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## **Is There a Bubble in the Housing Market? An Analysis**

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The popular press is full of speculation that we are in a “housing bubble” that is about to burst. *Barrons*, *Money Magazine* and *The Economist* have all run recent feature stories about the irrational runup in prices and the potential for a crash in home prices. *The Economist* has had a series of articles with titles like “Castles in Hot Air” “House of Cards” “Bubble Trouble,” “Betting the House.” These accounts have necessarily raised a lot of concerns among the general public. But, how do we know if the housing market is in a bubble?

The term “bubble” is widely used but rarely defined very clearly. We believe that in its widespread use the term refers to a situation in which excessive public expectations for future price increases cause prices to be temporarily elevated. During a housing price bubble, home buyers think that a home that would normally be considered too expensive for them is now an acceptable purchase because they will be compensated by significant further price increases. They will not need to save as much as they otherwise might, since they expect the increased value of their home to do the saving for them. First-time home buyers may worry during a housing bubble that if they do not buy now, they will not be able to afford a house later. Furthermore, the expectations for high price increases may have a strong impact on demand if people think that home prices are very unlikely to fall, and certainly not fall for long, so there is little perceived risk associated with an investment in homes.

If expectations of rapid and steady future price increases are important motivating factors for the buyer then the home price level is inherently unstable. Prices cannot go

rapidly up forever, and when people perceive that prices have stopped going up, then this support for their acceptance of high home prices could break down. Prices could then fall due to diminished demand: the bubble bursts.

At least one aspect of a housing bubble has clearly been seen recently: the rapid price increases. A rapid surge in home prices after 2000, as tabulated for example by Economist Intelligence Service, has infected almost all advanced countries of the world with the exception of Germany and Japan. In some of these countries, price-rental ratios and price-average income ratios have hit highs that are record since their data begin in 1975.<sup>1</sup>

But, the mere fact that there have been rapid price increases is not itself evidence of a bubble. The basic question is whether expectations of large future price increases are sustaining the market, whether these expectations are salient enough to generate anxieties among potential homebuyers, and whether there is sufficient confidence in such expectations to motivate action.

In addition, changes in fundamentals may explain much of the increase. As we will show, income growth alone explains the pattern of home price increases in most states. Also, falling interest rates clearly explain much of the recent run up nationally, but they cannot explain cross state variations in appreciation.

To shed light on whether the current boom is a bubble and whether it is likely to burst or deflate, we present two pieces of new evidence. First, we will analyze U. S. state level data on home prices and incomes over a period of 71 quarters. This will allow us to confirm for a comprehensive sample of U. S. data whether one important “fundamental”

variable might plausibly account for housing price movements. At minimum we will know how much of the observed variation at the state level is unexplained by income.

Secondly, we will present the results of a new questionnaire survey in 2003 of people who bought homes in 2002 in four metropolitan areas: Los Angeles, San Francisco, Boston and Milwaukee. The survey replicates a survey we did fifteen years ago, in 1988, in these same metropolitan areas during another purported housing bubble, after which prices did indeed fall sharply in many cities, and allows comparison of the present situation with that one. Our survey also allows comparison across cities reputedly going through a bubble recently (Los Angeles, San Francisco and Boston) with one that is not (Milwaukee).

Note that the notion of a bubble is really defined in terms of people's thinking: their expectations for future price increases, their theories about the risk of falling prices, their worries about being priced out of the housing market in the future if they do not buy. Economists rarely ask people what they are thinking when they are making economic decisions and some economists have argued that we should never do so.<sup>2</sup> We disagree: If questions are carefully worded and people are surveyed at a time close to their making an actual economic decision, by making comparisons across time and economic circumstances, we can learn about how the decisions are made.<sup>3</sup>

### **A Preliminary on the Origins of the term “Housing Bubble”**

There is very little agreement about housing bubbles. In fact, the widespread use of this term “housing bubble” itself is quite new. Figure 1 shows a count since 1980 of the monthly number of stories incorporating the words “housing bubble” in major papers in

the English language around the world, as tabulated using Lexis-Nexis (and rescaling the figures in years before 2003 to account for the smaller coverage in Lexis Nexis in earlier years.) The term “housing bubble” had virtually no currency until 2002, when use suddenly increased dramatically, even though the runup in real estate prices in the 1980s was as big as that since 1995. The peak in usage of “housing bubble” was in October 2002. The only real evidence of currency before 2002 is a few uses of the term just after the stock market crash of 1987, but that usage quickly died out.

The term “housing boom” has had much more steady currency since 1980. As one can see from Figure 1, the use of this term was fairly steady from 1980 to 2001, though it too took off in 2002, also peaking in October. The term “boom” is much more neutral than “bubble.” The term “boom” suggests an opportunity for investors. In contrast, the term “bubble” connotes a negative judgment on the phenomenon, an opinion that price levels cannot be sustained.

Perhaps journalists are shy to raise the word bubble except after some salient public event that legitimizes the possibility, events such as the stock market crash of 1987 or the stock market crash after 2000. The question is whether such journalistic use of the term also infects thinking of home buyers: do home buyers think that they are in a bubble?

### **The “Housing Bubble” that Peaked around 1990**

The period of the 1980s, and the price declines in many cities in the early 1990s, is now widely looked back upon as the example, or model, of a boom cycle that led to a bust. A pattern of sharp price increases, a peak around 1990 and then a decline in many

world cities, including Boston, Los Angeles, London, Sydney and Tokyo, looks consistent with a bubble.

Housing prices began rising rapidly in Boston in 1984. In 1985 alone house prices in the Boston metropolitan area went up 39%. In Case (1986), repeat sales indexes were constructed to measure the extent of the boom in constant quality home prices. In addition, a structural supply and demand model, which explained house price movements over ten years and across 10 cities, failed to explain what was going on in Boston. The model predicted that income growth, employment growth, interest rates, construction costs and other fundamentals should have pushed Boston prices up by about 15 percent. Instead, they went up over 140 percent before topping out in 1988. The paper ends with the conjecture that the boom was at least in part a bubble.

Case and Shiller (1987) described price changes by constructing a set of repeat sales indexes from large data bases of transactions in Atlanta, Chicago, Dallas and San Francisco. These indexes were used in Case and Shiller (1989) to provide evidence of positive serial correlation in real house prices. In fact, the paper showed that a change in price observed over one year tends to be followed by a change in the same direction the following year between 25 percent and 50 percent as large. The paper finds evidence of inertia in excess returns as well. This strong serial correlation of price changes is certainly consistent with our expectations of a bubble.<sup>4</sup>

During the 1980's, spectacular home price booms in California and the Northeast helped stimulate the underlying economy on the way up, but they ultimately encountered a substantial drop in demand in the late 1980's and contributed significantly to severe

regional recessions in the early 1990's. The 1980s boom led to sharp price declines in some, though not all cities.

Since 1995, U. S. housing prices have been rising faster than incomes and faster than other prices in virtually every metropolitan area. Despite the fact that the economy was in recession during from March to November of 2001 and despite the loss of nearly 3 million jobs since 2000, the price of single family homes, the volume of existing home sales and the number of housing starts in the United States have remained at near record levels. There can be no doubt that the housing market and spending related to housing sales have kept the U.S. economy growing and has prevented a "double dip" recession since 2001.

The big question before us is whether there is reason to think that such a runup in prices will be followed by similar, or even worse, declines this time. In order to answer this question, we need to try to understand better the causes of these large movements in the housing market.

### **House Prices and Income 1985-2002**

A fundamental issue to consider when judging the plausibility of bubble theories is the stability of the relationship between income and house prices over time and space. If that relationship is stable, then clearly fundamentals have the potential to explain house prices. This section looks at the relationship between house price and per capita personal income by state quarterly from 1985:1 and 2002:3. In all (51 states and 71 quarters) the data contain 3621 observations.

**Home Prices:** The pattern of changes in home values was constructed from repeat sales price indexes applied to the 2000 Census median values by state. Case-Shiller weighted repeat sales indexes (See Case and Shiller [1987 and 1989]) constructed by Fiserv CSW Inc. are available for 16 states. In addition, the Office of Federal Housing Enterprise Oversight (OFHEO) makes state level repeat value indexes produced by Fannie Mae and Freddie Mac available for all states.

The Case-Shiller indexes are the best available for our purposes and wherever possible we use them. While OFHEO uses a similar index construction methodology (The WRS method of Case and Shiller [1987]), their indexes are in part based on appraisals rather than exclusively on arms-length transactions. CS indexes use controls, to the extent possible, for changes in property characteristics, and it can be shown that they pick up turns in price direction earlier and more accurately than do the OFHEO indexes. Nonetheless, to capture broad movements over long time periods the indexes tend to track each other quite well, and OFHEO indexes are used in most states to achieve broader coverage.

The panel on home prices was constructed as follows for each state:

$$V_i^t = V_i^{1999:1} I_i^t \quad (1)$$

where

$V_i^t$  = Adjusted median home value in state  $i$  at time  $t$

$V_i^{1999:1}$  = Mean value of owner occupied homes in state  $i$  in 1999 quarter 1

$I_i^t$  = Weighted Repeat Sales price index for state  $i$ , 1999:1 = 1.0



The baseline figures for state level mean home prices are based on owner estimates in the 2000 Census. A number of studies have attempted to measure the bias in such estimates. The estimates range from -2% (Kain and Quigley [1972]) and Follain and Malpezzi [1981]) to +6% (Goodman and Ittner [1992]).

**Per Capita Personal Income:** Personal income by state is available to download from the U.S. Department of Commerce, Bureau of Economic Analysis. It is a consistent time series produced on a timely schedule. Population figures by state are not easy to obtain quarterly. The most carefully constructed series that we could find was put together by Economy.com, formerly Regional Financial Associates.

Table 1 presents the ratio of house price to per capita income for the eight most volatile states and the seven least volatile states. The least volatile states exhibit remarkable stability and very low ratios. Wisconsin, for example, a state that we will explore at some length later, has a ratio that remains between 2.1 and 2.4 for the entire 18 years. A simple regression of house price on per capita income in Wisconsin generates an  $R^2$  of .99.

On the other hand, the 8 most volatile states exhibit equally remarkable instability. Connecticut, for example, has a ratio that varies between 4.5 and 7.8, and we find that income only explains 45% of the variation in house price. Table 2 shows the variation for all 50 states and the District of Columbia. Glancing down the table reveals that 43 of the 51 observations have a standard deviation below 0.41, while only those 8 described in Table 1 are above 0.41. These calculations reveal that states seem to fall into one of two categories. For the vast majority of states, prices seem to move very much in line with

income. But in New England, New York, New Jersey, California and Hawaii, prices seem to be significantly more volatile.

Plots of the ratio of price to per capita income for the states of California, Massachusetts and Wisconsin (Figures 2,3, and 4) show clearly that the pattern of variation is anything but a random walk in California and Massachusetts. In these states the pattern is long inertial up swings followed by long inertial downturns followed by another rise that has lasted several years. In Wisconsin, the ratio is much smaller and remarkably stable.

We conclude that while income alone completely explains house price increases in the vast majority of states, there are large swings in home prices in about 9 states that exhibit strong inertia and that cannot be well explained by income patterns. We turn now to direct evidence of buyer behavior over the cycle.

### **The 1988 Survey**

Case and Shiller (1988) presented the results of a survey of a sample of 2,000 households that bought homes in May of 1988 in four markets: Orange County, (California), San Francisco, Boston, and Milwaukee. The four cities were chosen to represent hot (California), cooling (Boston) and steady (Milwaukee) markets. The survey was inspired in part by an article on page one of the June 1, 1988 *Wall Street Journal* which described the current “frenzy in California’s big single family home market” and that included colorful stories of *Angst* and activity in the housing market<sup>5</sup> We wanted to find out what was going on out there, and compare it with other places in a systematic way.

The results of that survey provide strong evidence for some parameters of a housing bubble theory operating in 1988: that buyers were influenced by an investment motive, that they had strong expectations about future price changes in their housing markets, that they perceived little risk. Responses to a number of questions revealed that emotion and casual word of mouth played a significant role in house purchase decisions. In addition, there was no agreement among buyers about the causes of recent house price movements and no cogent analysis of fundamentals.

One additional finding in Case and Shiller (1988) lends support to an important stylized fact about the U.S. housing market that has not been well documented in the literature which is that house prices are sticky downward. That is, when excess supply occurs, prices do not immediately fall to clear the market. Rather, sellers have reservation prices below which they tend not to sell. This tendency not to accept price declines is connected with a belief that prices never do decline, and with some of the parameters of thinking that underlie a housing bubble.

### **Home Buyer Behavior in Four cities: 1988 and 2003**

Before we present the results of a virtually identical survey done in 2003, we will describe house price behavior in the four survey areas.

Although the timing was not identical, Orange County, San Francisco and Boston experienced two boom cycles and a bust over the last 20 years. Table 3 describes the timing and the extent of these cycles which are also shown in nominal terms in Figures 5-8.

The first booms in California were similar in Los Angeles and San Francisco. Both metropolitan areas peaked in the second quarter of 1990 after a 125 percent nominal (55% real) run up which began slowly, gradually accelerated into 1998 and then slowed as it approached the peak. The first boom in Boston was similar but it accelerated earlier and actually peaked in the third quarter of 1988 after a 143% increase (over 100% real).

The bust which followed was most severe and long lived in Los Angeles which dropped 29% in nominal terms (40% real) from the peak to a trough in the first quarter of 1996. San Francisco only dropped 14% (20% real) and began rising again in the first quarter of 1993, three years earlier. Boston was on the mend two years earlier than that.

