

What Were They Thinking? Home Buyer Behavior in Hot and Cold Markets

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Recent financial events, and associated turmoil in the housing markets, have underscored how poorly economists understand speculative booms and busts. But there is nothing new here: lack of understanding has long been lamentable. In 1957, Paul Samuelson wrote:

If people think that tulips will appreciate at percent per month, they can be motivated to act so that this will happen. Happen for how long?...I have long been struck by the fact, and puzzled by it too, that in all the arsenal of economic theory we have no way of predicting how long such a bubble will last. To say that prices will fall back to earth after reaching ridiculous heights represents a safe but empty prediction. Why do some manias end when prices are ridiculous by 10% while others persist until they are ridiculous to the tune of hundreds of percent.

We are not much better off now in our understanding of these phenomena than we were then, a half century ago.

This paper represents an effort to assemble new information to understand the forces that created the most recent U.S. housing boom and bust and associated financial crisis, as an exploration to find new methods to correct our lack of understanding. It will not be easy to understand forces that have baffled economists for centuries. But we have to start somewhere.

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We report here our own questionnaire survey data from home buyers in four cities, with an initial survey in 1988, and annual surveys starting in 2003. The surveys allowed two important comparisons: comparisons through time, and comparisons across cities. One of the four cities, Milwaukee, never had a significant boom, or bust, and so served as a control.

The surveys were done under the hypothesis that changing patterns of thinking among home buyers, and not just predictable responses to conventional economic factors such as central bank policies, were at work in producing the boom and bust. But just what thinking changed? We did our surveys, which we believe are the only in-depth surveys that focus respondents' attention on the real estate market, to try to get some quantitative feel for changing thinking.

Moreover, we attempt here to relate these data to other information about the business cycle. Among these, we have worked with the Chicago Mercantile Exchange to create a futures market for home prices, which elicits market-based expectations data. We link as well with others' survey data and with other economic data.

From our results we have come to believe that a social contagion of enthusiastic thinking was a major factor in the boom, and a change in this thinking was part its unraveling. We propose our methods that produced these initial findings as a model for continuing research.

The 1996-2006 Real Estate Boom, the 2006-9 bust, and Subsequent Revival

Figure 1 (an update of a figure from Shiller [2005]) shows the general pattern of home prices since 1890. The remarkable boom in home prices starting in the late 1990s,

and peaking in 2006, is unprecedented in U.S. history. The event, and the dramatic subsequent bust 2006-9, present us with an unusual opportunity to study changing speculative thinking. Note that the boom and bust do not seem possibly justified by any of the fundamentals shown on the chart: construction costs, population, or long-term interest rates.²

Of course, we do not show here all possible economic factors. For example, the unusual pattern of very low short-term interest rates, shown in Figure 2, seems to coincide with the height of the bubble.³ But we do not see the overall correlation between the federal funds rate and home prices as compelling. The bubble seemed to start long before the 2002 Funds Rate cuts, and proceeded smoothly through its previous path through the series of cuts. It is true that home prices peaked in 2006 after a sharp increase in the funds rate 2004-5, but by 2006 the funds rate did not even attain the level it showed in 2000, when the bubble was getting firmly underway. Moreover, even to the extent that there is a correspondence between changes in the federal funds rate and changes in the boom and bust cycle, we do not know from that the direction of causality. The central bank may have been responding to changes in perceptions that were related to those of home buyers. For example, just as home buyers were concluding that it was a bubble, the Fed may have too, and this may have been a factor in their decision to tighten credit starting in 2004. At the very least we think that those who seem to blame the housing boom and bust entirely on exogenous Fed policy should consider alternative hypotheses.

² The long upswing of home prices since 1983, over a period of declining inflation, apparently has something to do with another behavioral economics principle, money illusion. See Brunnermeier and Julliard 2008.

³ Given the increasing importance of adjustable rate mortgages during the boom, the low short-term interest rates might have had an impact on housing demand because they tended to lower the “teaser” rate on those mortgages.

Moreover, there are distinctly different patterns in different cities at the same time, while the major economic factors considered above (including the federal funds rate) are virtually the same everywhere in the U.S. Figure 3 shows real home prices since the fourth quarter of 1977 for the four cities we concentrate on in this paper. Three of the cities (Boston, Los Angeles and San Francisco) show two massive booms and two substantial busts in this time interval, and yet the remaining city (Milwaukee) is decidedly tame in contrast. Something city-specific must be considered to understand the boom. In the case of Milwaukee, the abundance of nearby land is likely to be an important factor that differentiates it from the other cities, and allows a construction response to nip any incipient home price boom in the bud. But, as we shall see below, there are also differences in how people think about housing speculation in Milwaukee as compared with the other cities. The differences in speculative attitudes are plausibly a factor in the different speculative dynamics, even if the differences in attitudes are themselves ultimately affected by the availability of land there. The resulting speculative processes then may not be closely determined by any fundamentals.

One of us reached a similar conclusion about a regional boom in the 1980s. Case (1986) studied the price boom in Boston beginning in 1984. A structural supply and demand model which predicted home prices well in 9 of the 10 cities from which data were drawn suggested that fundamentals (income growth, interest rates, employment growth, housing starts, etc.) should have pushed Boston home prices up by 15%. Instead they went up by 140% before topping out in late 1988. The paper posed a conjecture that the Boston boom was a bubble.

Clearly, psychology and emotion affect the behavior of home buyers. Demand, of course, depends on the willingness to pay of potential home buyers. Willingness to pay depends on household expectations, and expectations can be forward looking and “rational,” backward looking, or simply irrational and ill informed. There may be a social epidemic, intermediated by economic variables, that spreads changed expectations, as a sort of “confidence multiplier” [Akerlof and Shiller, 2009].

Our theory relates to the concept of “collective consciousness,” that sociologist Émile Durkheim advanced [1895] that at any point of time in history there is a world view that supports this consciousness. Another sociologist, Maurice Halbwachs, stressed the “collective memory,” the set of facts that everyone remembers. The world view changes, especially when events attract attention to different facts.

Our theory relates also to the notion of the “fragility” of expectations that are, in our view, a cornerstone of Keynesian economic theory. Keynes, [1937], wrote that “The psychology of a society of individuals each of whom is endeavoring to copy the others leads to what we may strictly term a conventional judgment. . . .The practice of calmness and immobility, of certainty and security, suddenly breaks down. New fears and hopes will, without warning take charge of human conduct.”⁴

The changes in public attitudes may take the form of public reassessments of the situation, and may be aired in public forums. A new idea may start to gain respectability and force among opinion leaders, and then there may be a new steady trend in public thinking. To the extent that this is what dominates bubbles, we ought to be able to observe the changes in public opinion.

⁴ Keynes [1937] p. 215.

The turning points that we observe seem in fact to represent interruptions in long-term trends, and this fact seems to reinforce the idea that they are due to new ideas and discussions. Figure 4 shows a couple of common leading indicators of home price movements, permits issued for new single family homes, from Census, and the traffic of prospective home buyers, from the National Association of Home Builders. Both of these show a remarkable peak in 2005, followed by a steady three-year decline, and then another sharp turning point in 2009. The suddenness of the turning points, and the steadiness of change between turning points, are striking, and cry out for explanation.

New information technology appears to be giving us yet more leading indicators, measured in terms of Internet traffic, Wu and Brynjolfsson 2009. Our reading of these results is, however, that while counts of web searches will be useful in predicting changes, such evidence is only part of the story that might enlighten us about the substance of public thinking and about major turning points.

The explanation for these turning points must have something to do with attitudes towards the particular market, the market for single family homes, for the precise dates of turning point are not replicated in other series, even in other real estate markets. Figure 5 shows indices of real commercial real estate prices, and Figure 6 shows an index of real farm value. Clearly, while one may see some similarities between these markets and the market for single-family homes (both these market have boomed and busted recently), these markets' turning points in the recent cycle were off by a couple years. The farmland prices show a remarkable boom peaking in 1981, that was not replicated in home prices then.

Our Home buyer Surveys

To help understand the role of psychology and expectations we decided more than two decades ago to survey a sample of home buyers and ask them specifically about their reasons for buying. Our research was motivated by a cover story in the *Wall Street Journal* on June 1, 1988, which described the “frenzy” in the California housing market. We decided on a questionnaire survey of approximately 10 pages and sent it to what was nearly the universe of home buyers in four metropolitan areas: Boston, Massachusetts, Orange County and San Francisco, California, and Milwaukee, Wisconsin. These four were chosen to represent two “hot” markets (Orange County and San Francisco), a “cold” (post boom) market (Boston), and a relatively stable market (Milwaukee). The total sample was sent to 500 home buyers in each city.

In Case and Shiller (1988) we presented the results of that survey and concluded: “While the evidence is circumstantial, and we can only offer conjectures, we see a market largely driven by expectations. People seem to form their expectations from past price movements rather than any knowledge of fundamentals. This means that housing price booms will persist as home buyers become destabilizing speculators.”

In addition, we found significant evidence that housing prices were inflexible downward at least in the absence of severe and prolonged economic decline.

In 2003, we decided to replicate the survey in the same cities with the same questionnaire to see if the market conditions and past history had changed the results. The surveys were all sent out during the spring of the respective survey years. We now have completed the process a total of eight times, and this paper presents a first look at the aggregate results.

These survey results may help us to understand the changing conditions in the housing market. The surveys were undertaken both to contribute evidence to some of our theories about the psychology of the housing market (See Case 1992, Case and Shiller 1988, 2003, Case Quigley and Shiller 2005, and Shiller 2005) and its relation to fluctuations in the aggregate economy and also to collect broad data that may be useful in the future. This report covers only a fraction of the survey results.

The Survey Data

The Case-Shiller home buyer surveys are of people who have actually closed on a new house in the given year. In a typical year, only about 7 percent of the housing stock transacts. Clearly, those who do transact do not represent the universe of homeowners, home seekers or home sellers. Yet these are the people on whom we base our implicit valuation of the entire stock.

During the first year, 1988, the response rate was extraordinary. Of 2,030 surveys mailed in 1988 we ultimately got 886 or 43.6 percent completed and tabulated. In 2003, the response rate was 34.9 percent of 2,000 originally mailed. The high response rate was in part the result of sending the questionnaire with a letter hand signed by both of us, sending a post card follow-up to non-respondents, and finally sending a second mailing. When response rates dropped off after 2005, we included a letter signed by a colleague in each state. The response rates remained low in 2007, standing at 22 percent overall, however they rebounded somewhat in 2008 to 24.6 percent.

Hypotheses

As we saw in Figure 2, across the four surveyed regions, home prices accelerated from 2003 to 2006 and subsequently declined into 2008. Momentum shifted again in 2009 as prices began to increase. From the acceleration of home prices from 2003 to 2006, we anticipate that Los Angeles, San Francisco and, to a lesser extent, Boston, whose prices have accelerated more than Milwaukee during this time, would show the greatest increases in speculative attitudes. Also, as home prices declined from the peak into 2008 to the greatest extent in Los Angeles, San Francisco and Boston, we anticipate larger declines in speculative attitudes in those areas relative to Milwaukee. For Milwaukee, where home price increases have been more modest and steady relative to the other three areas, we expect to see less intense speculative, albeit increasingly speculative, attitudes. We refer to San Francisco, Los Angeles and Boston as the three boom cities throughout the report. We also hope to gain insight as to the direction of attitudes from the most recent 2009 data. Our data, shown in Tables below, more or less confirm these expectations, though there are some surprises. In order to best interpret the data, we have broken the survey results into the following sections: housing as an investment, insights into home buyer sentiment and attitudes, home buyer awareness about present housing market conditions and what might explain the sharp turning points in growth rates of real home prices.

