988, 1989, 1990       | +45% |                        |      |           |
|                                      | 2000, 2001, 2002       | +48% |                        |      |           |
| Santa Rosa-Petaluma, CA              | 1989, 1990             | +41% |                        |      |           |
|                                      | 2000, 2001, 2002       | +48% |                        |      |           |
| Stockton, CA                         | 2001, 2002, 2003       | +38% |                        |      |           |
| Vallejo-Fairfield, CA                | 2001, 2002, 2003       | +45% |                        |      |           |
| Yuba City, CA                        | 2003                   | +42% |                        |      | 1978-1986 |
| <b>Other Western Locations</b>       |                        |      |                        |      |           |
| Bellingham, WA                       | 1990, 1991, 1992       | +43% |                        |      | 1978      |
| Bend, OR                             | 1990, 1991             | +32% |                        |      | 1978-1985 |
| Boulder, CO                          | 1994                   | +31% |                        |      |           |
|                                      | 2001                   | +31% |                        |      |           |
| Corvallis, OR                        | 1994, 1995             | +36% |                        |      | 1978-1985 |
| Denver-Aurora, CO                    | 1979                   | +34% |                        |      |           |
| Missoula, MT                         | 1994                   | +30% |                        |      | 1978-     |

|                                |                        |      |                                    |      |           |
|--------------------------------|------------------------|------|------------------------------------|------|-----------|
|                                |                        |      |                                    |      | 1987      |
| Mount Vernon-Anacortes, WA     | 1990, 1991             | +36% |                                    |      | 1978-1985 |
| Ogden-Clearfield, UT           | 1995, 1996             | +30% |                                    |      |           |
| Provo-Orem, UT                 | 1995, 1996             | +34% |                                    |      | 1978-1982 |
| Salt Lake City, UT             | 1994, 1995, 1996       | +36% |                                    |      |           |
| Seattle-Tacoma-Bellevue, WA    | 1978, 1979             | +45% |                                    |      |           |
|                                | 1990, 1991             | +34% |                                    |      |           |
| <b>Oil Patch</b>               |                        |      |                                    |      |           |
| Anchorage, AK                  |                        |      | 1987, 1988, 1989, 1990, 1991       | -29% | 1978-1982 |
| Austin-Round Rock, TX          |                        |      | 1989, 1990, 1991, 1992             | -25% |           |
| Casper, WY                     |                        |      | 1988, 1989, 1990                   | -33% | 1978-1982 |
| Fort Worth-Arlington TX        | 2003                   | +37% |                                    |      |           |
| Grand Junction, CO             |                        |      | 1985, 1986, 1987, 1988             | -29% | 1978-1979 |
| Houston-Baytown-Sugar Land, TX |                        |      | 1986, 1987, 1988, 1989, 1990       | -22% |           |
| Lafayette, LA                  |                        |      | 1986, 1987, 1988, 1989, 1990, 1991 | -40% | 1978-1980 |
| Midland, TX                    |                        |      | 1987, 1988, 1989, 1990, 1991, 1992 | -31% | 1978-1981 |
| Odessa, TX                     |                        |      | 1989, 1990, 1991                   | -22% | 1978-1983 |
| Oklahoma City, OK              |                        |      | 1987, 1988, 1989, 1990, 1991       | -26% |           |
| San Antonio, TX                |                        |      | 1988, 1989, 1990, 1991, 1992       | -17% | 1978      |
| <b>New England</b>             |                        |      |                                    |      |           |
| Barnstable Town, MA            | 1987, 1988             | +62% | 1992, 1993, 1994, 1995             | -15% | 1978-1983 |
|                                | 2000, 2001, 2002, 2003 | +48% |                                    |      |           |