All three metropolitan areas have seen a prolonged boom period ever since, although San Francisco has shown some volatility since mid-2002. Home prices during this boom rose 129% in nominal terms in San Francisco, 94% in Los Angeles and 126% in Boston with very low inflation. At the time the second survey sample were buying their homes, prices were still rising in all four metropolitan areas.

The price index for Milwaukee could not be more different. It shows a very steady climb at a rate of 5.6% annually, essentially the same rate of growth as per capita income. Interestingly, over the entire cycle, Milwaukee did about as well as Los Angeles, but not as well as Boston.

Over the entire cycle, house prices in Boston increased more than 5 fold in nominal terms while, while prices in San Francisco quadrupled and prices in both Milwaukee and Los Angeles tripled.

Three of the four cities: Los Angeles, San Francisco and Boston, show pronounced cycles. These three might be called glamour cities, in that they are either the home for international celebrities, entertainment industries, world-class universities, or high technology industries, and the prices of homes in these cities are high as well as volatile.<sup>6</sup>

Table 4 looks at the latest boom cycle in a bit more detail. Using the state data described in the last section of the paper, the table makes two points. First, in all three states, home price increases outpaced income growth. Note that the price increases were not as great as in the metropolitan area data because the indexes were for the entire state. All three states had increases in their ratios of home price to income, but the changes were dramatically larger in the boom-bust states.

A very important fact that we have not discussed in any detail is that from 1995 through 2003 mortgage interest rates fell sharply. After peaking at nearly 10 percent in early 1995, the 30-year fixed rate dropped into the 6's by mid-1999. During 2000, rates spiked back to 8.5 percent but then fell steadily from mid-2000 until 2003 when they went below 5 percent for a brief period.

Table 4 also shows the effect of declining rates on the cash costs of buying a home. In 1995 at the beginning of the current run up, the 30 year fixed rate was 8.8%. I fell to 6% at the time the sample was drawn and kept the monthly payment required to buy the median home from rising faster than income. The ratio of annual payment to per capita income actually fell in California and Wisconsin and stayed constant in Massachusetts. Although this fact adds weight to the arguments of those who point to fundamentals as an explanation of current house prices, it is important to note that while interest rates may

explain movements through time, they cannot explain differences in appreciation rates across cities.

### **Survey Method**

A random sample of 500 sales was drawn from each of four counties: Orange County, California (Los Angeles); Alameda County (San Francisco) California; Middlesex County (Boston) , Massachusetts; and Milwaukee County, Wisconsin. These are nearly the same areas that we used in our 1988 survey, and so we can make comparisons with these earlier results

We used the very same questionnaire that we used in our 1988 survey, with only the addition of several new questions at the end. Since these new questions were at the end, there is no change in the context of any questions. The accompanying letters were essentially similar to those of 1988.

Survey methods followed guidelines outlined in Dillman (1978). Ordinary mail was used because, at this point in history, we judge that use of e-mail is still not widespread enough to produce a representative sample. The questionnaire was 10 pages long and included questions on a number of topics. The focus was on the home buyers' expectations, understandings of the market situation, and behavior. The questionnaire encouraged respondents to "write comments anywhere on the questionnaire" (and their comments were indeed helpful to us in interpreting the significance of the answers).

During the first cycle of surveys, in 1988, we had two markets booming (the California counties), one market at its peak and showing excess supply (Boston) and one

drifting market (Milwaukee). This time three of the four markets were in remarkable booms, Milwaukee again serves as a control city, where no real boom was taking place.

The survey was sent to 2000 persons who bought homes between March and August of 2002. These dates are just before the peak in media usage of the term “housing bubble” in October 2002. Questionnaires with personalized letters to the respondents were mailed out in January 2003, a reminder postcard was sent out in February 2003, and replacement questionnaires with personalized letters were again sent out to those who had not responded in March 2003. These dates were just after the peak in media use of the term “housing bubble.” Thus, we managed to get our questionnaire survey out at a time when attention to the possibility of a housing bubble must have been close to its maximum. Our respondents had the opportunity to participate in the real estate market at a time of intense public attention to the possibility of a bubble, and had the opportunity to read and think about this experience for some months afterwards. This is what we wanted to do, since our purpose is to gauge human behavior during a purported bubble.

Just under 700 questionnaires were returned completed and usable this time; the response rate was somewhat higher for the 1988 survey. Response rates for each county are given in Table 5.

In our current survey in 2003, the economy was in the process of recovering from a recession that ended in November 2001, though at that time the recovery was slow, and the National Bureau of Economic Research had not yet announced at the time of the survey that the recession was over. In contrast, in our 1988 survey there was no recession. In addition, this time the Fed had lowered interest rates to historic lows at the

time these buyers were signing purchase and sale agreements. In 1988, interest rates were on the rise.

Table 6 describes the sample. A substantial majority of buyers were buying as a primary residence, and only a small minority were buying to rent. First time buyers were a majority of the sample in Milwaukee. The lowest percentage of first time buyers was in Orange County. We were surprised to see that the 2003 survey was more than 90% single family in all four markets while it was a significantly smaller portion of the 1988 survey. We have no explanation as yet for this.

### **Survey Results: Housing as an investment**

A tendency to view housing as an investment is a defining characteristic of a “housing bubble.” Expectations of future appreciation of the home are a motive for buying that deflects consideration from how much one is paying for housing services. That is what a bubble is all about, buying for the future price increases rather than just for the pleasure of occupying the house. And it is this motive that is thought to lend an instability to bubbles, a tendency to crash when the motive weakens.

Table 7 presents the responses to questions about housing as an investment. For the vast majority of buyers, investment was “a major consideration” or they at least “in part” thought of it as an investment. In Milwaukee and San Francisco it was a major consideration for a majority of buyers. The tendency to view housing as an investment is similar to what it was at the boom period that we observed in our 1988 survey, though somewhat weaker. Far fewer of the homebuyers in 2003 would say that they were



buying “strictly for investment purposes.” Thus, conditions reported in 2003 would appear to be consistent with a bubble story, though less so than they were in 1988.

The apparent attractiveness of housing as an investment is further enhanced by the perception that the investment entails only very little risk. As can be seen from Table 7, both in 1988 and 2003 only a small percentage of buyers thought that housing involved a great deal of risk in all cities, although the fraction seeing a great deal of risk rose (perhaps not surprisingly) to a fairly high level (14.8%) in San Francisco in 2003. In three of the four cities, there was more perception of risk in 2003 than there was in 1988, which is what we would expect, given all the media attention to bubbles in 2003. But still the perception of risk of decline is small: one may say that home buyers do not perceive themselves as in a bubble.

### **Survey Results: Exaggerated Expectations, Excitement and Word-of-Mouth**

Table 8 gets to the meat of the issue of the alleged housing bubble: It concerns the role of price expectations, and the emotional charge and the extent of talk about real estate.

Expectations for the future price performance of homes were high in both 1988 and 2003.<sup>7</sup> In both of these housing booms, roughly 90% or more expected an increase in home prices over the next several years, and the expected increase over the next 12 months was very high, even surpassing 15% in San Francisco in 2003.

But it is the long-term expectations, the 10-year expectations, that are most striking. In fact, when asked about the average rate of increase *per year* over the next ten years, in Orange County they replied 13.1% (14.3% in 1988); in San Francisco they were even

more optimistic at 15.7% (14.8% in 1988); in Boston the answer was 14.6% (8.7% in 1988); and in Milwaukee it was 11.7% (7.3% in 1988). Note that a rate of only 11.6% a year means a tripling of value in ten years. While the one year expectations are lower in 2003 than they were in 1988 in the glamour cities, the ten-year expectations are even higher.

While fewer respondents in 2003 say that it is a good time to buy a house because prices may be rising in the future, at least 2/3 agree with the statement in all four cities. Many think that it is not only a good time to buy, but that there is a risk that delay may mean not being able to afford a home later.

The number who admit to being influenced by “excitement” is still high, close to 50% in Orange County, though still down when compared to 1988. The amount of talk is nearly as high as it was in 1988, and talk is an important indicator of a bubble, since word-of-mouth transmission of the excitement is a hallmark.

We conclude that these general indicators of the defining characteristics of bubbles are fairly strong in 2003, though generally less strong than in 1988 in the glamour cities and more strong in Milwaukee.

### **Survey Results: Simple (or Simplistic) Theories**

Table 9 shows results on public agreement with a number of simple theories or stories about speculative price movements, popular theories that might influence how their interpretation of recent events might translate into bubble expectations. Our survey results indicate that these simplistic theories are quite a powerful force, and, moreover, a

bit different in the glamour or bubble cities: Los Angeles, San Francisco and Boston, when compared with cities generally thought less exciting, like Milwaukee.

The most simplistic theory is one that we have often heard expressed in casual conversation: that desirable real estate just naturally appreciates rapidly. The theory expressed seems to confuse the level of prices with the rate of change. The most elementary economic theory would say that properties that people like a lot will be highly priced, not necessarily increasing in price. We tried to gauge agreement with this theory by asking if people agree with the statement “Housing prices have boomed in \_\_\_\_\_ because lots of people want to live here.” There is overwhelming agreement with this statement in all the glamour cities, but not in Milwaukee.

A related fallacy that is often heard is a suggestion that economic theory implies that home prices where land is scarce should be increasing faster than in places where land is more abundant. Again, the theory that we have often heard seems to confuse price levels with rates of change: where land is more scarce, prices will be higher, but not necessarily rising faster. Our results show that most people in glamour cities agree with this theory too.

An even more outrageous fallacy that we detect in popular conversations about home prices is that “When there is simply not enough housing available, price becomes unimportant.” To the credit of our respondents, most do not agree with this statement. But from 20% to 40% do agree, and particularly in the glamour cities.

Another fallacy we think we have detected is in an interpretation of prices closing above asking prices. Homeowners sometimes seem to think that this phenomenon is a sign of a crazy boom that suspends the economic laws of supply and demand. Indeed,

most people in the glamour cities think that in such a time “there is panic buying and price becomes irrelevant.”

With these results we did not firmly prove that people are guilty economic fallacies, because the questions admit of alternative interpretations, and people were probably not focusing clearly on their exact wording. However, we do believe that the strong agreement with these statements is at least suggestive of such fallacies. We believe that there is a sort of knee-jerk reaction to stories about boom markets in real estate that does not accord with economic theory, but that does affect the prices people are willing to pay for their homes. We leave clearer proof that people commit such fallacies to further work. A closer study of such popular fallacies is difficult to carry out, for if we draw out the fallacy clearly enough to reveal their belief in it to our satisfaction, respondents in that process may be educated out of the fallacy by the very questioning intended to reveal it.

All these theories about panic buying and the irrelevance of price does not, however, indicate that people generally believe that the markets are driven by psychology. The results of the last question in Table 9 show that people generally do not believe that markets are driven primarily by psychology, even in a booming real estate market. We interpret this as further confirming our general conclusion that most homeowners do not perceive themselves to be in a bubble even in the height of a bubble.

### **Survey Results: Popular Themes in Interpreting Recent Price Movements**

We have documented that people talked a lot about the housing market both in 1988 and 2003. What is it that they are likely to have talked about? We need to know the

news stories that are on their mind if we are to understand the origins of the purported housing bubble.

Table 10 shows some results from two open-ended questions that were put on the questionnaire, along with a space for the respondent to write in answers in his or her own words. Responses to these questions are especially interesting since they elicit themes that are already on the minds of respondents, rather than putting words in their mouths.

We would perhaps not expect any one theme to dominate in answers to such questions, since people are so different and there are so many different points of view and interpretations for any such broad question. But we do see what appears to be a dominating theme, both in 1988 and 2003: interest rates. Clearly, interest rates have fallen substantially and have contributed to the run up of prices since 1995. But while interest rates may explain movements through time, they cannot explain differences in appreciation rates across cities.

Many of the answers to these questions are disappointing. Most typically the answers read like random draws from the business section of the newspaper, or else the respondents refer to casual observations that one might see just driving around town. There was no quantitative evidence presented by these respondents, no reference to professional forecasts.

We should not be surprised that the lists of answers were generally uninspired. As we noted above, the single-family home market is a market of amateurs, generally with no economic training.

Once more we see evidence that in neither period did many homebuyers perceive themselves as in a housing bubble. References to market psychology were quite rare.

## **Survey Results: Relation of Investment Demand in 2003 to the Stock Market Boom and Bust**

The appearance of the real estate bubble right after the stock market drop has lent support to the notion that the movement towards the stock market is somehow connected to that drop. One popular theory is that the stock market drop was followed by investor disgust with the stock market and a “flight to quality” as people sought safer investments in real assets like homes. There has been a lot of discussion about people shifting their assets toward housing because the stock market has done so poorly since 2000. On the other hand, a falling stock market could have a negative wealth effect on home buying decisions.<sup>8</sup>

Table 11 presents the responses to three questions that we did not ask in 1988, questions that were added on at the end of the questionnaire in 2003 so as not to change the context in 2003 of questions that were originally asked in 1988. Note that the home purchase was completed, and survey was virtually finished before the stock market rally (25% on the S&P500) of March 11-July 8 2003.

The answers to the last question on Table 11, whether the experience with the stock market encouraged purchase of a home, shows that the vast majority of people in all four counties said that the performance of the stock market “had no effect on my decision to buy a house.” But, we should not discard the notion that the stock market behavior is at least partly responsible for the boom in the real estate market. Judging from their additional comments, it appears that some of the majority who said it had no effect on the decision to buy a house said so only because they would have bought *some* house in any

event, even if perhaps a smaller house. More significantly, many more people (between a quarter and a third of respondents) said that the stock market's performance "encouraged" them to buy a home while only a small percent found it discouraging.

Immediately after this question on the questionnaires we also included an open-ended question at this point, "Please explain your thinking here." An open space was provided on the questionnaire for them to write in answers, though most left this blank. The answers we did get were all over the map, apparently viewed by respondents as an opportunity to vent on any subject.