Housing as an Investment

Several questions in our survey aid our understanding of the extent to which buyers view their home purchase as an investment. The idea of a home being thought of as means for capital gains has not always been with us.

Table 1 shows that for the three boom cities, the percentage of homes that were purchased “to live in as primary residence” was generally lowest in 1988, but declining in all three boom cities from 2003 to 2005, until it was practically down to the 1988 levels in Boston and Los Angeles by 2005. All cities show an increase in this percentage between 2005 and 2006. The three boom cities continue this increasing trend through 2009. If this percentage can be interpreted as the percentage of home buyers who are not speculators, we thus see that in the early-2000s boom homes bought purely for investment would seem to have peaked in 2005 and declined through 2009.

Table 2 (with Figure 7) shows that in the three boom cities the tendency to regard the home purchase as an investment has never been as high in the 2000s boom as it was as at the peak of the boom in 1988. The data do show a pattern that buyers increasingly give at least some thought to their home as investment in the years leading up to the peak in home prices in 2006. The pattern is generally reversed as prices began to drop from 2006 to 2009. There is no clear pattern of change in 2006. Regarding a home as an investment is probably a reflection of long-term, not short-term expectations, and may not change quickly as the housing market changes. However, a relationship appears to exist between home prices and regarding a home purchase as an investment.

We also gathered data from LexisNexis to further identify regional differences. We selected regional newspapers as our source and chose “investment property” as the

search term. We decided to compare the region of Milwaukee against the regions of San Francisco and Los Angeles by selecting the Milwaukee Sentinel Journal, the L.A. Times, the San Francisco Chronicle and Marin Independent Journal. Figures 8 and 9 show the number of articles containing the term “investment property” by year dating back to 1996, which is a year generally preceding the acceleration of home prices. If we can interpret the frequency of articles as a reflection of interest in the search term then the data tells two different stories. The data reveals no pattern in the Milwaukee region; however, the data from the Californian newspapers shows a different story. Chart 2 reveals a distinct pattern similar to that of home prices. There appears to be regional differences that extend into media.

Figure 10 shows the estimated percent of newspaper articles that have the phrase “home as investment” by decades from 1800 to 1970 (Proquest Historical Newspapers) and by year starting in 1980 (linked to the Proquest results using Lexis Nexis). Even though there were more than 5 million articles in the Proquest database for the first decade (1800-9) and more for subsequent decades, the term “home as investment” never once appeared until the 1880s. The term took off abruptly in the 1970s (perhaps because of the concern in those newly high inflation times for investments that would beat inflation, or for safer investments because of the two oil crises) and has been high ever since, though it has grown particularly in the 2000s, until very recently.

Of course, these news media counts do not allow us to quantify just what people were saying about investment in real estate. Commentators could in some times be advising investment, at others advising against it. There is no substitute for quality survey

evidence as we have collected, but unfortunately we cannot go back into history and collect survey data after the fact.

Expectations

Tables 5, 6 and 7 reveal buyers' price median and mean expectations over a few years, one year and ten years respectively. Table 5 shows that while in all cities the great majority of homeowners expect home price increases in the next few years, the tendency to think so is most pronounced in the boom cities. In the first great boom, in 1988, between 98% and 99% of the home buyers in Los Angeles and San Francisco expect an increase in home prices. In our more recent results, the fraction has never been so high, again perhaps because of memories of past price declines, and the fraction appeared to be declining in 2005. The fraction expecting an increase tumbled in Boston in 2006, but not so in the other cities. In 2007 Milwaukee and Los Angeles buyers abruptly turned more negative, but San Francisco buyers waited until 2008 before souring on home price expectations. In 2009 all three boom cities reversed again favoring a more positive outlook while Milwaukee remained stable.

Table 6 shows both mean and median one-year reported expectations for home price change, see also Figure 11. Mean expectations are higher than median expectations in every year except for Boston and San Francisco in 2008, reflecting a long right-tail of respondents who give extravagant expectations. Perhaps the median expectation, less affected by these extreme answers, is the more meaningful. Note that in 1988 the two booming cities, Los Angeles and San Francisco, home buyers reported expectations of ten percent or more, while in the other cities the expectation was only half that. In 2005,

the boom cities showed a similar, if slightly less dramatic, difference from the postboom Boston and nonboom Milwaukee. Expectations for price increases tumbled in 2006 in all cities, but remained positive. In 2008 all three boom cities registered negative mean price expectations with more than half of respondents indicating a decline in prices. Once again 2009 results have reversed in momentum toward positive expectations for the boom cities. If a long right-tailed distribution can be interpreted as exuberance then it is once again on the rise.

The Chicago Mercantile Exchange, in collaboration with us and the firm MacroMarkets LLC and Standard & Poor's established futures contracts for single family home prices in July 2006. These contracts traded with significant volume for only a little over a year. (They are still trading, but with very little activity). Figure 12 shows the actual and futures prices for these contracts. These contracts traded initially in contango, but fell rapidly into backwardation. Thus, the expectations in these contracts quickly became inconsistent with the home buyer expectations we see from our surveys. Those who traded in the futures markets became, essentially, very pessimistic. Ultimately, our efforts to establish market expectations failed. The initial market was very thin, reflecting the opinions only of a segment of the market, and a segment that eventually drifted to virtually nil.

In any event, what probably matters more to home buyer behavior are long-term expectations, which are difficult to elicit from futures markets anyway. Table 7 shows both mean and median *ten-year* reported expectations. These show roughly the same patterns of increase and decrease as do the one-year expectations, but at a much higher

level, see also Figure 13. People have never given up their long-term optimism for home prices, though these expectations have declined somewhat since the peak in the market.

We stressed in 1988 that there was a sharp difference between the boom cities and the nonboom city Milwaukee, and that the expectations expressed in the California boom cities seemed extravagant, reflecting a distorted market psychology. That pattern of differences has repeated itself in the 2000s boom, though Milwaukee begins to look less different from the others. Note that an expectation of 10% a year appreciation for ten consecutive years, the median reported expectation in 1988 in both boom cities, San Francisco and Los Angeles, would imply a house that sold for \$1,000,000 today would sell for \$2,600,000 in ten years. The median expectations were only slightly less dramatic in 2005. There is a sharp drop in mean ten-year expectations from 2005 to 2008, but less sharp a drop in median expectations. This means that the long right tail of the distribution of expectations eroded sharply, but that typical expectations have retreated more modestly. In 2009 the difference between median and mean ten-year expectations reversed its decline and increased over 2008 results similar to the results found in one year expectations.

Table 11 shows the extent of agreement with the 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.” Generally, the vast majority of respondents in any city during any time period from 2003 to 2009 agree with this statement. Unfortunately, this question was not asked in the 1988 survey. Additionally, respondents in Los Angeles and San Francisco experience a noticeably higher proportion of respondents in agreement than those in

Milwaukee in every time period revealing a difference in attitude toward housing as it relates to investments.⁵

Buyer Psychology

Buyers were asked whether they agree or disagree with the following statement: “There has been a good deal of excitement surrounding recent housing price changes. I sometimes think that I may have been influenced by it.” Table 12 shows that a sense of excitement has been prominent in many of the survey years, which is not surprising given housing prices have experienced rapid increases and decreases during the survey years. As expected, excitement grows from 2003 until the peak in 2005 and 2006 depending on the city. Excitement subsequently declined from the peak into 2008. In 2009, however, momentum shifted again as excitement in all cities increases.

Table 10 shows that fears of being priced out of the market, of not being able to afford a house later, are especially salient in the boom cities. The results indicate that the prevalence of this fear has been growing since 2003, and by 2005 were nearly at 1988 levels. From 2005 to 2008, the proportion of people who say they have such fear fell substantially in all cities. In 2009 respondents in Milwaukee and Boston continue to experience less fear; however, the boom cities of San Francisco and Los Angeles both experienced increased fears of being priced out of the market.

⁵ A new Reports national telephone survey shows that at the end of 2009 just 59% of adults think buying a home is the best investment families can make. This is virtually unchanged from 58% in October, the lowest finding all year, and is down seven points since September 2008. Twenty percent (20%) of Americans now believe that buying a home is not the best family investment and 21% aren't sure. http://www.rasmussenreports.com/public_content/business/housing/november_2009/59_think_a_home_is_a_family_s_best_investment.

Table 4 shows that in all three boom cities the perception of risk in the real estate market has trended up every year we observe here between 1988 and 2005. One might surmise that little or no risk was seen by most home buyers in Los Angeles and San Francisco in 1988 not only because these cities were booming at the time, but also because no one could remember then an episode of price decline in California, the boom of the 1970s having ended in a soft landing. After 2000, the memories of the 1990s price declines must have colored many people's thinking. Surprisingly to us, perceptions of "a great deal of risk" in the housing market subsides a little in 2006, even though there is more talk of the turning of the housing market.

In Table 8 we show the responses to one of several questions about expectations. Each survey respondent was asked if he or she agreed or disagreed with the following sentence: "It is a good time to buy a home because housing prices are likely to rise in the future." In their responses to the 1988 survey home buyers said yes overwhelmingly in all four metropolitan areas. One would anticipate that they would agree if they were in California, but recall that Boston was flat to down at the time the survey was taken.

If expectations were backward looking and adaptive, Boston home buyers would have been more divided in their optimism. Instead, 78 percent of buyers said that it was "a good time to buy because prices were likely to rise in the future."

Similarly in Milwaukee in 1988, 85 percent agreed with the statement despite the fact that nearly 40 percent said that prices were falling or flat

The 2003 survey was distributed during a time when prices were rising everywhere in the country at a healthy clip. Respondents in all four cities perceived this

to be so. In addition, not surprisingly, a majority agreed with the statement “It is a good time to buy a home because housing prices are likely to rise in the future.”

The years 2007 and 2008 stand out because the market had clearly turned. In Boston, the market started falling in September, 2005, and fell slowly losing 4 percent of its value by Spring, 2007, and 6.7 percent by Spring, 2008. All four markets were in decline when the surveys for 2007 and 2008 were taken. Both Los Angeles and San Francisco witnessed house prices decline 4 percent by Spring 2007 and by over 25 percent by Spring 2008. Milwaukee was down 4.1 percent and 18 percent respectively during the two surveys. In addition, there seemed to be no delusion about it in the minds of home buyers: A majority of those in all four cities thought that house prices were falling rapidly.

But the same vast majority of buyers, when asked whether they agreed with the statement: “It is a good time to buy since prices are likely to rise in the future,” answered “yes” loudly and clearly. In these data, again, the attitude toward the future is incredibly positive. About 80 percent expect that house prices will rise in the future justifying their decision to buy in both 2007 and 2008. In 2009 the percentage of respondents in agreement increased in every city with Los Angeles and San Francisco posting the largest increases over 2008 results and both stand at over 90% agreement. The larger swings in results for the boom cities of Los Angeles and San Francisco help to confirm the thesis that boom cities experience greater volatility in sentiment.