|   |                              |      |                                       |      |               |
|---|------------------------------|------|---------------------------------------|------|---------------|
| Boston-Cambridge-Quincy,<br>MA-NH                 | 1985, 1986, 1987, 1988       | +74% |                                       |      |               |
|   | 2000, 2001, 2002             | +36% |                                       |      |               |
| Bridgeport-Stamford-<br>Norwalk, CT               | 1985, 1986, 1987, 1988       | +71% |                                       |      |               |
| Burlington-South Burlington,<br>VT                | 1986, 1987, 1988             | +32% |                                       |      | 1978-<br>1984 |
| Hartford-West Hartford-East<br>Hartford, CT       | 1986, 1987, 1988             | +61% | 1993, 1994, 1995, 1996, 1997,<br>1998 | -17% |               |
| Manchester-Nashua, NH                             | 1986, 1987, 1988             | +55% | 1991, 1992, 1993, 1994, 1995,<br>1996 | -20% | 1978-<br>1982 |
|   | 2002, 2003                   | +35% |                                       |      |               |
| New Haven-Milford, CT                             | 1986, 1987, 1988             | +76% | 1992, 1993, 1994, 1995, 1996,<br>1997 | -16% |               |
| Norwich-New London, CT                            | 1988                         | +50% | 1993, 1994, 1995, 1996                | -16% | 1978-<br>1984 |
| Portland-South Portland-<br>Biddeford, ME         | 1986, 1987, 1988             | +47% |                                       |      | 1978-<br>1982 |
| Providence-New Bedford-<br>Fall River-Warwick, RI | 1985, 1986, 1987, 1988, 1989 | +69% |                                       |      |               |
|   | 2002, 2003                   | +39% |                                       |      |               |
| Springfield, MA                                   | 1986, 1987, 1988             | +63% |                                       |      | 1978-<br>1979 |
| Worcester, MA-CT                                  | 1985, 1986, 1987, 1988       | +71% |                                       |      | 1978-<br>1979 |
|   | 2002, 2003                   | +34% |                                       |      |               |
| <b>Other Northeast</b>                            |                              |      |                                       |      |               |
| Albany-Schenectady-Troy,<br>NY                    | 1986, 1987, 1988             | +49% |                                       |      | 1978-<br>1979 |
| Allentown-Bethlehem-<br>Easton, PA-NJ             | 1987, 1988, 1989             | +48% |                                       |      |               |
| Kingston, NY                                      | 2003                         | +33% |                                       |      | 1978-<br>1985 |
| New York-Northern NJ-Long<br>Island, NY-NJ        | 1985, 1986, 1987, 1988       | +65% |                                       |      |               |
|   | 2002, 2003                   | +32% |                                       |      |               |

|  |                  |      |                                    |      |           |
|--|------------------|------|------------------------------------|------|-----------|
| Ocean City, NJ                               | 2002, 2003       | +37% |                                    |      | 1978-1985 |
| Philadelphia-Camden-Wilmington, PA-NJ-DE-MD  | 1987, 1988       | +41% |                                    |      |           |
| Poughkeepsie-Newburgh-Middletown, NY         | 1986, 1987, 1988 | +63% |                                    |      | 1978-1980 |
|  | 2003             | +35% |                                    |      |           |
| Scranton-Wilkes-Barre-Hazleton, PA           | 1988             | +31% |                                    |      | 1978-1983 |
| Trenton-Ewing, NJ                            | 1986, 1987, 1988 | +61% |                                    |      |           |
| Washington-Arlington-Alexandria, DC-MD-VA-WV | 1988, 1989       | +31% |                                    |      |           |
|  | 2003             | +31% |                                    |      |           |
| <b>Florida</b>                               |                  |      |                                    |      |           |
| Cape Coral-Fort Myers, FL                    | 2003             | +31% |                                    |      |           |
| Miami-Fort Lauderdale-Miami Beach, FL        | 2003             | +36% |                                    |      |           |
| Naples-Marco Island, FL                      | 2002, 2003       | +32% |                                    |      |           |
| Port St. Lucie-Fort Pierce, FL               | 2003             | +37% |                                    |      |           |
| Punta Gorda, FL                              | 2003             | +31% |                                    |      |           |
| <b>Other</b>                                 |                  |      |                                    |      |           |
| Honolulu, HI                                 | 1980             | +31% | 1996, 1997, 1998, 1999, 2000, 2001 | -16% |           |
|  | 1989, 1990, 1991 | +60% |                                    |      |           |
| Niles-Benton Harbor, MI                      | 1985             | +30% |                                    |      | 1978-1983 |
| Peoria, IL                                   |                  |      | 1984, 1985, 1986, 1987, 1988       | -17% | 1978      |

\* A city must include at least one 5-year period where nominal prices declined by more than 15 percent.

Source: FDIC FYI "U.S. Home Prices: Does Bust Always Follow Boom?" February 10, 2005. (Office of Federal Housing Enterprise Oversight Home Price Index, nominal and real, using Bureau of Labor Statistics Consumer Price Index less shelter inflation index).