Some of the answers from those who said they were encouraged by the performance in the stock market did refer to the drop in the stock market after 2000 as a reason to buy a house now. Quoting a few of their answers verbatim will illustrate: "Housing costs continue to increase. Value of home investment to increase. Stock market not so promising." "Could be better investment than stock market." "I lost \$400,000 in my pension and personal stock portfolio—at least buying this big beautiful home I know it's a hard asset that would hold its value & appreciate while it gives me great enjoyment." "Money that we had saved for a house was starting to become a loss in the market." "I have only made money in real estate and lost a lot in the stock market." "The stock market at my age is not helping me. Short-term real estate is the strongest investment you can make short or long term." "Stock market went down. House market is still going up." "Renting is not cheap, stock is declining, this implies our total assets is [sic] not going anywhere." "The value of my condo had increased significantly compared to the gains to my portfolio. With interest rates low a new home seemed more likely to

increase than a comparable investment in the stock market and brings tax & quality of life benefits.”

Some respondents referred to the increased volatility or other uncertainty in the stock market since 2000, rather than its changed level, as a reason to shift their portfolio: “It seemed that shifting some of our net worth to cash and homeownership was a wise move in the face of the market volatility in 2000-2002.” “I’m buying the house for the long term. The house will probably depreciate in the next couple years, but it will certainly appreciate over 10+ years. This is because it is a good house in a good community. This is information that I am confident of. In contrast, there is no confidence that I have full (or even good) information about the stock market (or that even my mutual fund managers have good information about the companies they invest in). So, I buy the house.” “A house seems like a more solid investment than stocks. Less volatile.”

Although this evidence is far from proof of the connection between the stock market and the housing market, we interpret it as confirming the notion that people got fed up with the stock market after the decline and high volatility as well following the 2000 peak and just became more positive about real estate.

### **Survey Results: Excess Demand and Upward Rigidity in Asking Prices**

In boom cities, newspaper articles feature stories of homes that sold well above asking price. We already noted that it was an article in the *Wall Street Journal* that referred to “frenzy in California’s big single family market” that inspired our original survey. In fact, such frenzy seems to be a fairly common occurrence in boom cities. As we see in Table 12, quite a large number of people reporting selling above the asking price in both



the 1988 and 2003 surveys. In fact, an amazing 45% of respondents reported in the 2003 survey selling at above asking prices in San Francisco in 2002, well after the sharp decline in employment following the NASDAQ collapse which began in 2000. Sellers report that about 20% of properties sell for more than the asking price in Orange County and slightly fewer in Milwaukee which had no boom.

Many of those who sold felt that they could have gotten more thought that if they had charged 5 or 10 percent more, the property would have sold just as quickly. This was the sense of over 20% of sellers in all markets, up substantially in 2003 except in Orange County where it stayed the same.

An amazing number of respondents, in fact a majority in San Francisco and Boston in 2003, a near majority in Milwaukee and 26% in Orange County thought that charging more would be unfair. On the other hand, the number who reported that their house was not intrinsically worth more than they were asking dropped in the latest survey compared to 1988.

### **Survey Results: Downward Rigidity and Excess Supply**

An important question on which the survey sheds some light is what happens in a bust? How do sellers respond to rising inventories and increasing time on the market? It is first important to point out that the housing market is not an auction market. Prices do not fall to clear the market quickly as one observes in most asset markets. Selling a home requires agreement between buyers and sellers. It is a stylized fact about the housing market that “bid-ask” spreads widen when demand drops, and the number of transactions falls sharply. This must mean that sellers resist cutting prices.

The survey, Table 13, does indeed support the fact that buyers lower their asking prices only as a last resort. A majority in all counties and in both years of the survey argue that the best strategy in a slow market is to “hold up until you get what you want.” In fact, only a small minority of respondents reported that they would have “lowered the price until I found a buyer.” In addition, from 78.8% in San Francisco in 1988 to 93% in post-boom Boston reported having reservation prices.

There is clear evidence that such resistance prevents house prices from falling at the onset of a down period and that if the underlying fundamentals come back quickly enough, it can prevent a bubble from “bursting.” Instead, the danger when demand drops in housing markets is that the volume of sales may drop precipitously. This would do more damage to the U.S. economy today that a modest decline in prices.

### **A Model of Speculative Bubbles in Housing**

Buyers and sellers in the housing market are overwhelmingly amateurs, who have little experience with trading. High transactions costs, moral hazard problems, and government subsidy of owner-occupied homes have kept professional speculators out of the market. These amateurs are highly involved with the market at the time of home purchase, and may overreact at times to price changes and to simple stories, resulting in substantial momentum in housing prices.

Shiller (2000) argues that speculative bubbles are caused by “precipitating factors” that change public opinion about markets or that have an immediate impact on demand, and by “amplification mechanisms” that take the form of price to price feedback.

A number of fundamental factors can influence price movements in housing markets. On the demand side, demographics, income growth, employment growth, changes in financing mechanisms or interest rates, as well as changes in locational characteristics like accessibility, schools or crime, to name a few, have been shown to have effects. On the supply side attention has been paid to construction costs, the age of the housing stock, and the industrial organization of the housing market. The elasticity of supply has been shown to be a key factor in the cyclical behavior of home prices.

The cyclical process that we observed in the 1980's in those cities experiencing boombust cycles was that general economic expansion, best proxied by employment gains, drove demand up. In the short run, those increases in demand encountered an inelastic supply of housing and developable land, inventories of for-sale properties shrank and vacancy declined. As a consequence, prices rose. Accelerating price increases provided the amplification mechanism as they lead buyers to anticipate further gains and the bubble was born. Once prices overshoot or supply catches up, inventories begin to rise, time on the market increases, vacancy rises and price increases begin to slow eventually encountering downward stickiness.

With housing, a significant precipitating factor may be employment gains if only because they are highly visible. Employment releases occur on the first Friday of each month with state data somewhat later. Both national and state releases by the BLS receive dramatic fanfare in the press. In all three of the volatile cities, substantial employment gains and falling unemployment preceded the upward acceleration of house prices during both booms

The predominant story about home prices is always the prices themselves; the feedback from initial price increases to further price increases is a mechanism that amplifies the effects of the precipitating factors. If prices are going up rapidly, there is much word of mouth communication, a hallmark of a bubble. The word of mouth can spread optimistic stories, and thus help cause an overreaction to other stories, such as stories about employment. The amplification can also work on the downside as well. Price decreases will generate publicity for negative stories about the city, but initially downward stickiness is encountered.

The amplification mechanism appears to be stronger in the glamour cities that are undergoing rapid price change at the time of our surveys than in our control city Milwaukee. We saw in our survey results that talk is more frequent there and that excitement is stronger there. Presumably this greater talk and excitement has something to do with the greater price volatility historically there, leading to greater public interest and concern with the movements in real estate prices. Thus, real estate price volatility can be self-perpetuating, once started it generates more public attention and interest, and thus more volatility in the future.

There are longer-run forces that come into play that tend eventually to reverse the impact of any initial price increases and the public overreaction to them. New construction can bring some new housing online in the space of about a year. We now have a highly sophisticated national construction industry, dominated by national firms such as Pulte Homes, Lennar Corporation or Centex Corporation. These are capable of moving their operations into a city quickly if they perceive the ability to build homes for less than the going price there. However, there are important barriers to their moving in

to certain cities, as executives from these firms will animatedly tell you. In many mature cities, there is no place to build, and permitting can be long and costly. Case (1994) argued that the effect of supply elasticity differences across cities explained a larger percentage of price changes than demographics. Clearly, prices of houses can go up more rapidly than building costs only if supply is inelastic at least in the short run.

Zoning restrictions are an important barrier to the construction of new homes. These restrictions prevent more intensive use of available land, as by building more closely-spaced houses or taller high rise apartment buildings. Glaeser and Gyourko (2002) have shown a close correlation across U. S. cities between a measure of zoning strictness derived from the Wharton Land Use Control Survey (the measure being the length of time it has taken for an application for rezoning to result in a building permit for a modest-sized single-family subdivision of less than 50 units) and levels of existing housing prices relative to the cost of new construction in the United States. They found that there is relatively little correlation between population density and home prices, even though economic theory might seem to suggest such a correlation. Thus zoning has been fundamental in limiting the supply of housing.

Even if shortages of places to build are long lasting, in the longer run, positive impulses to employment can, if there are barriers to supply response, lead to outflow of industries that have little reason to stay in the city, thereby eventually reversing the high demand for homes. At the height of booms both labor supply and demand can be negative factors, with high home prices deterring workers from coming to an area and a labor shortage deterring industry from locating there. Moreover, retirees and families with children (who thus have higher housing demand) will tend eventually to leave high-

price cities. Thus, eventually cities that had attracted certain industries and had seen employment bursts become more specialized: Silicon Valley becomes almost exclusively a Mecca for people who need to benefit from the synergies of that industry.

This process can eventually reverse the price increases. This process of reversal, however, is hardly on the minds of most home buyers who, as we have seen, are preoccupied with relatively simplistic stories about housing when they consider their investments. The relatively bad performance of their city after the boom comes as a surprise to them.

Over long intervals of time in most states, the growth rate of home prices has tended to track per capita nominal income growth. It is not surprising that this should be so, for two reasons. First, land zoned for new construction in scarce or important locations is fixed, and if people target a fraction of their incomes for the costs of a home, with fixed supply the price of that fixed land should increase with income. Secondly, construction costs, which are mostly labor costs, tend to track per capita income as well. Thus, over the period from 1980 to 2000, the price growth in Los Angeles and the price growth of Milwaukee have been about the same. But, there is a big difference between the shorter-run behavior in those two cities.

The uptrend in home prices that is implied by the growth rate of per capita income, along with the tendency for home price decreases to be slow and sluggish, has meant that relatively few citywide home price declines are observed in history. There are more often periods of flat real estate prices, where the ratio of price to income, or the ratio of price to the consumer price index is falling but the level of prices itself has not fallen. Outright price declines are much more salient in investor psychology than failures

to keep up with income. Thus, popular culture has not identified bubbles as a problem in real estate, until last year.

The popular impression has been that real estate is an investment that cannot go down. The declines in prices in the early 1990s in many cities, documented for the first time in history by accurate real estate price indexes that were developed by us and others in the early 1990s, has forever reduced the salience of this public impression, but, as we have seen from the above survey, the idea still lingers. There is also a popular impression that real estate is a candidate for the “best investment” that can be made. Whether real estate really is the best investment is not really amenable to economic analysis, since it is not possible to measure the “dividend” in the form of housing services that homes offer. Presumably, there is diminishing marginal utility to owning a bigger and bigger house, and so the psychic dividend declines with the amount of house purchased. The basic question that individuals must resolve is how big a house to buy, and the theory that “housing is always the best investment” is a poor clue to how to answer this question. But, that theory has a salience that is quite strong in the current market.

### **Is a Housing Bubble About to Burst?**

Clearly, one can construct an argument that home price increases nationally since 1995 have been driven by fundamentals. For more than 40 states, income growth alone explains virtually all housing price increases, and falling interest rates have reduced financing cost sufficiently to keep the ratio of annual mortgage payments to income from rising even in the boom states of Massachusetts and California. In the vast majority of states housing is actually more affordable that was the case in 1995

Nonetheless, our analysis indicates that there are elements of a speculative bubble in single family home prices in some cities: the strong investment motive, the high expectations for future price increases and the strong word of mouth. For the three glamour cities we studied, the indicators of bubble sentiment that we showed in Tables 7 and 8 are generally nearly as strong as they were in 1988. Some of these are surprisingly high in 2003, notably the ten-year expectations for future price change, where expected annual price increase is in the 13% to 15% range for all these cities. Even our fourth city, Milwaukee, is perhaps showing some bubble sentiment, for the expected annual price increase for the next ten years there is 11.7%.

All of the fundamental measures of bubble activity, the expectations, the sense of opportunity and urgency, the excitement and the amount of talk are generally down from their levels in 1988 in the glamour cities, and are up from their levels of 1988 in Milwaukee.<sup>9</sup>

Most people do not perceive themselves in 2003 as in the midst of a bubble, despite all the media attention to the possibility of a housing bubble, but they didn't either in 1988, after which real prices fell sharply in many cities.

While these indicators do not suggest such strong evidence of a bubble as in 1988 it would be reasonable to suppose that in the near future price increases will stall, even decline, in some cities. We have seen that people are not as confident of real estate prices as they were even before the 1980s real estate bubble burst, and this lack of confidence may be translated into an amplification of any price declines. Real home prices are already flat in Denver and in Detroit, following periods of rapid growth. More declines in real home prices will probably come in cities that have been frothy, notably cities on



both coasts of the United States, and especially those cities that have weakening economies. But, declines in real estate prices might appear even in cities whose employment holds steady.

The consequences of such a fall in home prices would be severe for some individuals. Given the high level of personal debt relative to personal income, an increase in bankruptcies is likely. Such an increase could potentially worsen consumer confidence, creating a renewed interest in replenishing savings.

Personal consumption expenditure, which has driven the economy so far, may drop, stalling the current economic recovery. However, judging from the historical record, nationwide drops in real housing prices are unlikely, and the drops in different cities are not likely to be synchronous: some will probably not occur for a number of years. Such a lack of synchrony will blunt the impact of the bursting of the bubbles on the aggregate economy.

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## Notes

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<sup>1</sup> “Castles in Hot Air,” *The Economist*, May 28, 2003. Also online at [economist.com](http://economist.com).

<sup>2</sup> See Milton Friedman, 1953.