As a footnote, when they were asked in the 2007 and 2008 surveys the inverse question: do you agree or disagree with the following statement: “it is not a good time to buy a home because house prices are likely to decline in the future,” in every city the

response was overwhelmingly negative. Over 85 percent said that they disagreed. This again seems to reject both the hypotheses that expectations were based on backward looking extrapolations of recent trends and the hypothesis that expectations were rational and forward looking. On the contrary. The results seem to show that home buyers were “exuberant.”

The University of Michigan Consumer Sentiment survey has been asking a somewhat similar question, whether it is a good time to buy a house (Figure 14), but without our words “because housing prices are likely to rise in the future.” The proportion thinking it is a good time to buy in the Michigan surveys since 1960 has shown a lot of short-run oscillations through time, and at the time of the home price boom of the 2000s the proportion was not especially high.

Does this contradict our notion that the 2000s boom in home prices was due to extravagant expectations? We think not, and this highlights difficulty in interpreting responses to survey questions. The Michigan survey does not appear to have been designed to study real estate bubbles, though the appearance of this question on their questionnaire may suggest so. Theirs was a survey to measure consumer confidence and willingness to consume, and this question was placed among other questions that clearly indicated to the respondent what the subject of attention was. The question has no natural scaling, no clear other time that is suggested as a comparison point. Clearly, from the reasons people gave for their answers (Figure 15) show that historically the reasons are most prominently associated with interest rates. People say “good time to buy” when they perceive interest rates to be low, and “bad time to buy” when they perceive them to be high.

Buyers also have an accurate idea of the interest rate environment as shown in Table 9. Our espondents were asked if they agreed with the statement: “It’s a good time to buy a home because interest rates are relatively low and they are likely to rise in the future.” Agreement with this statement was high even in 1988, but it became much higher in all cities in the recent years, especially in 2003 before the Fed began raising interest rates. One might say that interest rates have an effect on housing demand through two channels, through the size of the mortgage payment (which people will have to compare with their income and expenses) and also through a sense of urgency to buy if rates are lower than expected in the future. The results from the responses on this question indicate that the second channel is especially important in the 2000s boom, both in an absolute sense because of the nearly 100% agreement in 2003 and 2004, and in a relative sense when comparing with the 1988 boom. Of course, agreement fell sharply in 2006, after interest rates had increased. However, the target fed funds rate has been between 0.00% and 0.25% since December 2008 and agreement in the 2009 data is now as high as it was in 2003 and 2004. In fact, 100% of the 2009 Milwaukee respondents are in agreement revealing that participants have an understanding of the interest rate environment.

What Might Explain the Sharp Turning Points in Growth Rates of Real Home Prices?

The peak growth rate in real prices nationally in the 1980s occurred in the second quarter of 1986, that is, between the 1985 peak in Boston and the 1988 peak in Los Angeles. This was followed by a trough in the real growth rate in the fourth quarter of 1990, just as the nation teetered into the 1990-91 recession. Since then, the trend in home price growth rates has been relentlessly upward until 2006.

What happened at these sharp turning points in growth rates? We are particularly interested in the peak in the mid-to-late 1980s. Fortunately, there is some evidence. In our 1988 survey, we asked some open-ended questions to see what people would think of as reasons for the housing market: “What do you think explains recent changes in home prices in _____? What ultimately is behind what is going on? And “Was there any event (or events) in the last two years that you think changed the trend in home prices? We read their answers and put them into categories. Of course, with open ended questions there is a wide variety of answers given, we are in effect recording people’s free associations. But some themes were repeatedly mentioned.

In Boston, where the growth rate of home prices was falling sharply, the most popular theme in 1988 was the stock market crash of 1987, an event of great significance just a year earlier: 25.0% of respondents brought up that crash in answering these questions. In sharp contrast, in Los Angeles only 1.7% of people brought up the stock market crash. Apparently the stock market crash resonated more in Boston, where growth rates in home prices were falling sharply, than in Los Angeles.

People in Los Angeles tended to bring up other things. In Los Angeles, 20.4% brought up immigration or population change, compared to only 6.0% in Boston. Moreover, 10.8% of our respondents in Los Angeles brought up anti-growth legislation, while not a single resident of Boston brought up that topic. These two topics are related, for in California at the time there was a major anti-growth movement that attempted to restrict the supply of homes for these new immigrants.

The answers are much different with the latest surveys, reflecting changing perceptions and the changing information set that Halbwachs pointed to when he spoke of the collective memory.

It may be in these changes, more than in the quantitative expectations that we have recorded, that most explains the major trends in the market. Figure 16, which gives a scaled count of news stories with the term “housing bubble” in it, shows the major change in public thinking that began around the time when the housing boom of the 2000s first became apparent, and has grown steadily ever since. The story of a housing bubble is an invention of our times, an invention that is spreading to capture more and more of our thinking, and to create a fragility of expectations that was unknown in times past.

By the time of the 2006 survey, just around the time of the peak in prices, some new themes became commonplace in answers to the question as the event that changed the trend in the housing market. Answers included “reality adjustment of the market,” “fewer speculation buyers,” “media hype of housing bubble,” and “overheated market.”

By the time of the 2009 survey, when the market was starting its sharp recovery, the answers included even more references to speculation and bursting bubbles. People have not forgotten about their newfound knowledge of bubbles. As of the 2009 survey, we could not find any optimistic new themes that indicated a positive major turning point in the market, and are left with the suspicion that the turn upwards in home prices is supported more by the government’s short-term support of the housing market rather than any new speculative enthusiasm.

Conclusion

This paper has used a method that is virtually unknown in macroeconomic circles to understand macroeconomic fluctuations, in this instance fluctuations in the home prices that have played a major role in the latest severe recession. We have collected regular survey data over the years on the thinking of people who recently had to make a critical decision, to buy a house with a questionnaire that focuses attention on speculative issues. We have collated these survey results with other information, and economic data.

We sense that we have learned something from this exercise, even though we have not found a “smoking gun” for the cause of major turning points in home prices and the economy. Interpreting data on “what people were thinking” is fraught with many difficulties.

Some philosophers of economic methodology, notably Milton Friedman in his *Essays in Positive Economics*, have warned against ever asking people about what they are thinking in making economic decisions. We feel we have learned something of the problems he pointed to in trying to do this. And yet, we feel that we have learned something valuable from these efforts, and some things that could be refined with further study.

We have clearly learned some things from these results that we did not know before. We have seen for example that extravagant expectations are part of what distinguishes boom times from non boom times, and we have learned directions that they thinking has changed,

In a sense, the questions of the value of the kind of study we have done depends on the perceived role of economists. Our results bear on only a small subset of the questions that economists want to answer. But for some questions, notably the question of assessing the future fragility of the economy and its potential for crisis, we feel that our results are important, and further results using similar methodology will be so also.

Tables

Table #1

“Why Did You Buy the Home that You Did?”

(Responses shown in percent of those answering this question.)

	Number Answering This Question	To live in as primary residence.	To live in part of the time as a second residence without renting to others	As a second residence that you will also rent out.	Only to rent out to others	For some other reasons:
1988 Question 2						
Boston	200	92.00	2.00	0.50	3.00	2.50
Los Angeles	241	88.38	3.32	0.83	3.73	3.73
Milwaukee	246	88.21	0.81	3.66	4.07	3.25
San Francisco	198	72.73	4.04	5.05	12.12	6.06
2003 Question 2						
Boston	206	96.60	0.97	0.00	0.97	1.46
Los Angeles	145	95.17	1.38	2.07	1.38	0.00
Milwaukee	190	90.00	1.05	0.53	5.26	3.16
San Francisco	165	93.33	0.61	1.21	3.03	1.82
2004 Question 2						
Boston	114	97.37	0.88	0.00	0.00	1.75
Los Angeles	91	93.41	1.10	0.00	3.30	2.20
Milwaukee	123	93.50	0.00	0.00	4.88	1.63
San Francisco	123	96.75	0.81	0.00	2.44	0.00
2005 Question 2						
Boston	132	92.42	1.52	0.00	0.76	5.30
Los Angeles	88	88.64	4.55	2.27	1.14	3.41
Milwaukee	115	89.57	0.00	0.87	4.35	5.22
San Francisco	108	86.10	0.93	0.93	6.48	5.56

	Number Answering This Question	To live in as primary residence.	To live in part of the time as a second residence without renting to others	As a second residence that you will also rent out.	Only to rent out to others	For some other reasons:
2006 Question 2						
Boston	101	96.04	0.00	1.00	2.97	0.00
Los Angeles	50	92.00	0.00	2.00	4.00	2.00
Milwaukee	65	90.77	1.54	0.00	4.62	3.08
San Francisco	54	88.89	1.85	0.00	1.85	7.41
2007 Question 2						
	Number Answering This Question	To live in as primary residence.	To live in part of the time as a second residence without renting to others	As a second residence that you will also rent out.	Only to rent out to others	For some other reasons:
Boston	90	96.67	1.11	0.00	1.11	1.11
Los Angeles	51	94.12	0.00	1.96	0.00	3.92
Milwaukee	87	97.70	0.00	0.00	0.00	2.30
San Francisco	72	88.89	1.39	0.00	1.39	8.33
2008 Question 2						
	Number Answering This Question	To live in as primary residence.	To live in part of the time as a second residence without renting to others	As a second residence that you will also rent out.	Only to rent out to others	For some other reasons:
Boston	133	96.99	0.00	0.00	0.00	3.01
Los Angeles	130	91.54	1.54	0.77	1.54	4.62
Milwaukee	126	89.68	0.00	0.00	4.76	5.56
San Francisco	152	90.13	3.95	0.00	2.63	3.29
2009 Question 2						
	Number Answering This Question	To live in as primary residence.	To live in part of the time as a second residence without renting to others	As a second residence that you will also rent out.	Only to rent out to others	For some other reasons:
Boston	110	100.00	0.00	0.00	0.00	0.00
Los Angeles	73	94.52	1.37	1.37	1.37	1.37
Milwaukee	91	81.32	2.20	0.00	6.59	9.89
San Francisco	94	93.62	0.00	2.13	1.06	3.19

Table #2
Home Perceived as Investment

1988 # 13 In deciding to buy your property, did you think of the purchase as an investment:	Number Answering This Question	Not at all	In part	It was a major consideration
Boston	200	7.00	45.00	48.00
Los Angeles	238	4.20	40.34	55.46
Milwaukee	243	10.29	45.68	44.03
San Francisco	199	4.52	31.66	63.82
2003 # 13 In deciding to buy your property, did you think of the purchase as an investment:	Number Answering This Question	Not at all	In part	It was a major consideration
Boston	205	9.76	56.10	34.15
Los Angeles	143	6.99	46.15	46.85
Milwaukee	187	7.49	42.25	50.27
San Francisco	164	9.76	38.41	51.83
2004 # 13 In deciding to buy your property, did you think of the purchase as an investment:	Number Answering This Question	Not at all	In part	It was a major consideration
Boston	111	9.91	47.75	42.34
Los Angeles	91	4.40	34.07	61.54
Milwaukee	120	10.00	42.50	47.50
San Francisco	122	9.84	41.80	48.36
2005 # 13 In deciding to buy your property, did you think of the purchase as an investment:	Number Answering This Question	Not at all	In part	It was a major consideration
Boston	131	12.98	50.38	36.64
Los Angeles	87	16.09	39.08	44.83
Milwaukee	113	9.73	37.17	53.10
San Francisco	106	8.40	49.10	42.50