## Table 2. Change in Economic Activity from Previous Year

|                            | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|----------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| <b>Oil Patch cities*</b>   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Employment                 | 5.1  | 7.0  | 3.7  | -1.3 | 3.9  | 1.7  | -3.1 | 1.2  | 2.5  | 2.5  | 3.7  | 2.5  | 0.8  | 2.9  | 3.3  | 3.6  | 3.0  | 4.1  | 4.4  | 2.0  | 3.0  |
| Population                 | 4.0  | 3.8  | 5.7  | 3.5  | 1.2  | 1.1  | 1.3  | -1.1 | -0.2 | 1.1  | 2.0  | 2.5  | 2.6  | 2.2  | 2.1  | 1.9  | 2.0  | 2.1  | 2.3  | 2.3  | 2.1  |
| <b>California cities*</b>  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Employment                 | 1.5  | 1.2  | -1.5 | 2.1  | 4.8  | 3.8  | 3.3  | 4.1  | 4.4  | 2.5  | 2.0  | -1.7 | -2.9 | -0.8 | 0.5  | 2.4  | 1.8  | 1.1  | 3.9  | 2.5  | 2.7  |
| Population                 | 2.1  | 1.8  | 2.4  | 2.2  | 2.0  | 2.3  | 3.0  | 2.8  | 2.5  | 2.7  | 2.2  | 1.5  | 1.5  | 0.8  | 0.4  | 0.5  | 0.7  | 1.1  | 1.4  | 1.6  | 1.2  |
| <b>New England cities*</b> |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Employment                 | 2.0  | 0.9  | 0.0  | 2.2  | 5.6  | 3.8  | 3.7  | 2.9  | 2.9  | -0.5 | -1.7 | -4.2 | -0.8 | 0.9  | -0.3 | 1.8  | 1.7  | 1.6  | 1.6  | 1.7  | 2.1  |
| Population                 | 0.5  | 0.5  | 0.4  | 0.8  | 0.7  | 0.8  | 0.8  | 0.8  | 0.8  | 0.3  | 0.3  | 0.3  | 0.0  | 0.3  | 0.3  | 0.3  | 0.5  | 0.5  | 0.6  | 0.7  | 0.8  |
| <b>Peoria</b>              |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Employment                 | -1.1 | -1.6 | -6.9 | -5.3 | 3.8  | -0.7 | 0.5  | 1.5  | 4.3  | 3.2  | 2.1  | 0.1  | -0.5 | 1.9  | 2.8  | 1.4  | 3.9  | 1.7  | 2.0  | 0.2  | 1.0  |
| Population                 | 0.9  | -0.2 | -0.9 | -1.4 | -1.7 | -2.0 | -1.8 | -0.8 | 0.0  | 0.8  | 0.6  | 0.7  | 0.2  | 0.1  | 0.1  | 1.0  | 0.0  | 0.0  | 0.1  | 0.2  | -0.2 |
| <b>Honolulu</b>            |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Employment                 | 3.1  | -1.2 | -0.7 | 1.2  | 1.0  | 2.2  | 2.1  | 4.7  | 3.2  | 3.1  | 3.2  | 2.0  | 0.2  | -0.6 | -1.0 | -0.9 | -0.5 | -0.4 | -0.2 | -0.9 | 2.4  |
| Population                 | 0.7  | 1.1  | 1.1  | 1.7  | 1.1  | 0.8  | 0.8  | 1.0  | 0.7  | 0.9  | 0.9  | 1.4  | 1.6  | 0.7  | 0.9  | 0.3  | 0.2  | 0.4  | 0.0  | -0.9 | -0.4 |
| <b>U.S.</b>                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Employment                 | 0.4  | 0.9  | -1.5 | 0.8  | 4.7  | 2.6  | 1.8  | 2.8  | 2.9  | 2.4  | 1.2  | -1.3 | 0.5  | 1.8  | 2.4  | 2.4  | 1.9  | 2.3  | 2.6  | 2.3  | 2.1  |
| Population                 | 1.0  | 1.0  | 1.0  | 0.9  | 0.9  | 0.9  | 0.9  | 0.9  | 0.9  | 0.9  | 1.1  | 1.3  | 1.4  | 1.3  | 1.2  | 1.2  | 1.2  | 1.2  | 1.2  | 1.2  | 1.1  |

\* Changes in employment and population are shown as weighted average for "bust" cities in these regions.

Note: The red and green shading in this table corresponds to the boom and bust periods depicted in Table 1, where at least one city is shaded.

Source: FDIC FYI "U.S. Home Prices: Does Bust Always Follow Boom?" February 10, 2005. (Bureau of Economic Analysis; Economy.com; U.S. Census Bureau).