<sup>3</sup> See Truman Bewley 2002

<sup>4</sup> Case and Shiller (1990) use time series-cross section regressions to test for the forecastability of prices and excess returns using a number of independent variables. The paper finds that the ratio of construction costs to price, changes in the adult population, and increases in real per capita income are all positively related to house prices and excess returns. The results add weight to the argument that the market for single family homes is inefficient.

<sup>5</sup> A. Nomani, Sr., “Nesting Fever: Buyers’ Panic Sweeps California’s Big Market in One-Family Homes,” *Wall Street Journal*, Section 1, Page 1, Column 6, June 1, 1988.

<sup>6</sup>Differences in glamour across cities is a sensitive topic that is nonetheless very real and ought to be taken note of here. Some of our respondents were very opinionated about these differences. One Milwaukee respondent wrote on the questionnaire “I was laid off and forced to expand my job search nationwide. I did not want to leave Chicago and certainly did not want to relocate to Milwaukee, a second rate city with high unemployment and racial tensions and zero talent in city government. However, the upside is that the housing prices in Chicago are so much higher than Milwaukee County and I was able to sell my tiny Cape Cod for a beautiful 4 bedroom historic house on a prime residential street.” (M322)

<sup>7</sup> The high average expectations are partly due to skewness in the distribution of responses. In 2003 the median expected price increases were: Orange County, 8%, San Francisco, 7%, Boston, 5% and Milwaukee, 5%. The average over the first three of these cities is 6.7%, which is still higher than in Milwaukee.

<sup>8</sup> See Case Quigley and Shiller (2002)

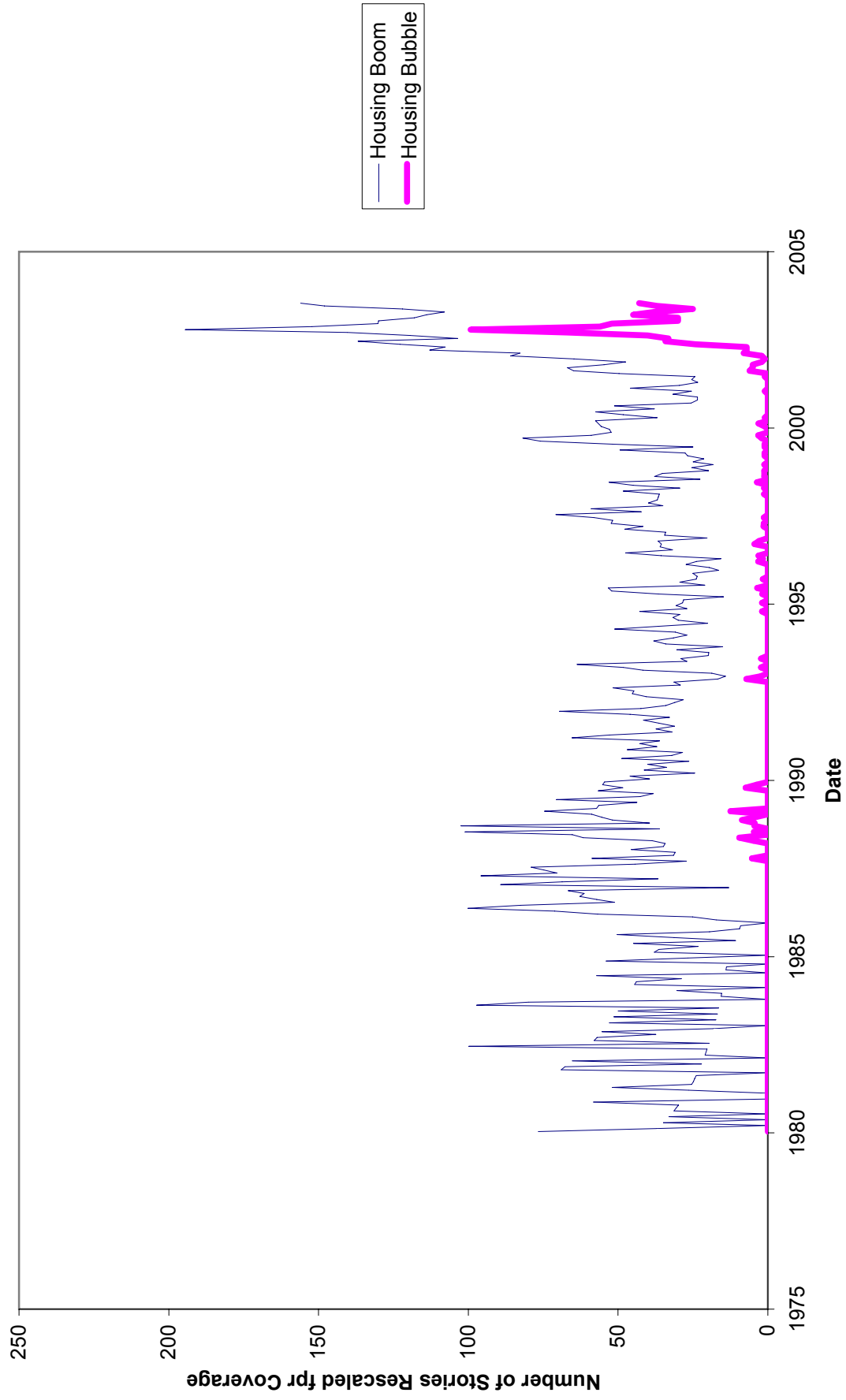
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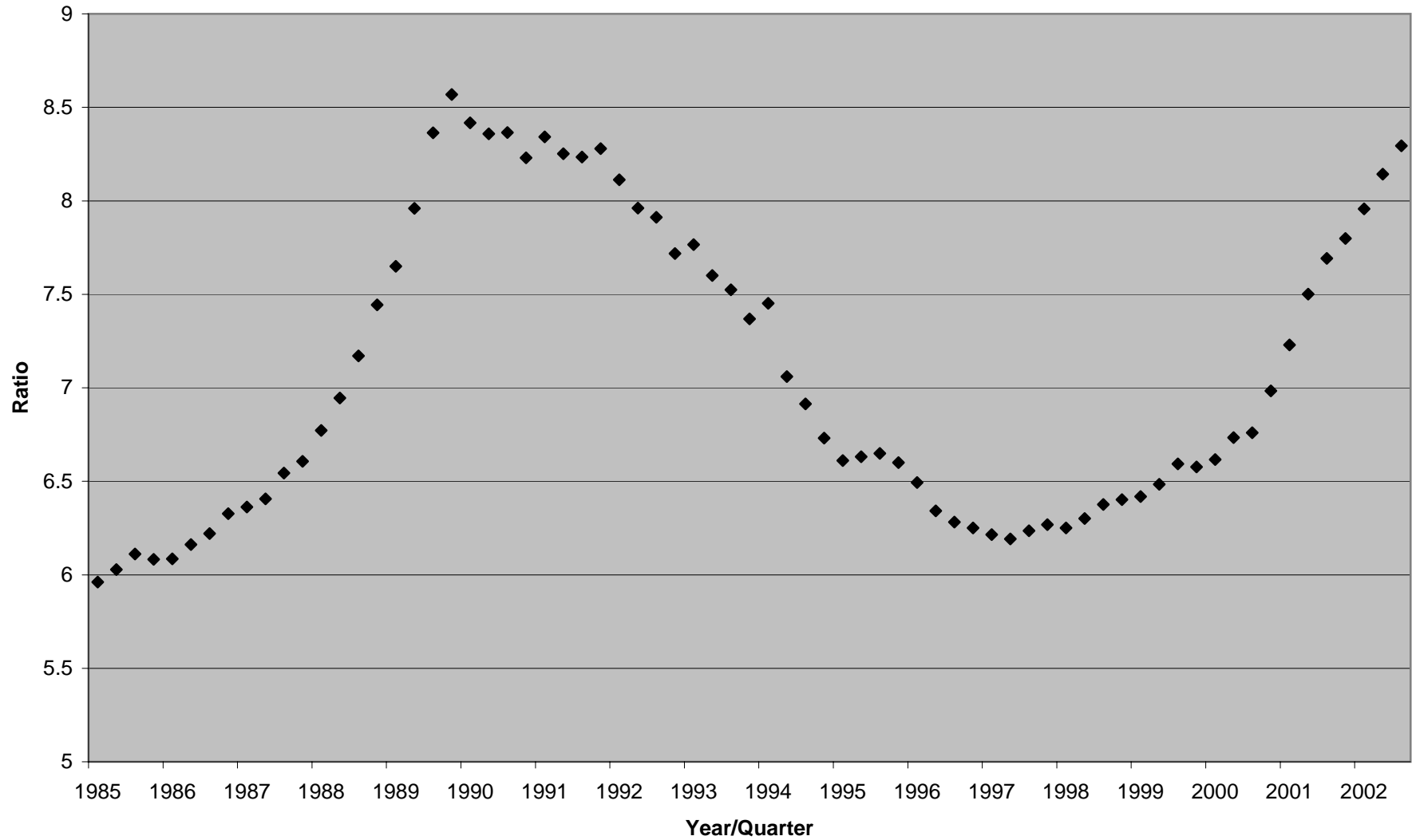
<sup>9</sup> Long-run expectations, however, are generally up substantially from 1988. If long-run expectations matter the most, one might say that the 2003 exuberance is just as strong as the 1988 one.



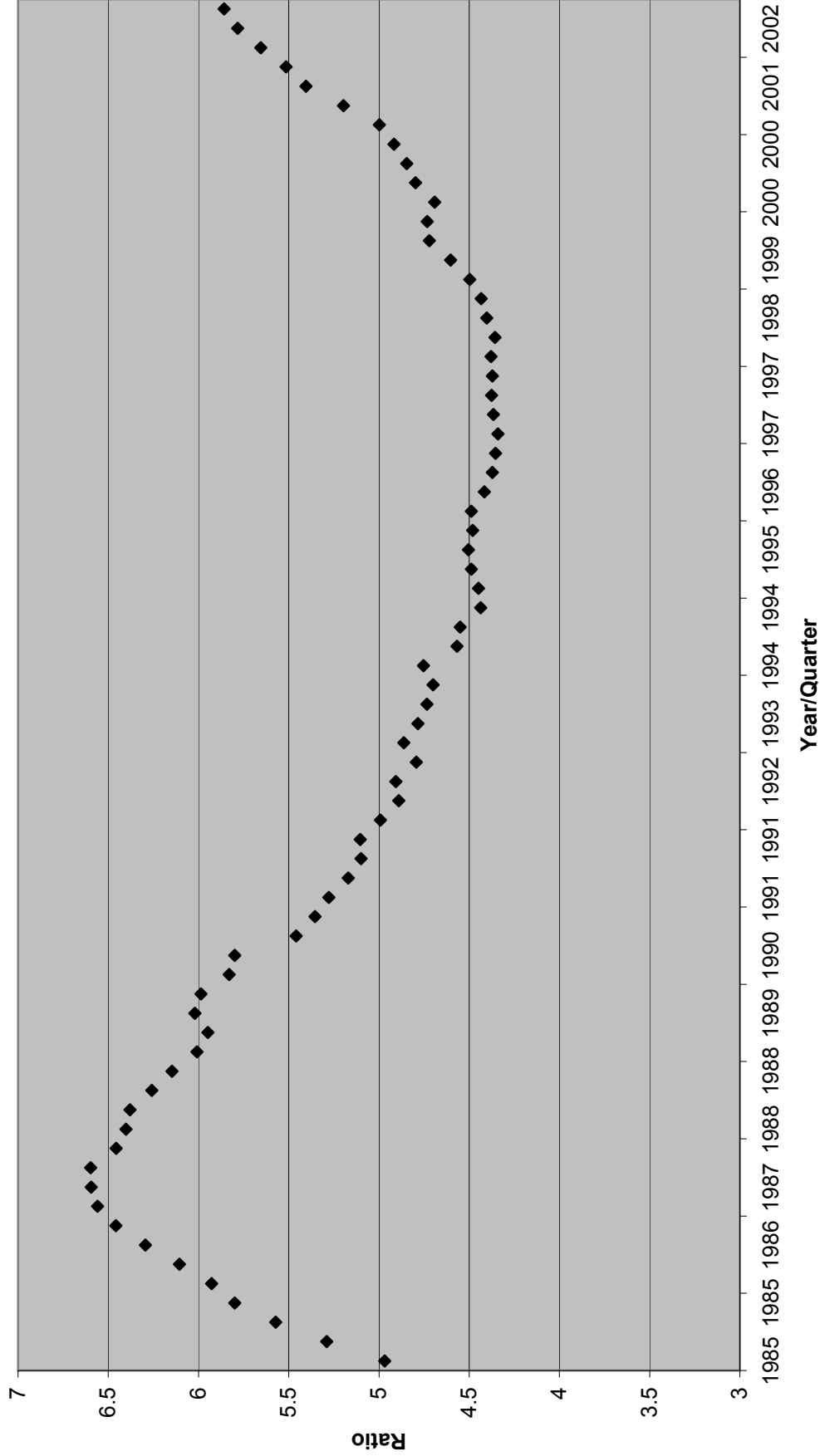
Figure 1 Number of Stories on Lexis Nexis Major Papers (Rescaled)