2006 # 13 In deciding to buy your property, did you think of the purchase as an investment:	Number Answering This Question	Not at all	In part	It was a major consideration
Boston	98	9.20	58.20	32.70
Los Angeles	49	10.20	42.90	46.90
Milwaukee	65	7.70	44.60	47.70
San Francisco	53	7.60	45.30	47.20
2007 # 13 In deciding to buy your property, did you think of the purchase as an investment:	Number Answering This Question	Not at all	In part	It was a major consideration
Boston	89	14.61	58.43	26.97
Los Angeles	51	13.73	47.06	39.22
Milwaukee	85	15.29	41.18	43.53
San Francisco	69	10.14	39.13	50.72
2008 # 13 In deciding to buy your property, did you think of the purchase as an investment:	Number Answering This Question	Not at all	In part	It was a major consideration
Boston	126	8.66	57.48	33.86
Los Angeles	128	10.16	56.25	33.59
Milwaukee	126	13.49	44.44	42.06
San Francisco	151	12.58	51.66	35.76
2009 # 13 In deciding to buy your property, did you think of the purchase as an investment:	Number Answering This Question	Not at all	In part	It was a major consideration
Boston	110	14.55	50.91	34.55
Los Angeles	69	15.94	52.17	31.88
Milwaukee	89	15.73	37.08	47.19
San Francisco	94	9.57	51.06	39.36

Table #3
Mortgages

Note: This question was not asked in 1988 and 2003.

2004 # 1b What type of mortgage did you get?	Number Answering This Question	Conventional fixed rate for ___ years	Adjustable rate (ARM) for ___ years	Other	No mortgage
Boston	107	71.96	22.43	3.74	1.87
Los Angeles	84	55.95	38.10	4.76	1.19
Milwaukee	115	72.17	23.48	4.35	0.00
San Francisco	110	42.73	47.27	5.45	4.55
2005 # 1b What type of mortgage did you get?	Number Answering This Question	Conventional fixed rate for ___ years	Adjustable rate (ARM) for ___ years	Other	No mortgage
Boston	122	40.98	49.18	9.02	0.82
Los Angeles	78	41.03	46.15	12.82	0.00
Milwaukee	111	65.77	29.73	4.50	0.00
San Francisco	96	27.61	63.50	9.38	0.00
2006 # 1b What type of mortgage did you get?	Number Answering This Question	Conventional fixed rate for ___ years	Adjustable rate (ARM) for ___ years	Other	No mortgage
Boston	93	74.20	18.30	6.50	1.10
Los Angeles	46	34.80	54.30	10.90	0.00
Milwaukee	62	69.40	21.00	8.10	1.60
San Francisco	48	47.90	43.80	8.30	0.00
2007 # 1b What type of mortgage did you get?	Number Answering This Question	Conventional fixed rate for ___ years	Adjustable rate (ARM) for ___ years	Other	No mortgage
Boston	83	83.13	13.25	3.61	0.00
Los Angeles	47	59.57	25.53	14.89	0.00
Milwaukee	83	79.52	15.66	3.61	1.20
San Francisco	65	55.38	36.92	7.69	0.00
2008 # 1b What type of mortgage did you get?	Number Answering This Question	Conventional fixed rate for ___ years	Adjustable rate (ARM) for ___ years	Other	No mortgage
Boston	121	85.95	10.74	3.31	0.00
Los Angeles	121	67.77	28.10	4.13	0.00
Milwaukee	116	84.48	3.45	4.31	7.76
San Francisco	133	66.92	25.56	7.52	0.00
2009 # 1b What type of mortgage did you get?	Number Answering This Question	Conventional fixed rate for ___ years	Adjustable rate (ARM) for ___ years	Other	No mortgage
Boston	101	91.09	5.94	1.98	0.99
Los Angeles	71	87.32	2.82	9.86	0

Milwaukee	88	81.82	1.14	7.95	9.09
San Francisco	84	89.29	2.38	5.95	2.38

Table #4
Perceptions of Risk

1988 # 22 Buying a home in the ____ area today involves (circle the one which best applies):	Number Answering This Question	A great deal of risk	Some risk	Little or no risk
Boston	197	5.08	57.87	37.06
Los Angeles	237	3.38	33.33	63.29
Milwaukee	237	5.91	64.56	29.54
San Francisco	192	4.17	40.10	55.73
2003 # 22 Buying a home in the ____ area today involves (circle the one which best applies):	Number Answering This Question	A great deal of risk	Some risk	Little or no risk
Boston	205	7.81	62.44	29.76
Los Angeles	139	7.91	47.48	44.60
Milwaukee	185	4.32	57.30	38.38
San Francisco	162	14.82	51.85	33.33
2004 # 22 Buying a home in the ____ area today involves (circle the one which best applies):	Number Answering This Question	A great deal of risk	Some risk	Little or no risk
Boston	111	10.81	63.06	26.13
Los Angeles	90	10.00	54.44	35.56
Milwaukee	119	0.84	54.62	44.54
San Francisco	121	19.01	61.98	19.01
2005 # 22 Buying a home in the ____ area today involves (circle the one which best applies):	Number Answering This Question	A great deal of risk	Some risk	Little or no risk
Boston	128	10.94	61.72	27.34
Los Angeles	86	10.47	60.47	29.07
Milwaukee	113	6.19	59.29	34.51
San Francisco	105	20.00	61.00	19.00

2006 # 22 Buying a home in the ____ area today involves (circle the one which best applies):	Number Answering This Question	A great deal of risk	Some risk	Little or no risk
Boston	96	9.40	71.90	18.80
Los Angeles	50	6.00	54.00	40.00
Milwaukee	65	9.23	66.20	24.60
San Francisco	52	11.50	63.50	25.00
2007 # 22 Buying a home in the ____ area today involves (circle the one which best applies):	Number Answering This Question	A great deal of risk	Some risk	Little or no risk
Boston	89	4.49	75.28	20.22
Los Angeles	50	10.00	58.00	32.00
Milwaukee	86	10.47	61.63	27.91
San Francisco	70	17.14	64.29	18.57
2008 # 22 Buying a home in the ____ area today involves (circle the one which best applies):	Number Answering This Question	A great deal of risk	Some risk	Little or no risk
Boston	127	6.30	75.59	18.11
Los Angeles	125	7.20	68.00	24.80
Milwaukee	125	6.40	72.00	21.60
San Francisco	149	12.75	68.46	18.79
2009 # 22 Buying a home in the ____ area today involves (circle the one which best applies):	Number Answering This Question	A great deal of risk	Some risk	Little or no risk
Boston	107	1.87	70.09	28.04
Los Angeles	71	8.45	64.79	26.76
Milwaukee	88	18.18	61.36	20.45
San Francisco	93	12.90	69.89	17.20

Table #5
Expectations of Increase or Decrease

1988 # 5 Do you think that housing prices in ____ (area) will increase or decrease over the next several years?	Number Answering This Question	Increase	Decrease
Boston	194	90.21	9.79
Los Angeles	240	98.33	1.67
Milwaukee	233	87.12	12.88
San Francisco	199	98.99	1.01
2003 # 5 Do you think that housing prices in ____ (area) will increase or decrease over the next several years?	Number Answering This Question	Increase	Decrease
Boston	203	82.79	17.24
Los Angeles	145	89.66	10.34
Milwaukee	187	95.19	4.81
San Francisco	158	90.51	9.49
2004 # 5 Do you think that housing prices in ____ (area) will increase or decrease over the next several years?	Number Answering This Question	Increase	Decrease
Boston	113	92.04	7.96
Los Angeles	89	89.89	10.11
Milwaukee	121	95.00	5.00
San Francisco	122	98.36	1.64
2005 # 5 Do you think that housing prices in ____ (area) will increase or decrease over the next several years?	Number Answering This Question	Increase	Decrease
Boston	130	86.92	13.08
Los Angeles	87	90.81	9.20

Milwaukee	116	93.97	6.03
San Francisco	105	86.67	13.33
2006 # 5 Do you think that housing prices in ____ (area) will increase or decrease over the next several years?	Number Answering This Question	Increase	Decrease
Boston	97	67.00	33.00
Los Angeles	49	91.80	8.20
Milwaukee	64	93.80	6.20
San Francisco	54	88.90	11.10
2007 # 5 Do you think that housing prices in ____ (area) will increase or decrease over the next several years?	Number Answering This Question	Increase	Decrease
Boston	87	79.31	20.69
Los Angeles	50	66.00	34.00
Milwaukee	85	78.82	21.18
San Francisco	72	91.67	8.33
2008 # 5 Do you think that housing prices in ____ (area) will increase or decrease over the next several years?	Number Answering This Question	Increase	Decrease
Boston	125	64.80	35.20
Los Angeles	130	53.85	46.15
Milwaukee	124	75.00	25.00
San Francisco	147	65.31	34.69
2009 # 5 Do you think that housing prices in ____ (area) will increase or decrease over the next several years?	Number Answering This Question	Increase	Decrease
Boston	107	81.31	18.69
Los Angeles	69	85.51	14.49
Milwaukee	90	72.22	27.78
San Francisco	93	86.02	13.98

Table #6
One-Year Expectations for Price Change

Question: How much of a change do you expect there to be in the value of your home over the next 12 months?

1988 # 6 _____% (percent change)	Number Answering This Question	Average	Median	Increase	Decrease
Boston	176	7.40	5.00	95.70	4.30
Los Angeles	217	15.30	11.00	98.60	1.40
Milwaukee	198	6.10	5.00	94.90	5.10
San Francisco	177	13.50	10.00	100.00	0.00
2003 # 6 _____% (percent change)	Number Answering This Question	Average	Median	Increase	Decrease
Boston	173	4.67	5.00	85.60	14.40
Los Angeles	141	9.44	10.00	94.20	5.80
Milwaukee	160	8.57	5.00	96.30	3.80
San Francisco	147	8.20	5.50	89.10	10.90
2005 # 6 _____% (percent change)	Number Answering This Question	Average	Median	Increase	Decrease
Boston	118	8.66	5.00	92.70	7.30
Los Angeles	82	10.67	10.00	94.00	5.90
Milwaukee	109	8.13	6.50	100.00	0.00
San Francisco	104	11.30	10.00	94.10	5.90
2006 # 6 _____% (percent change)	Number Answering This Question	Average	Median	Increase	Decrease
Boston	83	2.90	2.00	66.70	33.30
Los Angeles	43	6.10	5.00	89.80	10.20
Milwaukee	56	6.80	5.00	95.20	4.80
San Francisco	46	8.90	5.00	92.00	8.00
2007 # 6 _____% (percent change)	Number Answering This Question	Average	Median	Increase	Decrease
Boston	82	3.12	3.00	76.62	23.38
Los Angeles	44	-0.60	1.00	51.22	48.78
Milwaukee	81	8.00	4.00	91.36	8.64
San Francisco	65	5.18	4.00	86.15	13.85
2008 # 6 _____% (percent change)	Number Answering This Question	Average	Median	Increase	Decrease
Boston	117	-0.24	0.00	45.95	54.05
Los Angeles	115	-2.48	-3.00	30.43	69.57
Milwaukee	111	2.54	2.00	74.77	25.23
San Francisco	128	-1.24	0.00	42.19	57.81

2009 # 6 _____% (percent change)	Number Answering This Question	Average	Median	Increase	Decrease
Boston	106	2.41	1.00	70.93	29.07
Los Angeles	62	0.95	0.00	61.3	38.71
Milwaukee	78	2.26	1.00	60.26	39.74
San Francisco	83	3.01	2.00	72.289	27.711

Table #7
Ten-Year Expectations for Price Change

Question: On the average over the next ten years how much do you expect the value of your property to change each year?

1988 #7 ____% (percent change)	Number Answering This Question	Average	Median	Increase	Decrease
Boston	177	8.70	5.00	99.40	0.60
Los Angeles	208	14.30	10.00	99.50	0.50
Milwaukee	199	7.30	4.00	97.00	3.00
San Francisco	171	14.80	10.00	100.00	0.00
2003 #7 ____% (percent change)	Number Answering This Question	Average	Median	Increase	Decrease
Boston	190	13.86	5.00	96.80	3.20
Los Angeles	139	12.48	8.00	97.80	2.20
Milwaukee	160	10.95	5.00	97.00	3.00
San Francisco	153	15.52	7.00	99.30	0.70
2004 #7 ____% (percent change)	Number Answering This Question	Average	Median	Increase	Decrease
Boston					
Los Angeles	86	18.91	10.00	95.20	4.80
Milwaukee					
San Francisco		17.80	7.00		
2005 #7 ____% (percent change)	Number Answering This Question	Average	Median	Increase	Decrease
Boston	121	12.43	5.00	97.70	2.30
Los Angeles	84	22.05	9.00	96.50	3.50
Milwaukee	103	13.56	7.50	99.10	0.90
San Francisco	105	13.90	8.50	100.00	0.00
2006 #7 ____% (percent change)	Number Answering This Question	Average	Median	Increase	Decrease
Boston	85	9.30	5.00	97.80	2.20
Los Angeles	42	12.60	6.00	95.70	4.30
Milwaukee	55	12.70	6.00	96.80	3.20
San Francisco	45	13.00	8.00	100.00	0.00
2007 #7 ____% (percent change)	Number Answering This Question	Average	Median	Increase	Decrease
Boston	84	6.95	5.00	98.81	1.19
Los Angeles	48	15.20	7.00	93.75	6.25

Milwaukee	84	10.57	5.00	96.43	3.57
San Francisco	67	13.70	6.00	100.00	0.00
2008 #7 _____% (percent change)	Number Answering This Question	Average	Median	Increase	Decrease
Boston	125	7.68	4.00	99.20	0.80
Los Angeles	126	10.83	5.00	95.24	4.76
Milwaukee	119	8.86	5.00	95.80	4.20
San Francisco	147	10.18	5.00	97.28	2.72
2009 #7 _____% (percent change)	Number Answering This Question	Average	Median	Increase	Decrease
Boston	103	10.87	4.00	99.03	0.97
Los Angeles	68	8.74	4.00	98.53	1.47
Milwaukee	87	10.07	5.00	96.55	3.45
San Francisco	89	12.78	5.00	100.00	0.00

Table #8
Expectations, Motivation to Buy

1988 #25F It's a good time to buy a home because housing prices are likely to rise in the future.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	171	38.01	77.78	22.22
Los Angeles	206	48.54	93.20	6.80
Milwaukee	210	49.05	84.76	15.24
San Francisco	180	36.11	95.00	5.00
2003 #25F It's a good time to buy a home because housing prices are likely to rise in the future.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	175	62.86	66.29	33.71
Los Angeles	126	54.76	76.98	23.02
Milwaukee	161	47.83	86.96	13.04
San Francisco	145	60.00	82.07	17.93
2004 #25F It's a good time to buy a home because housing prices are likely to rise in the future.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	95	32.63	83.16	16.84
Los Angeles	74	31.08	72.50	27.50
Milwaukee	108	31.48	83.33	16.67
San Francisco	108	50.00	87.04	12.96
2005 #25F It's a good time to buy a home because housing prices are likely to rise in the future.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	104	73.08	72.12	27.89
Los Angeles	73	57.53	90.41	9.59
Milwaukee	101	53.47	85.15	14.85
San Francisco	89	73.03	78.65	21.35

2006 #25F It's a good time to buy a home because housing prices are likely to rise in the future.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	78	64.10	66.70	33.30
Los Angeles	40	50.00	75.00	25.00
Milwaukee	54	57.41	77.80	22.20
San Francisco	43	58.14	81.40	18.60
2007 #25F It's a good time to buy a home because housing prices are likely to rise in the future.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	77	57.14	70.13	29.87
Los Angeles	42	61.90	78.57	21.43
Milwaukee	71	42.25	76.06	23.94
San Francisco	57	68.42	82.46	17.54
2008 #25F It's a good time to buy a home because housing prices are likely to rise in the future.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	114	71.93	81.58	18.42
Los Angeles	104	60.58	78.85	21.15
Milwaukee	104	74.04	85.58	14.42
San Francisco	123	65.04	80.49	19.51
2009 #25F It's a good time to buy a home because housing prices are likely to rise in the future.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	99	76.77	87.88	12.12
Los Angeles	61	63.93	90.16	9.84
Milwaukee	79	73.42	87.34	12.66
San Francisco	80	71.25	91.25	8.75

Table #9
Interest Rate Motivation to Buy

1988 #25G It's a good time to buy a home because interest rates are relatively low and they are likely to rise in the future.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	169	31.95	76.33	23.67
Los Angeles	207	48.79	87.44	12.56
Milwaukee	212	40.09	91.98	8.02
San Francisco	171	38.01	91.81	8.19
2003 #25G It's a good time to buy a home because interest rates are relatively low and they are likely to rise in the future.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	192	72.92	94.27	5.73
Los Angeles	133	60.15	95.49	4.51
Milwaukee	172	53.49	98.26	1.74
San Francisco	150	59.33	95.33	4.67
2004 #25G It's a good time to buy a home because interest rates are relatively low and they are likely to rise in the future.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	107	36.45	97.20	2.80
Los Angeles	78	30.77	94.87	5.13
Milwaukee	105	40.95	98.10	2.86
San Francisco	110	50.00	95.45	4.55
2005 #25G It's a good time to buy a home because interest rates are relatively low and they are likely to rise in the future.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	121	70.25	92.56	7.44
Los Angeles	74	66.22	91.89	10.94

Milwaukee	96	72.92	97.92	2.08
San Francisco	97	68.04	91.75	8.25
2006 #25G It's a good time to buy a home because interest rates are relatively low and they are likely to rise in the future.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	83	73.49	84.30	15.70
Los Angeles	37	72.97	75.70	24.30
Milwaukee	56	58.93	87.50	12.50
San Francisco	42	71.43	78.60	21.40
2007 #25G It's a good time to buy a home because interest rates are relatively low and they are likely to rise in the future.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	74	70.27	85.14	14.86
Los Angeles	42	69.05	83.33	16.67
Milwaukee	76	47.37	81.58	18.42
San Francisco	61	55.74	68.85	31.15
2008 #25G It's a good time to buy a home because interest rates are relatively low and they are likely to rise in the future.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	117	70.94	85.47	14.53
Los Angeles	107	62.62	86.92	13.08
Milwaukee	107	68.22	85.05	14.95
San Francisco	119	70.59	78.15	21.85
2009 #25G It's a good time to buy a home because interest rates are relatively low and they are likely to rise in the future.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	101	79.21	96.04	3.96
Los Angeles	64	62.50	92.19	7.81
Milwaukee	80	70.00	100.00	0.00
San Francisco	82	73.17	96.34	3.66

Table #10
Fears of Being Priced Out of the Market

1988 #25E Housing prices are booming, unless I buy now, I won't be able to afford a home later.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	169	36.09	40.83	59.17
Los Angeles	200	44.50	79.50	20.50
Milwaukee	194	66.49	27.84	72.16
San Francisco	167	41.92	68.86	31.14
2003 #25E Housing prices are booming, unless I buy now, I won't be able to afford a home later.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	177	60.45	36.72	63.28
Los Angeles	121	61.16	48.76	51.24
Milwaukee	154	35.06	36.36	63.64
San Francisco	134	67.91	59.70	40.30
2004 #25E Housing prices are booming, unless I buy now, I won't be able to afford a home later.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	96	78.13	45.83	54.17
Los Angeles	77	31.17	67.53	32.47
Milwaukee	96	27.08	39.58	60.42
San Francisco	111	48.65	71.17	28.83
2005 #25E Housing prices are booming, unless I buy now, I won't be able to afford a home later.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	113	66.37	45.13	54.87
Los Angeles	74	60.81	70.27	29.73
Milwaukee	96	56.25	52.08	47.92
San Francisco	91	73.63	70.33	29.67

2006 #25E Housing prices are booming, unless I buy now, I won't be able to afford a home later.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	85	54.12	25.90	74.10
Los Angeles	44	50.00	52.30	47.70
Milwaukee	55	43.64	43.60	56.40
San Francisco	43	62.79	46.50	53.50
2007 #25E Housing prices are booming, unless I buy now, I won't be able to afford a home later.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	75	42.67	16.00	84.00
Los Angeles	43	44.19	34.88	65.12
Milwaukee	73	27.40	28.77	71.23
San Francisco	52	65.38	32.69	67.31
2008 #25E Housing prices are booming, unless I buy now, I won't be able to afford a home later.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	99	37.37	16.16	83.84
Los Angeles	100	42.00	22.00	78.00
Milwaukee	89	28.09	17.98	82.02
San Francisco	115	53.91	18.26	81.74
2009 #25E Housing prices are booming, unless I buy now, I won't be able to afford a home later.	Number Answering This Question	I have heard it.	Agree	Disagree
Boston	81	40.74	12.35	87.65
Los Angeles	64	35.94	25.00	75.00
Milwaukee	76	11.84	9.21	90.79
San Francisco	80	45.00	32.50	67.50

Table #11

Housing as Best Investment

Note: This question was not asked in 1988

#28. 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." (Please circle one number)