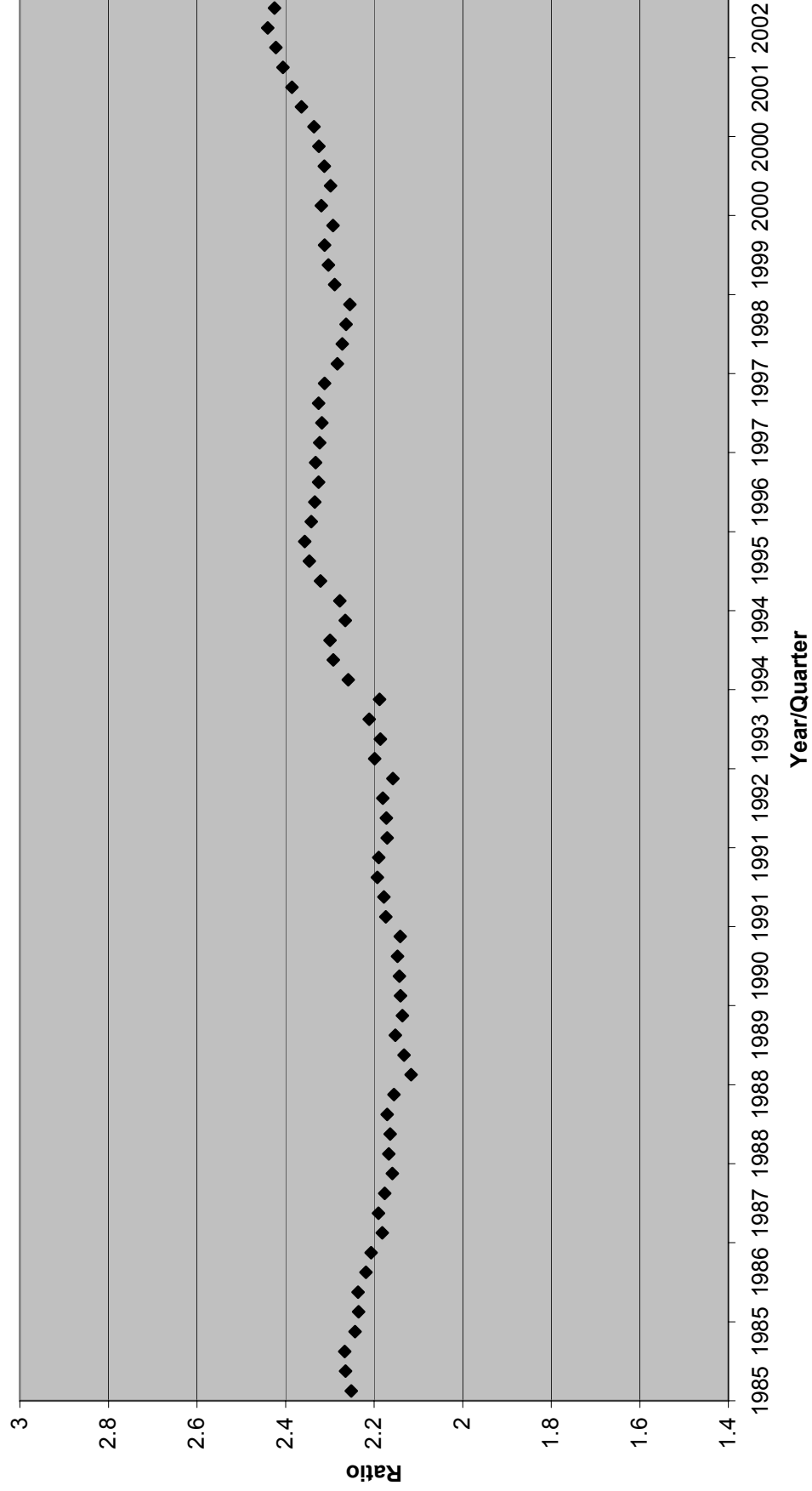
**Figure 2**  
**Ratio of House Prices to Per Capita Personal Income**  
**California (1985-2002)**



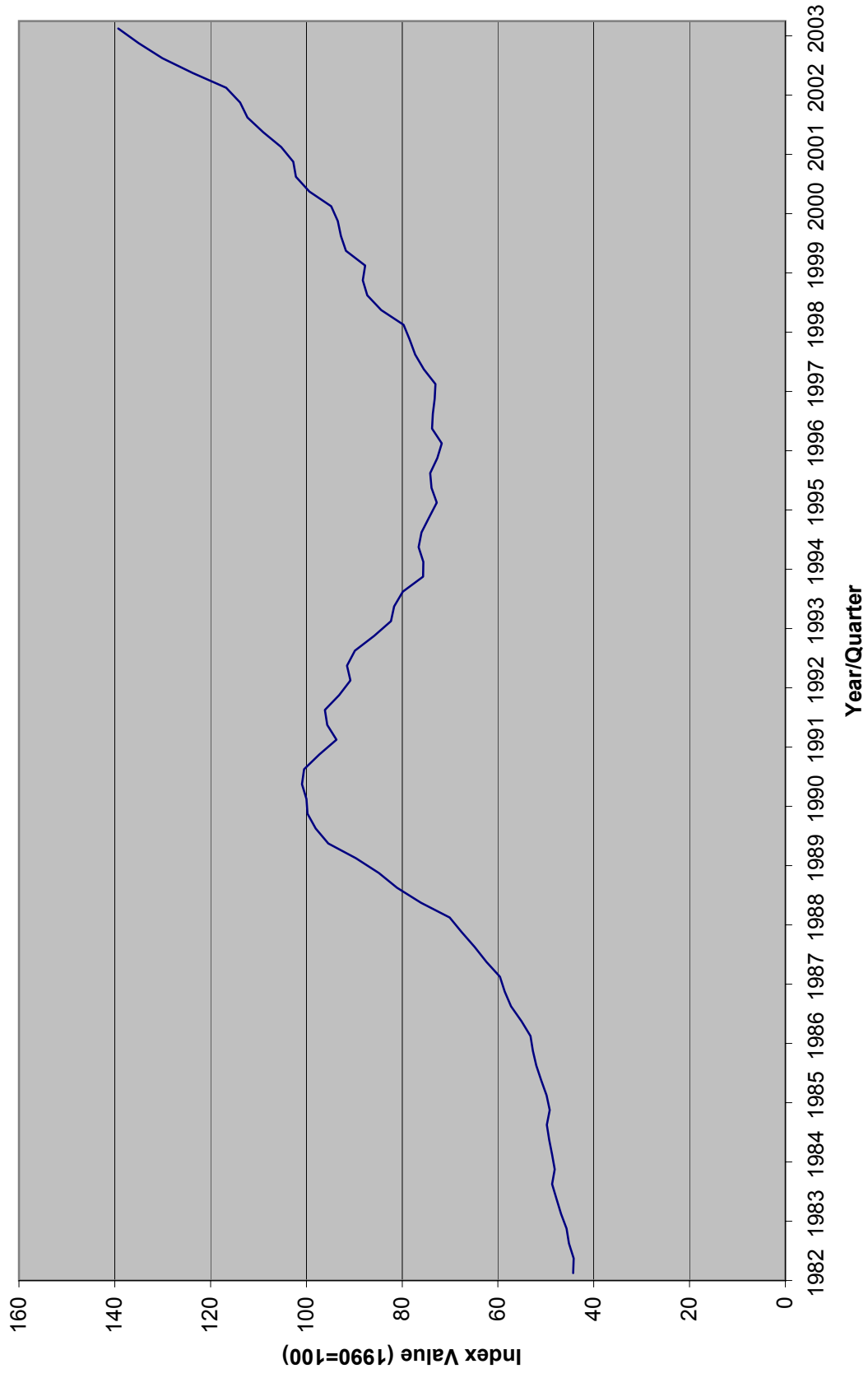
**Figure 3**  
**Ratio of House Prices to Per Capita Personal Income**  
**Massachusetts (1985-2002)**



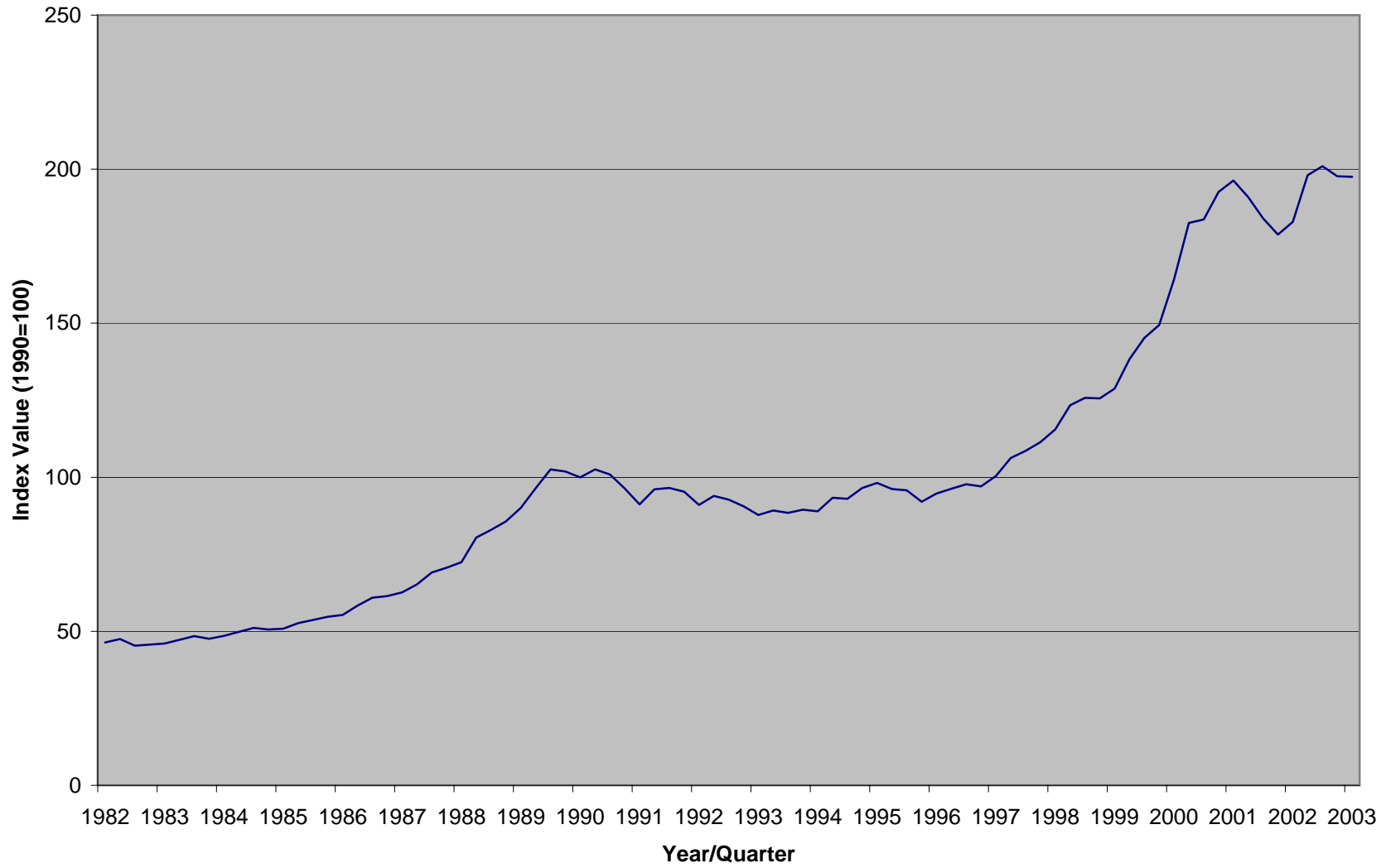
**Figure 4**  
**Ratio of House Price to Per Capita Personal Income**  
**Wisconsin (1985-2002)**



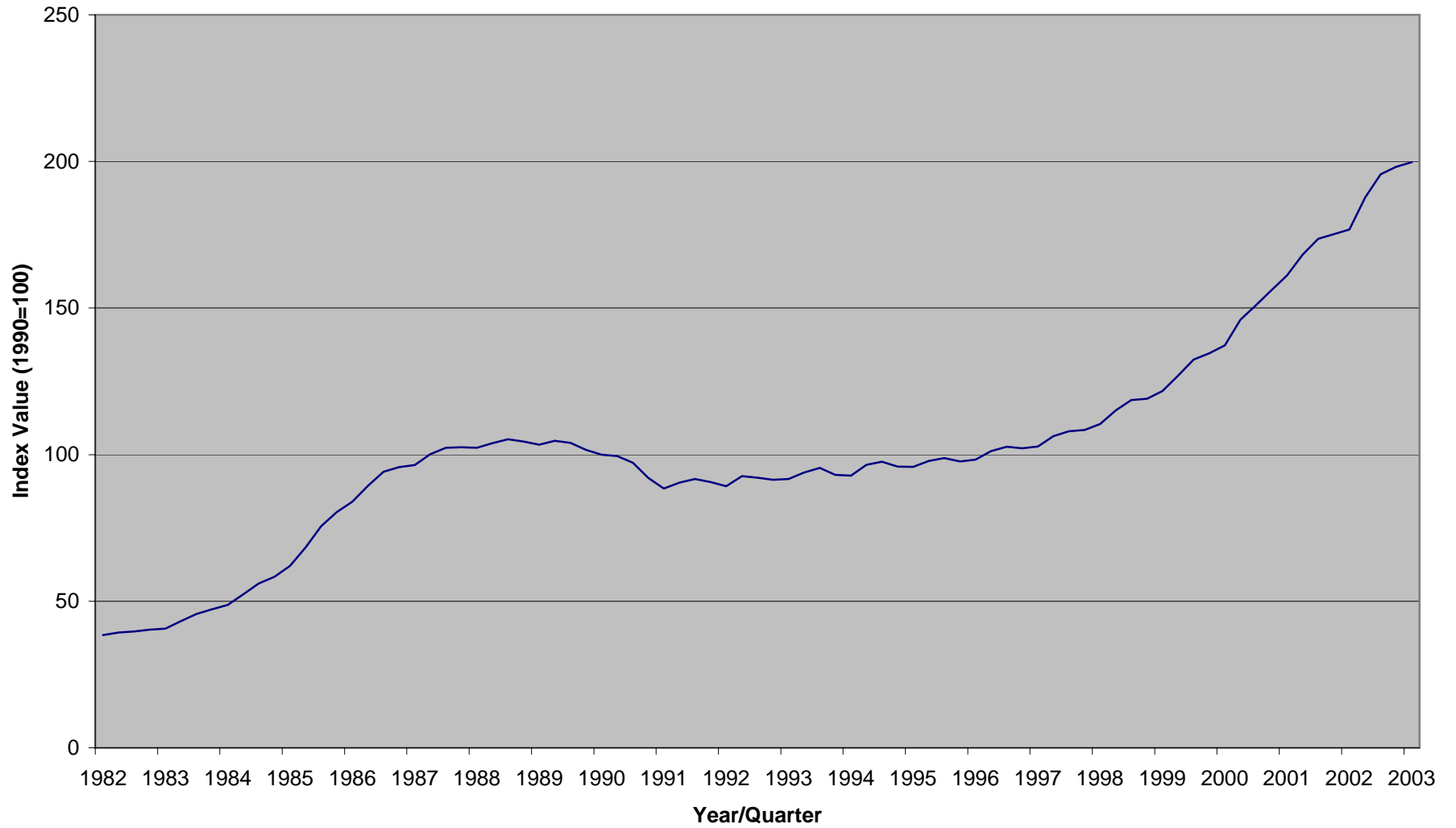
**Figure 5**  
**Los Angeles Home Price Index (1982:1-2003:1)**



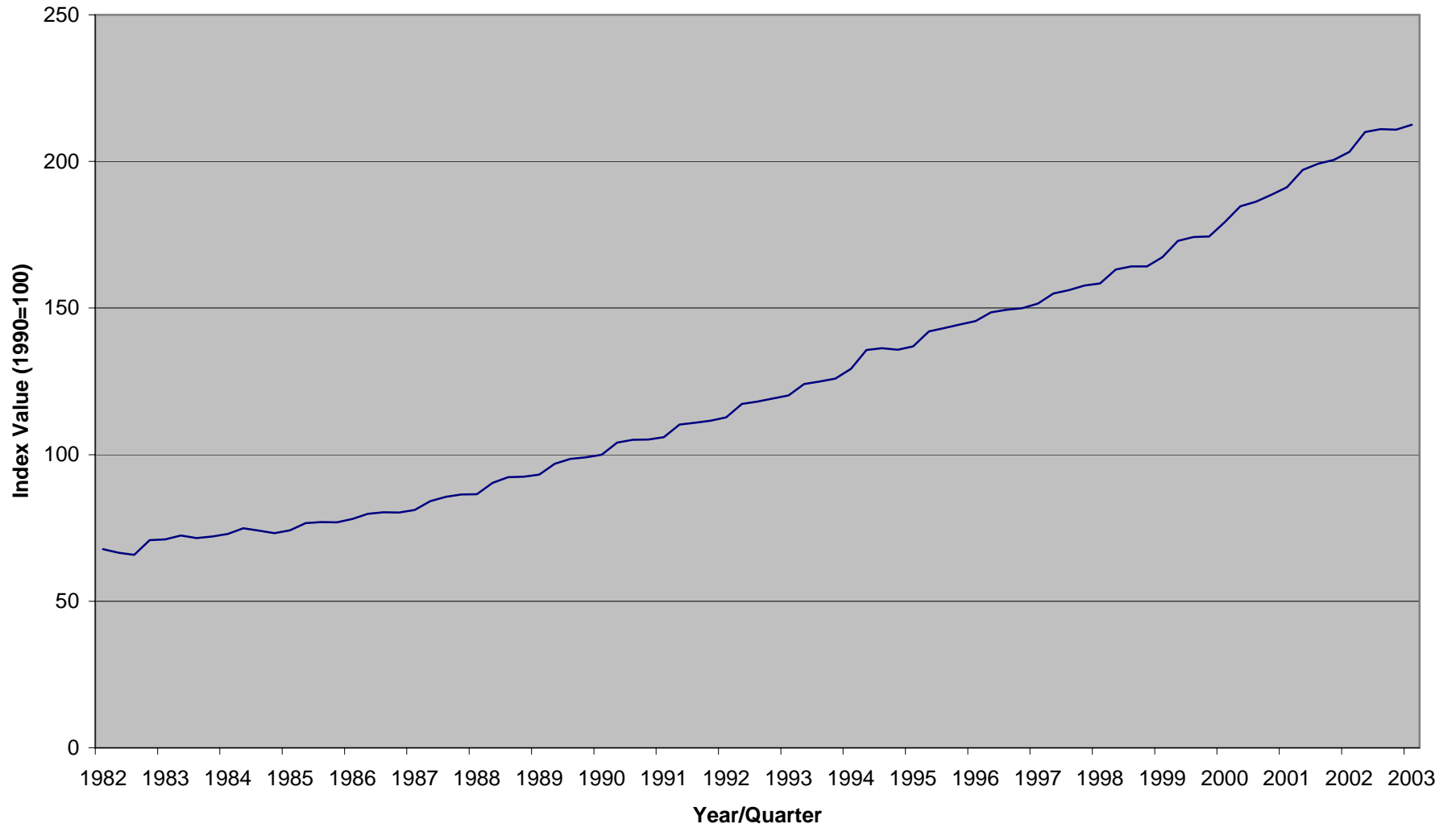
**Figure 6**  
**San Francisco Home Price Index (1982:1-2003:1)**



**Figure 7**  
**Boston Home Price Index (1982:1-2003:1)**



**Figure 8**  
**Milwaukee Home Price Index (1982:1-2003:1)**





**Table 1****Ratio of House Price to Per Capita Personal Income: 1985:1-2002:3  
Most and Least Volatile States**

| <b>State</b>  | <b>Min</b> | <b>Max</b> | <b>S.D.</b> | <b>Q3<br/>2002</b> | <b>Quarter of<br/>Peak</b> | <b>R<sup>2</sup>*</b> |
|---------------|------------|------------|-------------|--------------------|----------------------------|-----------------------|
| Hawaii        | 7.8        | 12.5       | 1.30        | 10.1               | 92:3                       | .83                   |
| Connecticut   | 4.5        | 7.8        | 1.10        | 5.4                | 88:1                       | .45                   |
| New Hampshire | 4.0        | 6.6        | .84         | 5.3                | 87:2                       | .49                   |
| California    | 6.0        | 8.6        | .80         | 8.3                | 89:4                       | .78                   |
| Rhode Island  | 4.6        | 7.1        | .75         | 6.1                | 88:1                       | .65                   |
| Massachusetts | 4.3        | 6.6        | .71         | 5.9                | 87:3                       | .70                   |
| New Jersey    | 4.5        | 6.8        | .67         | 5.6                | 87:3                       | .73                   |
| New York      | 3.8        | 5.6        | .51         | 4.9                | 87:3                       | .77                   |
| .             |            |            |             |                    |                            |                       |
| .             |            |            |             |                    |                            |                       |
| .             |            |            |             |                    |                            |                       |
| Nebraska      | 1.8        | 2.1        | .09         | 1.9                | 85:2                       | .96                   |
| Wisconsin     | 2.1        | 2.4        | .08         | 2.4                | 02:3                       | .99                   |
| Illinois      | 2.6        | 2.9        | .08         | 2.9                | 02:3                       | .98                   |
| Kentucky      | 2.1        | 2.4        | .07         | 2.2                | 85:1                       | .99                   |
| Indiana       | 2.0        | 2.3        | .06         | 2.1                | 86:4                       | .99                   |
| Iowa          | 1.7        | 1.9        | .06         | 1.8                | 02:3                       | .98                   |
| Ohio          | 2.3        | 2.5        | .04         | 2.5                | 02:3                       | .99                   |

\* R<sup>2</sup> from a regression of Ln(house price) on Ln(per capita income) 71 observations

Table 2

**Ratio of House Price to Per Capita Personal Income 1985:1-2002:3**

|                | Median | Min  | Max   | Std Dev | Mean  |
|----------------|--------|------|-------|---------|-------|
| Hawaii         | 9.79   | 7.83 | 12.50 | 1.34    | 10.03 |
| Connecticut    | 5.41   | 4.47 | 7.84  | 1.06    | 5.67  |
| New Hampshire  | 4.68   | 3.98 | 6.63  | 0.84    | 4.94  |
| California     | 6.76   | 5.96 | 8.57  | 0.80    | 7.07  |
| Rhode Island   | 5.49   | 4.58 | 7.12  | 0.75    | 5.62  |
| Massachusetts  | 4.97   | 4.34 | 6.60  | 0.72    | 5.20  |
| New Jersey     | 5.25   | 4.48 | 6.77  | 0.68    | 5.34  |
| New York       | 4.54   | 3.83 | 5.60  | 0.52    | 4.55  |
| Texas          | 2.48   | 2.20 | 3.59  | 0.41    | 2.61  |
| Maine          | 3.98   | 3.44 | 4.77  | 0.40    | 3.98  |
| DC             | 3.61   | 3.10 | 4.52  | 0.37    | 3.66  |
| Vermont        | 4.11   | 3.64 | 4.85  | 0.37    | 4.19  |
| Louisiana      | 2.56   | 2.42 | 3.53  | 0.33    | 2.70  |
| Alaska         | 3.26   | 2.48 | 4.07  | 0.33    | 3.29  |
| Oregon         | 2.25   | 1.49 | 2.69  | 0.32    | 2.23  |
| Utah           | 2.87   | 2.29 | 3.21  | 0.31    | 2.81  |
| Mississippi    | 2.28   | 2.21 | 3.15  | 0.29    | 2.43  |
| Maryland       | 4.01   | 3.62 | 4.69  | 0.29    | 4.05  |
| Oklahoma       | 2.13   | 2.05 | 3.04  | 0.28    | 2.25  |
| Washington     | 3.12   | 2.28 | 3.36  | 0.26    | 3.00  |
| Delaware       | 3.62   | 3.33 | 4.14  | 0.26    | 3.69  |
| Colorado       | 2.60   | 2.19 | 3.18  | 0.25    | 2.57  |
| Virginia       | 3.47   | 3.04 | 3.87  | 0.24    | 3.44  |
| Georgia        | 2.76   | 2.58 | 3.25  | 0.23    | 2.83  |
| Arizona        | 3.53   | 3.38 | 4.17  | 0.22    | 3.63  |
| North Dakota   | 2.24   | 2.05 | 2.98  | 0.22    | 2.32  |
| Arkansas       | 2.22   | 2.13 | 2.84  | 0.22    | 2.33  |
| Montana        | 2.55   | 2.02 | 2.71  | 0.22    | 2.44  |
| Florida        | 3.04   | 2.80 | 3.51  | 0.21    | 3.08  |
| Missouri       | 2.32   | 1.18 | 2.71  | 0.21    | 2.38  |
| Pennsylvania   | 2.70   | 2.43 | 3.14  | 0.21    | 2.73  |
| Wyoming        | 2.12   | 1.82 | 2.65  | 0.21    | 2.15  |
| New Mexico     | 3.38   | 3.12 | 3.85  | 0.20    | 3.40  |
| Tennessee      | 2.35   | 2.23 | 2.80  | 0.19    | 2.43  |
| Nevada         | 3.56   | 3.32 | 3.97  | 0.18    | 3.59  |
| Alabama        | 2.38   | 2.31 | 2.84  | 0.17    | 2.47  |
| Michigan       | 1.93   | 1.69 | 2.37  | 0.17    | 1.98  |
| Minnesota      | 2.40   | 2.27 | 2.92  | 0.16    | 2.47  |
| North Carolina | 2.60   | 2.50 | 2.98  | 0.16    | 2.67  |
| Idaho          | 2.58   | 2.27 | 2.91  | 0.15    | 2.58  |
| West Virginia  | 2.32   | 2.22 | 2.79  | 0.15    | 2.38  |
| South Carolina | 2.69   | 2.57 | 3.06  | 0.15    | 2.74  |
| Kansas         | 1.97   | 1.84 | 2.30  | 0.14    | 2.02  |
| South Dakota   | 1.87   | 1.73 | 2.20  | 0.11    | 1.89  |
| Nebraska       | 1.88   | 1.76 | 2.12  | 0.09    | 1.89  |
| Illinois       | 2.74   | 2.57 | 2.87  | 0.08    | 2.73  |
| Wisconsin      | 2.26   | 2.12 | 2.44  | 0.08    | 2.25  |
| Kentucky       | 2.21   | 2.11 | 2.41  | 0.08    | 2.23  |
| Iowa           | 1.78   | 1.68 | 1.92  | 0.06    | 1.79  |
| Indiana        | 2.12   | 2.03 | 2.25  | 0.06    | 2.13  |
| Ohio           | 2.34   | 2.27 | 2.46  | 0.04    | 2.34  |

**Table 3**  
**Housing Price Cycles:**  
**Los Angeles, San Francisco, Boston and Milwaukee**

|                  | Los Angeles | San Francisco | Boston | Milwaukee |
|------------------|-------------|---------------|--------|-----------|
| 1982-Peak        | +128%       | +126%         | +143%  | --        |
| Peak Quarter     | 90:2        | 90:2          | 88.3   |           |
| Peak to Trough   | -29%        | -14%          | -16%   | --        |
| Trough Quarter   | 96:1        | 93:1          | 91:1   |           |
| Trough to Peak   | +94%        | +129%         | +126%  | --        |
| Peak Quarter     | 03:1        | 02:3          | 03:1   |           |
| 1982:1 to 2003:1 | +214%       | +325%         | +419%  | +213%     |
| Avg, Annual rate | 5.6%        | 7.1%          | 8.2%   | 5.6%      |

Source: Fiserv CSW, repeat sales indexes

**Table 4****House Price, Income and Payments 1995:1 to 2002:3**

|                            | California | Massachusetts | Wisconsin |
|----------------------------|------------|---------------|-----------|
| House Price 1995:1         | 158,954    | 121,091       | 50,557    |
| House Price 2002:3         | 276,695    | 231,994       | 73,071    |
| Total change               | +74%       | +92%          | +45%      |
| Annual rate                | 7.7%       | 9.1%          | 5.1%      |
| Personal Income/Pop 1995:1 | 24,044     | 27,224        | 22,203    |
| Personal Income/Pop 2002:3 | 33,362     | 39,605        | 30,138    |
| Total Change               | +39%       | +45%          | +35%      |
| Annual rate                | 4.5%       | 5.1%          | 4.1%      |
| House Price/Income 1995:1  | 6.61       | 4.45          | 2.28      |
| House Price/Income 2002:3  | 8.29       | 5.86          | 2.42      |
| Annual Mtg. Payment 1995:1 | 12,145     | 9,253         | 3,862     |
| Annual Mtg. Payment 2002:3 | 15,908     | 13,338        | 4,201     |
| Payment/Income 1995:1*     | .51        | .34           | .17       |
| Payment/Income 2002:3*     | .47        | .34           | .14       |

\*Annual mortgage payment assumes 80% LTV, 30 year fixed rate. February 1995: 8.8%. August 2002, 6.0%. Source: Fannie Mae.