2003	Number Answering This Question	Strongly agree	Agree somewhat	Neutral	Disagree somewhat	Strongly disagree
Boston	206	36.41	49.03	9.22	4.85	0.49
Los Angeles	145	53.79	33.10	10.35	2.76	0.00
Milwaukee	186	31.18	40.86	16.67	9.14	2.15
San Francisco	162	50.62	39.51	6.79	2.47	0.62
2004	Number Answering This Question	Strongly agree	Agree somewhat	Neutral	Disagree somewhat	Strongly disagree
Boston	113	35.40	44.25	14.16	2.65	3.54
Los Angeles	89	53.93	40.45	4.49	1.12	0.00
Milwaukee	120	26.67	50.83	19.17	3.33	0.00
San Francisco	121	38.84	49.59	9.09	1.65	0.83
2005	Number Answering This Question	Strongly agree	Agree somewhat	Neutral	Disagree somewhat	Strongly disagree
Boston	130	33.08	49.23	10.00	4.62	3.08
Los Angeles	106	57.55	29.25	11.32	1.89	0.00
Milwaukee	114	32.46	45.61	16.67	4.39	0.88
San Francisco	106	57.55	29.26	11.30	1.89	0.00
2006	Number Answering This Question	Strongly agree	Agree somewhat	Neutral	Disagree somewhat	Strongly disagree
Boston	99	35.40	43.40	12.10	7.10	2.00
Los Angeles	53	37.70	62.30	0.00	0.00	0.00
Milwaukee	63	41.30	34.90	17.50	6.40	0.00
San Francisco	54	48.10	42.60	9.30	0.00	0.00
2007	Number Answering This Question	Strongly agree	Agree somewhat	Neutral	Disagree somewhat	Strongly disagree
Boston	89	22.47	49.44	20.22	3.37	4.49
Los Angeles	51	68.63	19.61	9.80	0.00	1.96
Milwaukee	83	32.53	43.37	14.46	7.23	2.41
San Francisco	70	37.14	51.43	5.71	4.29	1.43
2008	Number Answering This Question	Strongly agree	Agree somewhat	Neutral	Disagree somewhat	Strongly disagree
Boston	131	23.66	48.09	14.50	9.16	4.58

Los Angeles	129	51.94	35.66	6.98	3.88	1.55
Milwaukee	125	30.40	39.20	21.60	5.60	3.20
San Francisco	147	39.46	44.90	9.52	5.44	0.68
2009	Number Answered	Strongly agree	Agree somewhat	Neutral	Disagree somewhat	Strongly disagree
Boston	109	21.10	49.54	18.35	5.50	5.50
Los Angeles	74	48.65	37.84	9.46	2.70	1.35
Milwaukee	89	26.97	35.96	22.47	10.11	4.49
San Francisco	92	35.87	42.39	16.30	2.17	3.26

Table #12
Perceptions of Excitement in the Market

1988 #26 There has been a good deal of excitement surrounding recent housing price changes. I sometimes think that I may have been influenced by it.	Number Answering This Question	Yes	No
Boston	181	45.30	54.70
Los Angeles	230	54.35	45.65
Milwaukee	233	21.46	78.54
San Francisco	191	56.54	43.46
2003 #26 There has been a good deal of excitement surrounding recent housing price changes. I sometimes think that I may have been influenced by it.	Number Answering This Question	Yes	No
Boston	201	29.35	70.65
Los Angeles	141	46.10	53.90
Milwaukee	184	34.78	65.22
San Francisco	156	38.46	61.54
2004 #26 There has been a good deal of excitement surrounding recent housing price changes. I sometimes think that I may have been influenced by it.	Number Answering This Question	Yes	No
Boston	111	33.33	66.67
Los Angeles	91	50.55	49.45
Milwaukee	119	45.38	54.62
San Francisco	120	47.50	52.50

2005#26 There has been a good deal of excitement surrounding recent housing price changes. I sometimes think that I may have been influenced by it.	Number Answering This Question	Yes	No
Boston	128	35.94	64.06
Los Angeles	84	53.57	46.43
Milwaukee	114	47.37	52.64
San Francisco	107	57.94	42.06
2006#26 There has been a good deal of excitement surrounding recent housing price changes. I sometimes think that I may have been influenced by it.	Number Answering This Question	Yes	No
Boston	99	38.40	61.60
Los Angeles	50	58.00	36.00
Milwaukee	65	43.10	56.90
San Francisco	53	37.70	62.30
2007#26 There has been a good deal of excitement surrounding recent housing price changes. I sometimes think that I may have been influenced by it.	Number Answering This Question	Yes	No
Boston	88	38.64	61.36
Los Angeles	50	42.00	58.00
Milwaukee	84	22.62	77.38
San Francisco	69	49.28	50.72

2008#26 There has been a good deal of excitement surrounding recent housing price changes. I sometimes think that I may have been influenced by it.	Number Answering This Question	Yes	No
Boston	131	37.40	62.60
Los Angeles	129	51.94	48.06
Milwaukee	124	39.52	60.48
San Francisco	145	55.17	44.83
2009#26 There has been a good deal of excitement surrounding recent housing price changes. I sometimes think that I may have been influenced by it.	Number Answering This Question	Yes	No
Boston	108	38.89	61.11
Los Angeles	73	54.79	45.21
Milwaukee	86	43.02	56.98
San Francisco	92	60.87	39.13

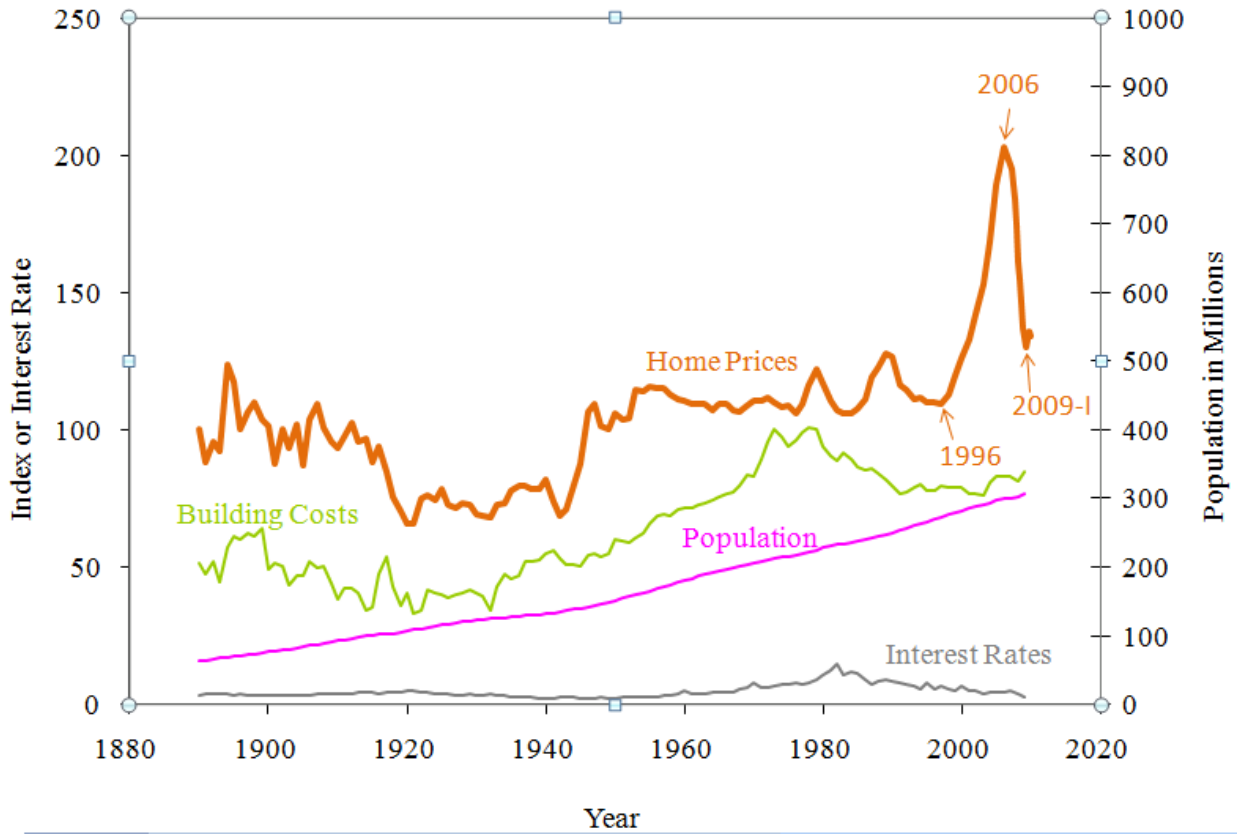


Figure 1. Real US home prices, building costs, population and long-term interest rates, 1890-2009. Source: Robert Shiller, *Irrational Exuberance*, 2nd. Edition, 2005, as updated. The home price index shown is, starting 1987, the S&P/Case-Shiller National Home Price Index, corrected for inflation with the consumer price index.

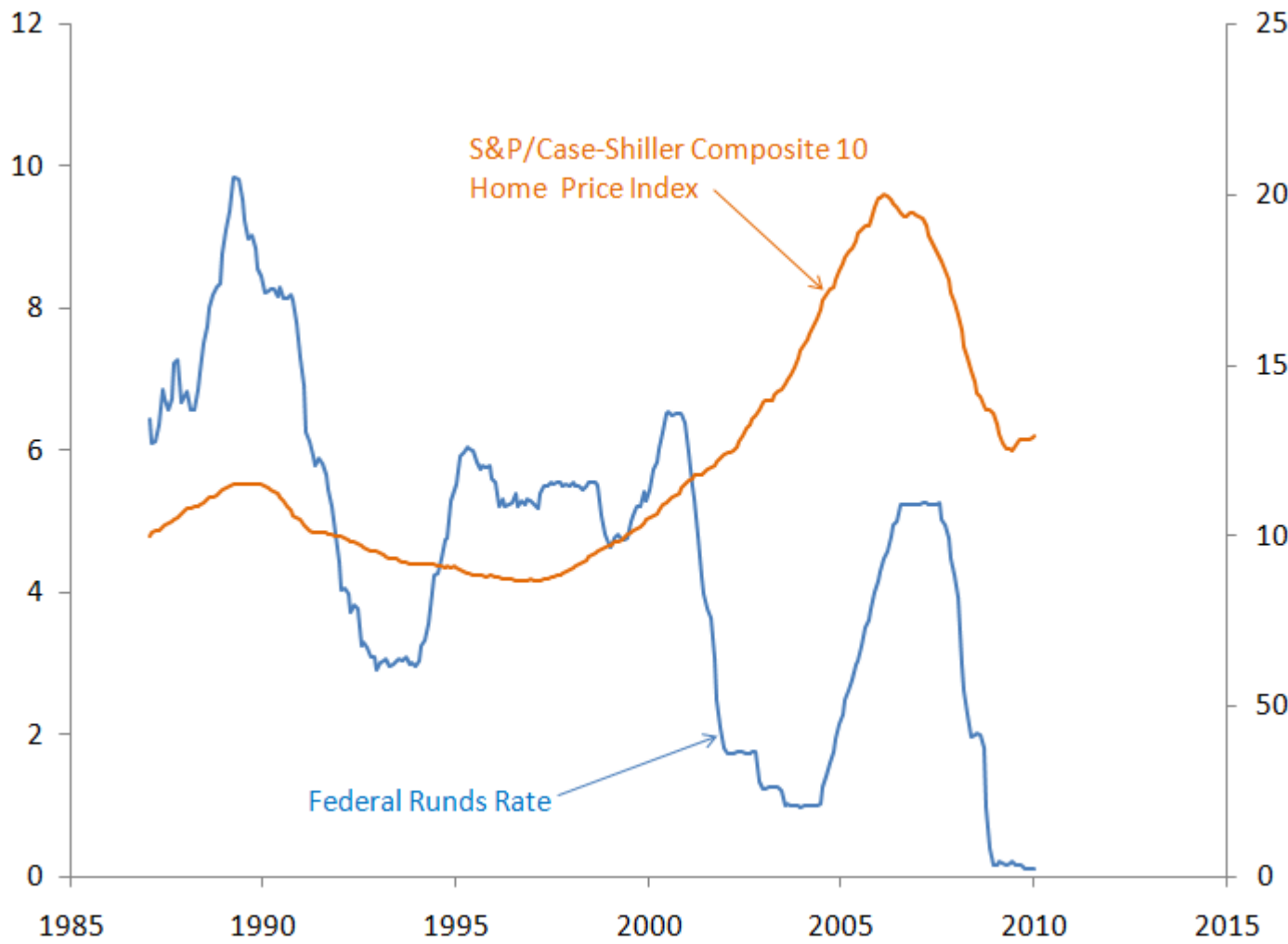


Figure 2: U.S. Federal Funds Rate (nominal) and S&P/Case-Shiller Composite 10 Home Price Index, corrected for inflation, monthly, January 1987-January 2010. Source:

Federal Reserve Bank of St. Louis, Standard & Poors.