Sources: State Personal Income: U.S. Department of Commerce, Bureau of Economic Analysis. State Population: Regional Financial Associates (Economy.com). House Price: 1989 Median, U.S. Census adjusted using CSW or blended repeat sales price index.

Table 5

*Samples and Response Rates*

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| City/Metropolitan Area | Sample |       | Returns Tabulated |      | Response Rate (Percent) |      |
|------------------------|--------|-------|-------------------|------|-------------------------|------|
|                        | 1988   | 2003  | 1988              | 2003 | 1988                    | 2003 |
| Orange County          | 500    | 500   | 241               | 143  | 48.2                    | 28.6 |
| San Francisco          | 530    | 500   | 199               | 164  | 37.5                    | 32.8 |
| Boston                 | 500    | 500   | 200               | 203  | 40.0                    | 40.6 |
| Milwaukee              | 500    | 500   | 246               | 187  | 49.2                    | 37.4 |
|                        | 2,030  | 2,000 | 886               | 697  | 43.9                    | 34.9 |

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Table 6

*General Description of Respondents' Home Purchases*

Percent of Responses

| Description                                 | Orange County |      | San Francisco |      | Boston |      | Milwaukee |      |
|---------------------------------------------|---------------|------|---------------|------|--------|------|-----------|------|
|                                             | 1988          | 2003 | 1988          | 2003 | 1988   | 2003 | 1988      | 2003 |
| Single-Family Home                          | 70.0          | 95.2 | 55.9          | 96.4 | 39.7   | 97.5 | 71.1      | 91.6 |
| First-Time Purchase                         | 35.8          | 31.7 | 36.2          | 46.0 | 51.5   | 41.6 | 56.9      | 53.1 |
| Bought to Live In as a<br>Primary Residence | 88.4          | 95.6 | 72.7          | 93.3 | 92.0   | 97.1 | 88.2      | 90.0 |
| Bought to Rent to Others                    | 3.7           | 2.8  | 12.1          | 3    | 3.0    | 0.9  | 4.1       | 5.3  |

Table 7

*Housing as an Investment*

Percent Responses in Each Category

| Question                                                                            | Orange County |         | San Francisco |         | Boston  |         | Milwaukee |         |
|-------------------------------------------------------------------------------------|---------------|---------|---------------|---------|---------|---------|-----------|---------|
|                                                                                     | 1988          | 2003    | 1988          | 2003    | 1988    | 2003    | 1988      | 2003    |
| “In deciding to buy your property, did you think of the purchase as an investment?” | (N=238)       | (N=143) | (N=199)       | (N=164) | (N=200) | (N=203) | (N=243)   | (N=187) |
| “‘It was a major consideration”                                                     | 56.3          | 46.8    | 63.8          | 51.8    | 48.0    | 33.9    | 44.0      | 50.3    |
| “‘In part”                                                                          | 40.3          | 46.2    | 31.7          | 34.4    | 45.0    | 56.2    | 45.7      | 42.2    |
| “‘Not at all”                                                                       | 4.2           | 7.0     | 4.5           | 9.8     | 7.0     | 9.9     | 10.3      | 7.5     |
| “Why did you buy the home that you did?”                                            | (N=238)       | (N=143) | (N=199)       | (N=164) | (N=199) | (N=203) | (N=246)   | (N=187) |
| “‘Strictly for investment purposes”                                                 | 19.8          | 7.5     | 37.2          | 10.6    | 15.6    | 8.2     | 18.7      | 13.8    |
| “Buying a home in ____ today involves”                                              | (N=237)       | (N=143) | (N=192)       | (N=164) | (N=197) | (N=203) | (N=237)   | (N=187) |
| “‘A great deal of risk”                                                             | 3.4           | 7.9     | 4.2           | 14.8    | 5.1     | 4.3     | 5.9       | 7.9     |
| “‘Some risk”                                                                        | 33.3          | 47.5    | 40.1          | 51.9    | 57.9    | 65.6    | 64.6      | 57.3    |
| “‘Little or no risk”                                                                | 63.3          | 44.6    | 55.7          | 33.3    | 37.1    | 26.6    | 29.5      | 38.4    |

Table 8

*Price Expectations, Sense of Excitement, and Talk*

Percent of Responses (except as indicated)

| Question                                                                                                                                      | Orange County |         | San Francisco |         | Boston  |         | Milwaukee |         |
|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------|---------------|---------|---------|---------|-----------|---------|
|                                                                                                                                               | 1988          | 2003    | 1988          | 2003    | 1988    | 2003    | 1988      | 2003    |
| “Do you think that housing prices in the ____ area will increase or decrease over the next several years?”                                    | (N=240)       | (N=145) | (N=199)       | (N=158) | (N=194) | (N=201) | (N=233)   | (N=187) |
| “Increase”                                                                                                                                    | 98.3          | 89.7    | 99.0          | 90.5    | 90.2    | 83.1    | 87.1      | 95.2    |
| “Decrease”                                                                                                                                    | 1.7           | 10.3    | 1.0           | 9.5     | 9.8     | 16.9    | 12.9      | 4.8     |
| “How much of a change do you expect there to be in the value of your home over the next 12 months?”                                           | (N=217)       | (N=139) | (N=185)       | (N=147) | (N=176) | (N=179) | (N=217)   | (N=160) |
| Mean                                                                                                                                          | 15.3          | 10.5    | 13.5          | 5.8     | 7.4     | 7.2     | 6.1       | 8.9     |
| (Standard Error)                                                                                                                              | (.8)          | (0.6)   | (.6)          | (0.6)   | (.6)    | (0.4)   | (.5)      | (1.0)   |
| “On average over the next 10 years, how much do you expect the value of your property to change each year?”                                   | (N=208)       | (N=137) | (N=181)       | (N=152) | (N=177) | (N=186) | (N=211)   | (N=169) |
| Mean                                                                                                                                          | 14.3          | 13.1    | 14.8          | 15.7    | 8.7     | 14.6    | 7.3       | 11.7    |
| (Standard Error)                                                                                                                              | (1.2)         | (1.2)   | (1.4)         | (1.8)   | (.6)    | (1.8)   | (.5)      | (1.3)   |
| “Which of the following best describes the trend in home prices in the ____ area since January 1988?”                                         | (N=239)       | (N=143) | (N=196)       | (N=161) | (N=198) | (N=199) | (N=230)   | (N=185) |
| “Rising rapidly”                                                                                                                              | 90.8          | 76.2    | 83.7          | 28.6    | 3.0     | 29.6    | 8.7       | 33.0    |
| “Rising slowly”                                                                                                                               | 8.8           | 22.4    | 12.8          | 51      | 34.3    | 49.2    | 53.0      | 57.3    |
| “Not changing”                                                                                                                                | .4            | 1.4     | 3.1           | 14.3    | 37.4    | 12.6    | 23.9      | 8.7     |
| “Falling slowly”                                                                                                                              | 0             | 0       | .5            | 6.2     | 22.2    | 8.5     | 11.7      | 3.1     |
| “Falling rapidly”                                                                                                                             | 0             | 0       | 0             |         | 3.0     | 0       | 2.6       | 0       |
| “It’s a good time to buy because housing prices are likely to rise in the future.”                                                            | (N=206)       | (N=126) | (N=180)       | (N=145) | (N=171) | (N=174) | (N=210)   | (N=161) |
| “Agree”                                                                                                                                       | 93.2          | 77      | 95.0          | 82.1    | 77.8    | 66.1    | 84.8      | 81      |
| “Disagree”                                                                                                                                    | 6.8           | 23      | 5.0           | 17.9    | 22.2    | 33.9    | 15.2      | 13      |
| “Housing prices are booming. Unless I buy now, I won’t be able to afford a home later.”                                                       | (N=200)       | (N=124) | (N=167)       | (N=134) | (N=169) | (N=175) | (N=194)   | (N=154) |
| “Agree”                                                                                                                                       | 79.5          | 48.8    | 68.9          | 59.7    | 40.8    | 37.1    | 27.8      | 36.4    |
| “Disagree”                                                                                                                                    | 20.5          | 51.2    | 31.1          | 40.3    | 59.2    | 62.9    | 72.2      | 63.6    |
| “There has been a good deal of excitement surrounding recent housing price changes. I sometimes think that I may have been influenced by it.” | (N=230)       | (N=141) | (N=191)       | (N=156) | (N=181) | (N=199) | (N=233)   | (N=184) |
| “Yes”                                                                                                                                         | 54.3          | 46.1    | 56.5          | 38.5    | 45.3    | 29.6    | 21.5      | 34.8    |
| “No”                                                                                                                                          | 45.7          | 53.9    | 43.5          | 61.5    | 54.7    | 70.4    | 78.5      | 65.2    |
| “In conversations with friends and associates over the last few months, conditions in the housing market were discussed.”                     | (N=238)       | (N=143) | (N=195)       | (N=163) | (N=198) | (N=203) | (N=235)   | (N=185) |
| “Frequently”                                                                                                                                  | 52.9          | 32.9    | 49.7          | 37.4    | 30.3    | 31      | 20.0      | 27.6    |
| “Sometimes”                                                                                                                                   | 38.2          | 50.3    | 39.0          | 43.6    | 55.1    | 53.7    | 50.2      | 40.5    |
| “Seldom”                                                                                                                                      | 8.0           | 14.7    | 9.7           | 17.2    | 12.1    | 14.3    | 25.1      | 28.1    |
| “Never”                                                                                                                                       | 0             | 2.1     | 1.5           | 1.8     | 2.5     | 1       | 4.7       | 3.8     |



Table 9

*Buyers' Agreement with Simple Theories*

Percent of Responses

| Question                                                                                                                                                                                                                                        | Orange County |         | San Francisco |         | Boston  |         | Milwaukee |         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------|---------------|---------|---------|---------|-----------|---------|
|                                                                                                                                                                                                                                                 | 1988          | 2003    | 1988          | 2003    | 1988    | 2003    | 1988      | 2003    |
| “Housing prices have boomed in ____ because lots of people want to live here.”                                                                                                                                                                  | (N=210)       | (N=128) | (N=178)       | (N=147) | (N=181) | (N=176) | (N=193)   | (N=148) |
| “Agree”                                                                                                                                                                                                                                         | 98.6          | 93.8    | 93.3          | 89.1    | 69.6    | 77.8    | 16.1      | 23      |
| “Disagree”                                                                                                                                                                                                                                      | 1.4           | 6.2     | 6.7           | 10.9    | 30.4    | 22.2    | 83.9      | 77      |
| “The real problem in ____ is that there is just not enough land available.”                                                                                                                                                                     | (N=197)       | (N=121) | (N=174)       | (N=141) | (N=168) | (N=177) | (N=192)   | (N=158) |
| “Agree”                                                                                                                                                                                                                                         | 52.8          | 60.3    | 83.9          | 59.6    | 54.2    | 72.9    | 17.2      | 35.4    |
| “Disagree”                                                                                                                                                                                                                                      | 47.2          | 39.7    | 16.1          | 40.4    | 45.8    | 27.1    | 82.8      | 64.6    |
| “When there is simply not enough housing available, price becomes unimportant.”                                                                                                                                                                 | (N=197)       | (N=116) | (N=165)       | (N=141) | (N=171) | (N=172) | (N=193)   | (N=151) |
| “Agree”                                                                                                                                                                                                                                         | 34.0          | 31.9    | 40.6          | 32.6    | 26.9    | 32      | 20.7      | 25.2    |
| “Disagree”                                                                                                                                                                                                                                      | 66.0          | 68.1    | 59.4          | 67.4    | 73.1    | 68      | 79.3      | 74.8    |
| “In a hot real estate market, sellers often get more than one offer on the day they list the property. Some are even over the asking price. There are also stories about people waiting in line to make offers. Which is the best explanation?” | (N=210)       | (N=135) | (N=177)       | (N=153) | (N=176) | (N=197) | (N=211)   | (N=173) |
| “There is panic buying and price becomes irrelevant”                                                                                                                                                                                            | 73.3          | 63.7    | 71.2          | 73.9    | 61.4    | 73.1    | 34.6      | 46.8    |
| “ Asking prices have adjusted slowly or sluggishly to increasing demand”                                                                                                                                                                        | 26.7          | 36.2    | 28.8          | 26.1    | 38.6    | 39.9    | 65.4      | 53.     |
| “Which of the following better describes your theory about recent trends in home prices in ____?”                                                                                                                                               | (N=226)       | (N=130) | (N=180)       | (N=153) | (N=188) | (N=195) | (N=215)   | (N=168) |
| “ It is a theory about the psychology of home buyers and sellers”                                                                                                                                                                               | 11.9          | 10.8    | 16.7          | 15      | 21.3    | 11.8    | 10.7      | 13.7    |
| “ It is a theory about economic or demographic conditions such as population changes, changes in interest rates or employment..”                                                                                                                | 88.1          | 89.2    | 83.3          | 85      | 78.7    | 88.2    | 89.3      | 86.3    |

Table 10

*Popular Themes Mentioned in Interpreting Recent Price Changes*

Percent of Responses (Percent of those who wrote something in either question who mentioned theme indicated)

“What do you think explains recent changes in home prices in \_\_\_\_\_? What ultimately is behind what’s going on?”