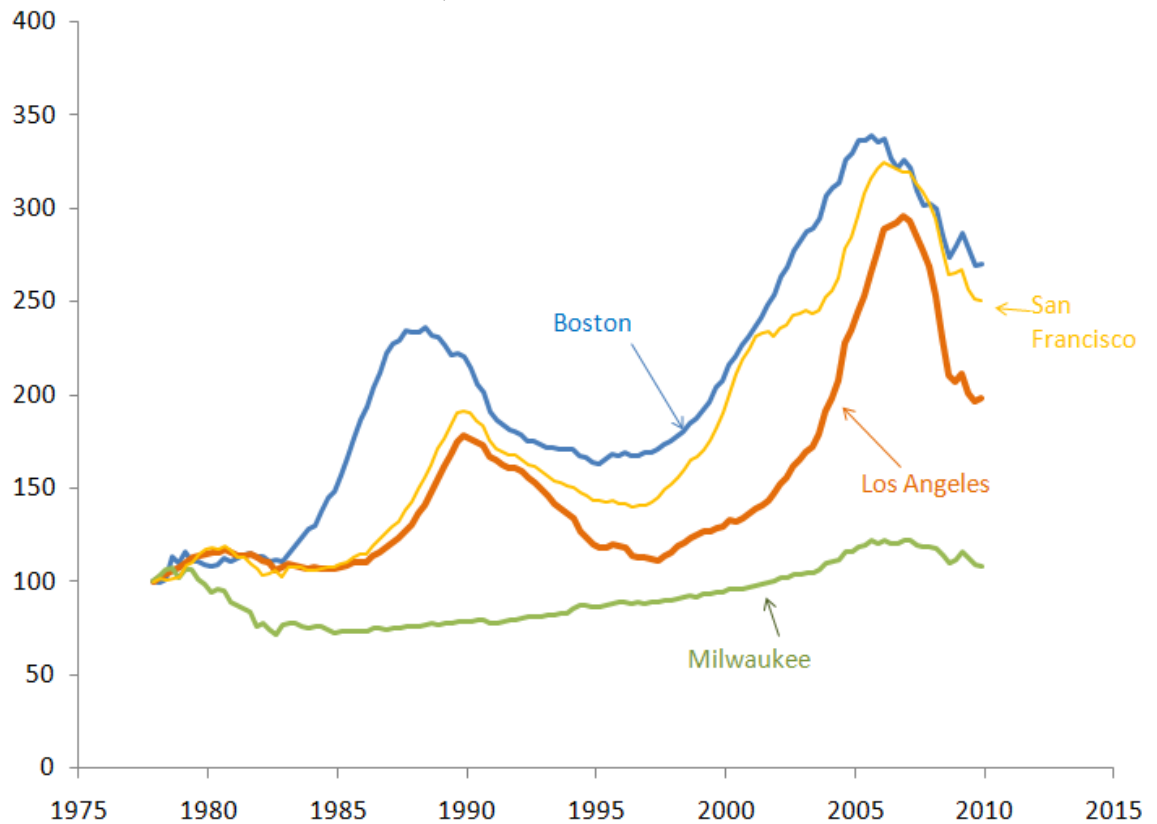


Figure 3. Quarterly real inflation-corrected home price indices for Boston, Los Angeles, Milwaukee and San Francisco, corrected for inflation and rescaled to 1977-IV=100. Source: authors' calculations using the home price index, all-transactions (including appraisals), not seasonally adjusted, from the Federal Housing Finance Administration and the CPI-U from the U.S. BLS Statistics.

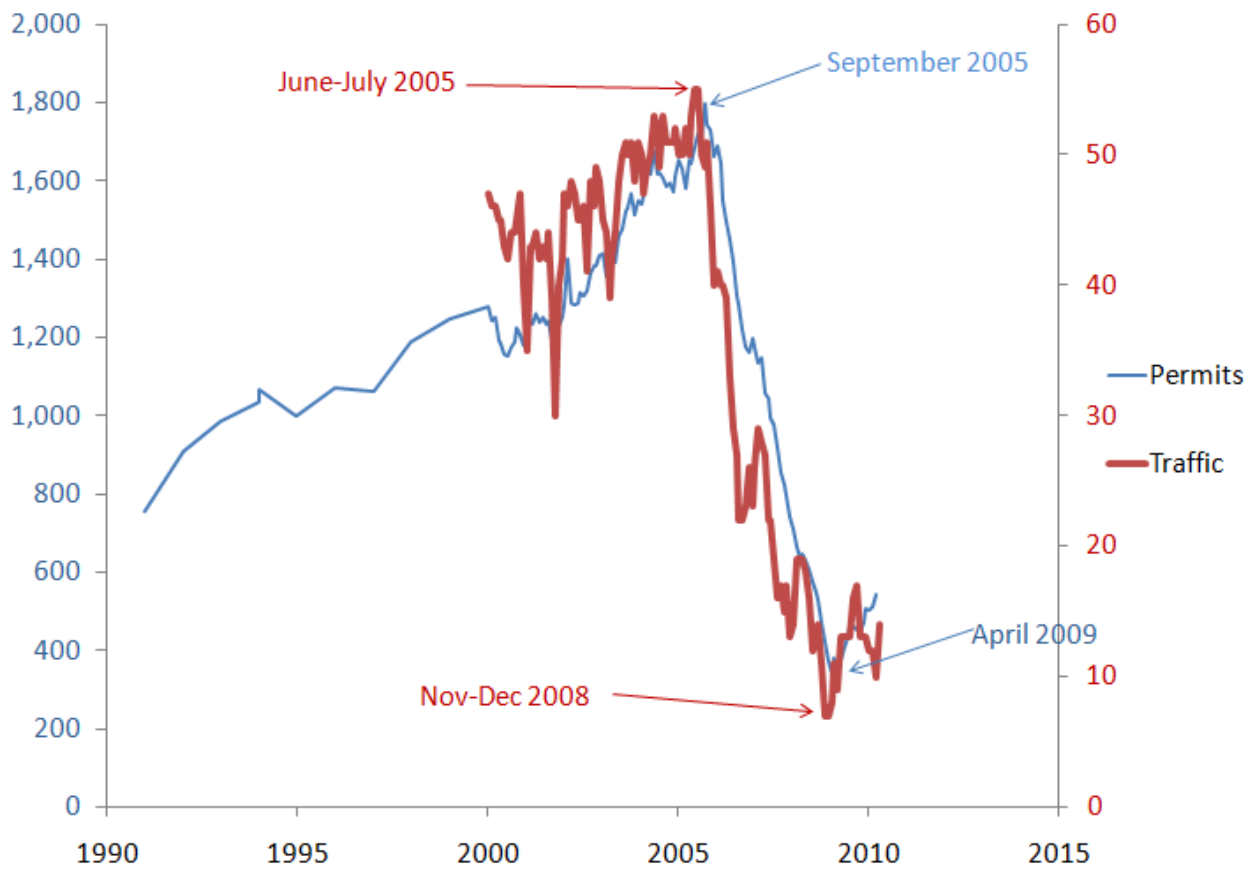


Figure 4. Permits issued for construction of single family homes (annual 1990 to 1999, monthly Jan 2000 to March 2010, Census) and traffic of prospective home buyers (monthly, January 2000 to April 2010, National Association of Home Builders).

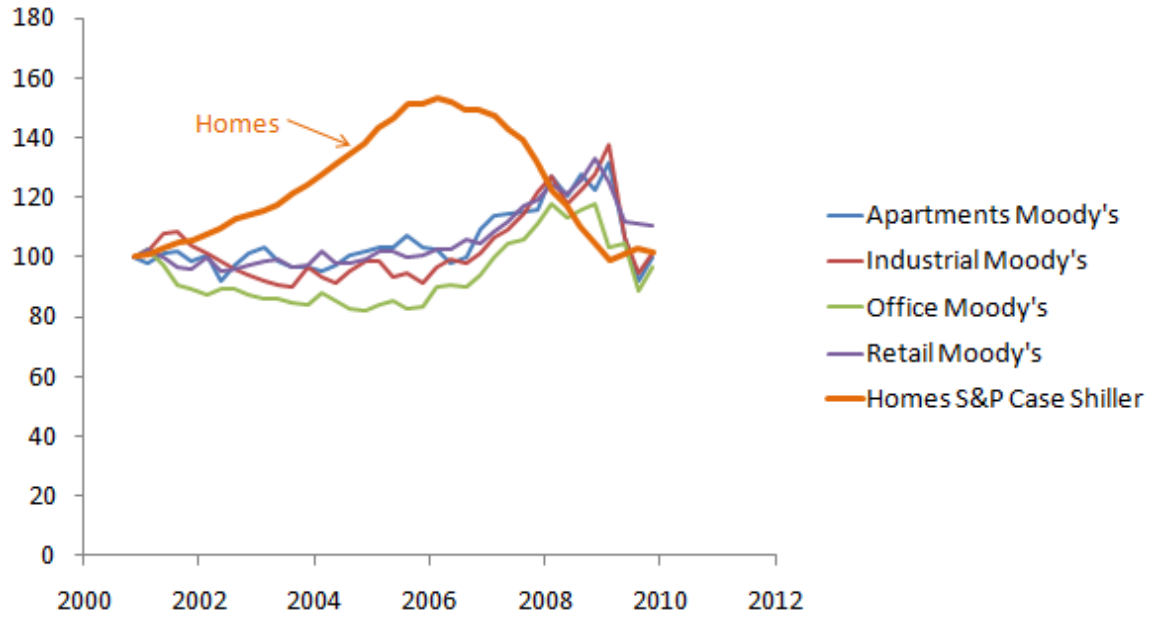


Figure 5. Moody's Commercial Property Price Index, and Case-Shiller Composite 10 Home Price Index, both corrected for inflation using CPI-U. Source: Authors' calculations using data from Moody's, Standard & Poors, and the U.S. Bureau of labor Statistics