“Was there any event (or events) in the last two years that you think changed the trend in home prices?”

| Tabulated response <sup>a</sup>                | Orange County |      | San Francisco |      | Boston |      | Milwaukee |      |
|------------------------------------------------|---------------|------|---------------|------|--------|------|-----------|------|
|                                                | 1988          | 2003 | 1988          | 2003 | 1988   | 2003 | 1988      | 2003 |
| <b>National</b>                                |               |      |               |      |        |      |           |      |
| Interest rate changes                          | 32            | 33   | 40            | 10   | 25     | 20   | 27        | 39   |
| Stock market crash                             | 2             | 4    | 2             | 11   | 25     | 13   | 2         | 8    |
| September 11, 2001                             |               | 6    |               | 9    |        | 16   |           | 7    |
| Iraqi war 2003                                 |               | 2    |               | 4    |        | 2    |           | 3    |
| Dot-com bust                                   |               | 2    |               | 21   |        | 4    |           | 0    |
| Corporate scandals—loss of confidence          |               | 0    |               | 1    |        | 0    |           | 0    |
| Poor/slow economy                              |               | 5    |               | 24   |        | 34   |           | 15   |
| <b>Regional</b>                                |               |      |               |      |        |      |           |      |
| Region is a good place to live                 | 17            | 13   | 18            | 8    | 6      | 5    | 2         | 3    |
| Immigration or population change               | 20            | 8    | 8             | 7    | 11     | 5    | 2         | 8    |
| Asian investors                                | 3             | 0    | 27            | 0    | 0      | 0    | 0         | 0    |
| Asian immigrants                               | 2             | 0    | 14            | 0    | 1      | 0    | 0         | 0    |
| Income growth                                  | 3             | 1    | 2             | 4    | 2      | 2    | 1         | 2    |
| Anti-growth legislation                        | 11            | 0    | 3             | 0    | 0      | 1    | 0         | 0    |
| Not enough land                                | 8             | 5    | 19            | 2    | 2      | 3    | 0         | 0    |
| Local taxes                                    | 3             | 0    | 0             | 0    | 4      | 0    | 10        | 4    |
| Increasing black population                    | 0             | 0    | 0             | 0    | 0      | 0    | 7         | 0    |
| Rental rates and vacancies                     | 0             | 1    | 3             | 0    | 7      | 3    | 2         | 0    |
| Traffic congestion                             | 4             | 0    | 7             | 1    | 0      | 0    | 0         | 0    |
| Local economy—general                          | 25            | 3    | 5             | 6    | 30     | 6    | 18        | 5    |
| Psychology of the housing markets <sup>b</sup> | 5             | 2    | 7             | 2    | 18     | 1    | 1         | 1    |
| Quantitative evidence                          | 0             | 0    | 0             | 0    | 0      | 0    | 0         | 0    |

<sup>a</sup>Numbers shown are percentages of questionnaires that mentioned, in answer to either of the two open-ended questions, the general subject indicated as determined by our reading of their text answers.

<sup>b</sup>Any reference to panic frenzy, greed, apathy, foolishness, excessive optimism, excessive pessimism, or other such factors were coded in this category.

<sup>c</sup>The coder was asked to look for any reference at all to any numbers relevant to future supply or demand for housing or to any professional forecast of supply or demand. The numbers need not have been presented, so long as the respondent seemed to be referring to such numbers.

Table 11

*Real Estate vs. Stock Market 2003*

Percent of Responses

| Question                                                                                                                                                                         | Orange<br>County | San<br>Francisco | Boston  | Milwaukee |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------|---------|-----------|
| “Do you agree with the following statement: ‘Real estate is the best investment for long-term holders, who can just buy and hold through the ups and downs of the market’?”      | (N=145)          | (N=162)          | (N=204) | (N=185)   |
| “Strongly agree”                                                                                                                                                                 | 53.7             | 50.6             | 36.7    | 31.3      |
| “Somewhat agree”                                                                                                                                                                 | 33.1             | 39.5             | 48.5    | 45.9      |
| “Neutral”                                                                                                                                                                        | 10.3             | 6.7              | 9.3     | 11.3      |
| “Somewhat disagree”                                                                                                                                                              | 2.7              | 2.4              | 4.9     | 9.1       |
| “Strongly disagree”                                                                                                                                                              | 0                | 0.6              | 0.4     | 2.1       |
| “Do you agree with the following statement: ‘The stock market is the best investment for long-term holders, who can just buy and hold through the ups and downs of the market’?” | (N=145)          | (N=162)          | (N=203) | (N=187)   |
| “Strongly agree”                                                                                                                                                                 | 8.2              | 8.0              | 14.7    | 14.9      |
| “Somewhat agree”                                                                                                                                                                 | 32.4             | 38.2             | 44.3    | 33.6      |
| “Neutral”                                                                                                                                                                        | 32.4             | 27.7             | 17.7    | 25.6      |
| “Somewhat disagree”                                                                                                                                                              | 20               | 16.0             | 15.2    | 20.3      |
| “Strongly disagree”                                                                                                                                                              | 6.8              | 9.8              | 7.8     | 5.3       |
| “The experience with the stock market in the past few years”                                                                                                                     | (N=143)          | (N=161)          | (N=202) | (N=186)   |
| “Much encouraged me to buy my house”                                                                                                                                             | 13.9             | 15.5             | 14.3    | 9.1       |
| “Somewhat encouraged me to buy my house”                                                                                                                                         | 11.1             | 16.7             | 13.8    | 13.9      |
| “Had no effect on my decision to buy my house”                                                                                                                                   | 74.1             | 64.5             | 70.7    | 74.7      |
| “Somewhat discouraged me from buying my house”                                                                                                                                   | 0                | 2.4              | 0.9     | 2.1       |
| “Much discouraged me from buying my house”                                                                                                                                       | 0.6              | 0.6              | 0       | 0         |

Table 12

*Upward Rigidity in Asking Prices*

Percent of Responses (except as indicated)

| Question <sup>a</sup>                                                                                                                                                                            | Orange County |         | San Francisco |         | Boston  |         | Milwaukee |         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------|---------------|---------|---------|---------|-----------|---------|
|                                                                                                                                                                                                  | 1988          | 2003    | 1988          | 2003    | 1988    | 2003    | 1988      | 2003    |
| “Did you finally settle on the price that was:”                                                                                                                                                  |               |         |               |         |         |         |           |         |
|                                                                                                                                                                                                  | (N=237)       | (N=141) | (N=194)       | (N=153) | (N=200) | (N=203) | (N=242)   | (N=183) |
| “Above the asking price”                                                                                                                                                                         | 6.3           | 19.9    | 9.8           | 45.8    | .5      | 21.3    | 3.3       | 17.5    |
| “Equal to the asking price”                                                                                                                                                                      | 38.0          | 50.4    | 26.8          | 27.5    | 23.5    | 59.1    | 22.7      | 52.4    |
| “Below the asking price”                                                                                                                                                                         | 55.7          | 29.7    | 63.4          | 26.7    | 76.0    | 28.6    | 74.0      | 31.1    |
| “If you had asked 5 to 10 percent more for your property, what would the likely outcome have been?”                                                                                              | (N=89)        | (N=68)  | (N=64)        | (N=59)  | (N=61)  | (N=83)  | (N=43)    | (N=46)  |
| “It wouldn’t have been sold”                                                                                                                                                                     | 21.3          | 23.5    | 23.4          | 27.1    | 31.1    | 27.7    | 32.5      | 26.1    |
| “It would have sold but it would have taken much more time”                                                                                                                                      | 44.9          | 47.1    | 46.9          | 40.7    | 54.1    | 38.6    | 37.2      | 39.3    |
| “If buyers had to pay that much they might not be able to obtain financing (a buyer cannot obtain financing unless an appraiser confirms the worth of the property).”                            | 7.9           | 4.1     | 9.4           | 6.8     | 0       | 4.8     | 9.3       | 8.7     |
| “It probably would have sold almost as quickly.”                                                                                                                                                 | 24.7          | 23.5    | 17.2          | 20.3    | 11.5    | 26.5    | 16.3      | 21.7    |
| “Other”                                                                                                                                                                                          | 1.1           | 1.5     | 3.1           | 5.1     | 3.3     | 2.4     | 4.7       | 4.4     |
| “If you answered that it would have sold almost as quickly, which of the following (you can check more than one) explains why you didn’t set the price higher?”                                  | (N=37)        | (N=31)  | (N=22)        | (N=26)  | (N=26)  | (N=37)  | (N=16)    | (N=15)  |
| “The property simply wasn’t worth that much.”                                                                                                                                                    | 32.4          | 25.8    | 27.3          | 23.1    | 38.5    | 13.5    | 25.0      | 13.3    |
| “It wouldn’t have been fair to set it that high; given what I paid for it, I was already getting enough for it.”                                                                                 | 16.2          | 25.8    | 22.7          | 61.5    | 15.4    | 54.1    | 31.3      | 46.7    |
| “I simply made a mistake or got bad advice; I should have asked for more.”                                                                                                                       | 21.6          | 19.9    | 18.2          | 7.7     | 19.2    | 8.1     | 25.0      | 13.3    |
| “Other”                                                                                                                                                                                          | 29.7          | 29      | 31.8          | 7.7     | 26.9    | 24.3    | 18.8      | 26.7    |
| “In the six months prior to the time you first listed the property, did you receive any unsolicited calls from a real estate agent or any one else about the possibility of selling your house?” | (N=89)        | (N=68)  | (N=61)        | (N=63)  | (N=62)  | (N=83)  | (N=48)    | (N=44)  |
| “Yes”                                                                                                                                                                                            | 71.9          | 69.1    | 59.0          | 55.6    | 38.7    | 53      | 43.2      |         |
| “No”                                                                                                                                                                                             | 28.1          | 30.9    | 41.0          | 44.4    | 61.3    | 46      | 56.8      |         |
| Approximate number of calls                                                                                                                                                                      |               |         |               |         |         |         |           |         |
| Mean                                                                                                                                                                                             | 8.7           |         | 5.0           |         | 3.9     |         | 2.7       |         |
| (Standard Error)                                                                                                                                                                                 | (1.2)         |         | (.3)          |         | (.4)    |         | (.2)      |         |

<sup>a</sup> Some respondents answered this question even though they had not replied “It probably would have sold almost as quickly” to the previous question. All the responses to this question have been included in the tabulation.

Table 13

*Excess Supply and Downward Rigidity in Asking Prices*

Percent of Responses (except as indicated)

| Question                                                                                                                                            | Orange County |         | San Francisco |         | Boston  |         | Milwaukee |         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------|---------------|---------|---------|---------|-----------|---------|
|                                                                                                                                                     | 1988          | 2003    | 1988          | 2003    | 1988    | 2003    | 1988      | 2003    |
| “Since housing prices are unlikely to drop very much, the best strategy in a slow market is to hold up until you get what you want for a property.” | (N=174)       | (N=111) | (N=148)       | (N=129) | (N=160) | (N=166) | (N=180)   | (N=147) |
| “Agree”                                                                                                                                             | 69.0          | 64.0    | 69.6          | 69.0    | 57.5    | 51.2    | 50.6      | 61.9    |
| “Disagree”                                                                                                                                          | 31.0          | 36.0    | 30.4          | 31      | 42.5    | 48.8    | 49.4      | 38.1    |
| “If you had not been able to sell your property for the price that you received, what would you have done?”                                         | (N=88)        | (N=65)  | (N=62)        | (N=61)  | (N=61)  | (N=83)  | (N=43)    | (N=43)  |
| “Left the price the same and waited for a buyer, knowing full well that it might have taken a long time”                                            | 42.0          | 32.3    | 38.7          | 29.5    | 32.8    | 21.7    | 32.6      | 39.5    |
| “Lowered the price step by step hoping to find a buyer”                                                                                             | 20.5          | 32.3    | 38.7          | 30.2    | 42.6    | 47.0    | 20.9      | 26.2    |
| “Lowered the price till I found a buyer”                                                                                                            | 4.5           | 7.7     | 3.2           | 11.5    | 4.9     | 12.0    | 7.0       | 9.3     |
| “Taken the house off the market”                                                                                                                    | 18.2          | 21.5    | 17.7          | 27.9    | 11.5    | 16.3    | 27.9      | 21.5    |
| “Other”                                                                                                                                             | 14.8          | 6.2     | 1.6           | 4.9     | 8.2     | 3.6     | 11.6      | 4.9     |
| “If you answered that you would have lowered your price, is there a limit to how far you would have gone if the property still hadn’t sold?”        | (N=33)        | (N=35)  | (N=38)        | (N=32)  | (N=29)  | (N=57)  | (N=16)    | (N=32)  |
| “Yes”                                                                                                                                               | 81.8          | 85.7    | 78.9          | 81.3    | 93.1    | 87.7    | 87.5      | 90.3    |