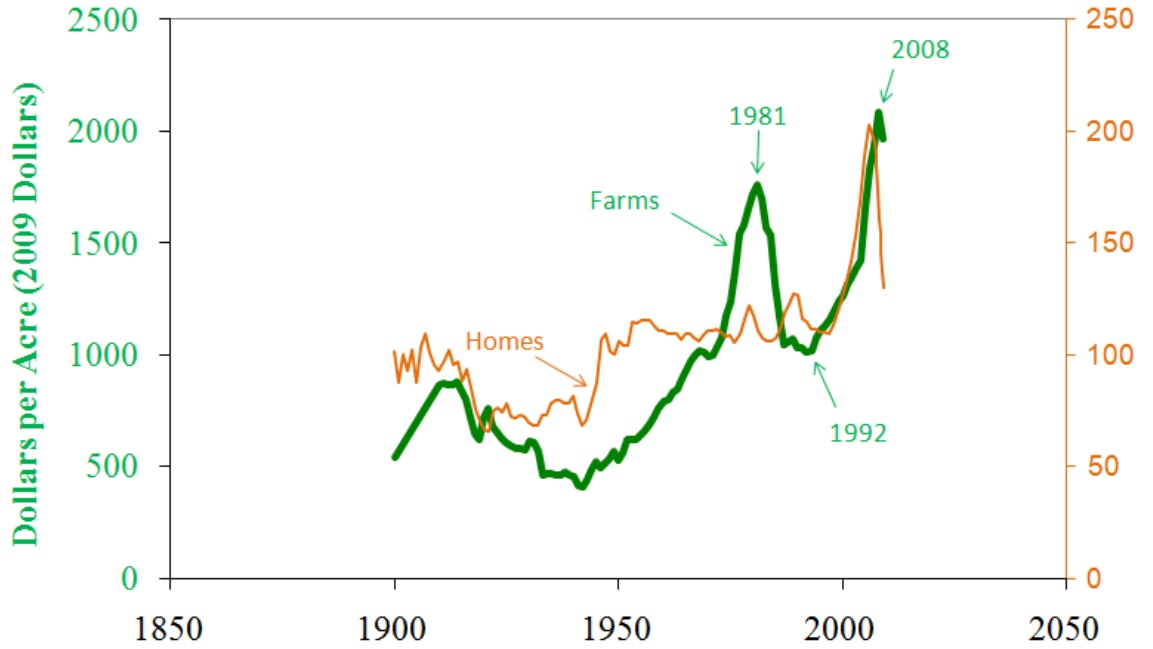


Figure 6. Average farm real estate value in 2009 dollars per acre and U.S. national home price index, 1890=100, both corrected for inflation, 1900-2009. Source: authors' calculations using data from United States Department of Agriculture, Shiller [2005], and U.S. Bureau of Labor Statistics.



Figure 7. 13. In deciding to buy your property, did you think of the purchase as an investment: 1. Not at all 2. In part 3. It was a major consideration. Source: Case-Shiller home buyer surveys as described in text. Note inverse scale on vertical axis (so that the plot represents positive investing sentiment).

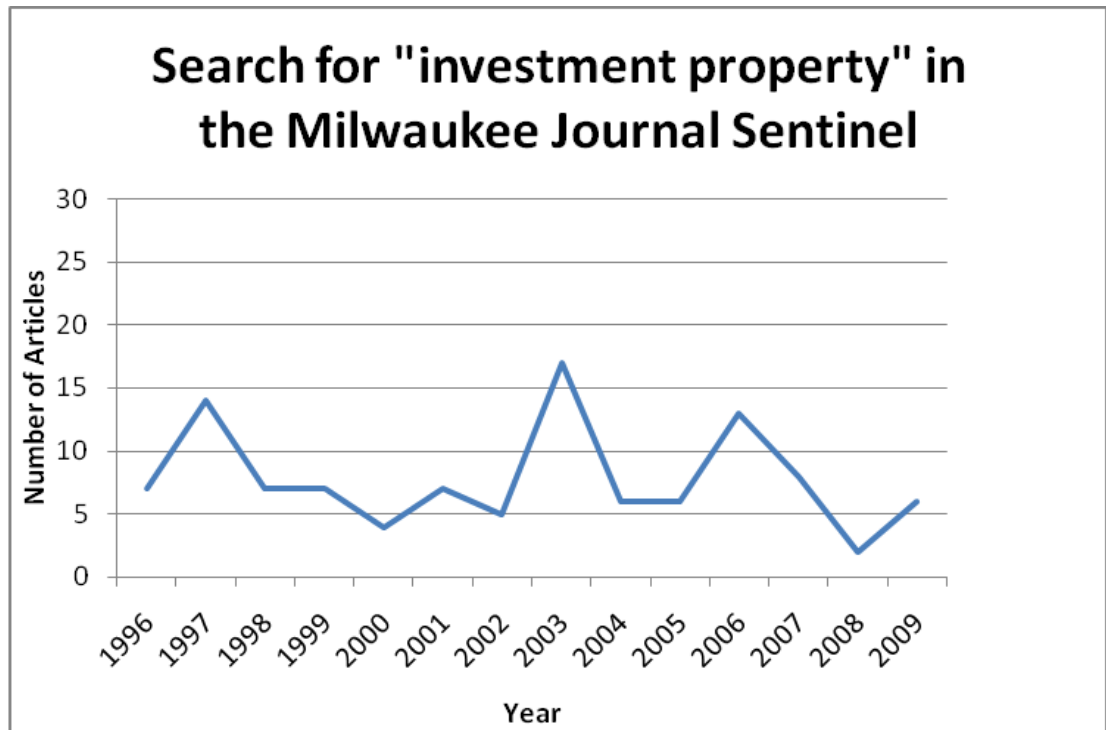


Figure 8. Search results for “investment property” in the Milwaukee Journal Sentinel.
Source: authors’ calculations using Lexis Nexis

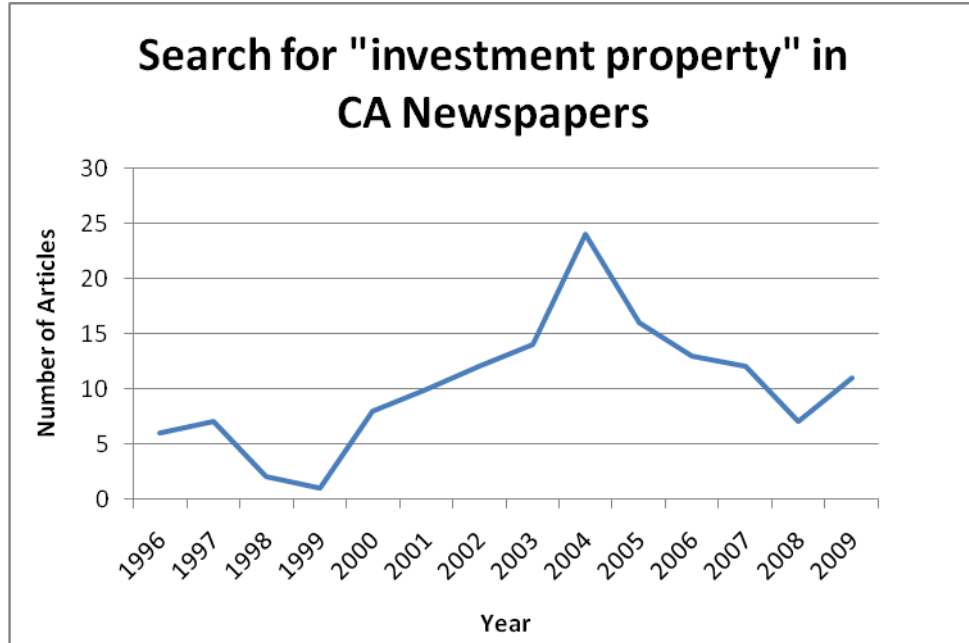


Figure 9. Search results for “investment property” in the L.A. Times, San Francisco Chronicle and Marin Independent Journal. Source: authors’ calculations using Lexis Nexis.

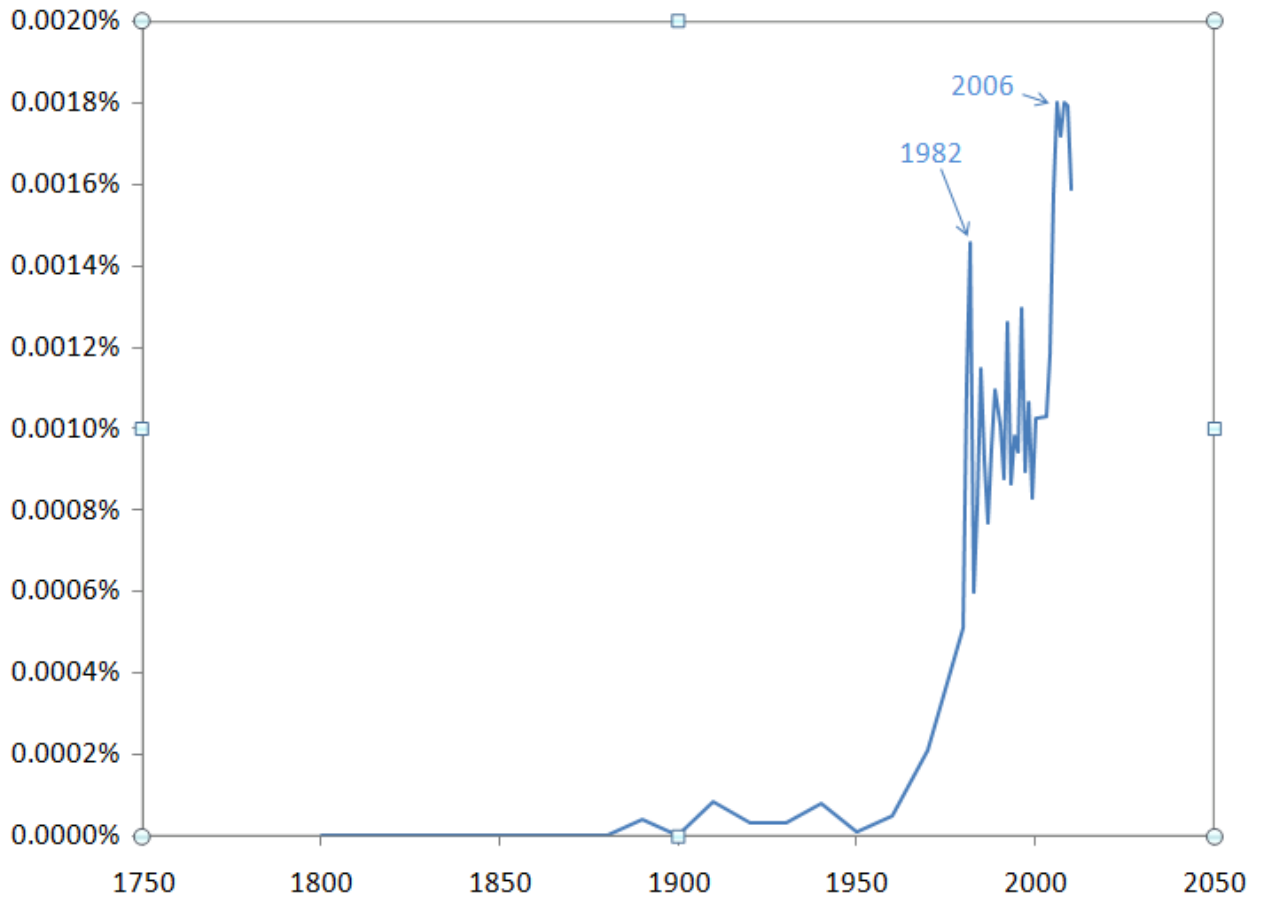


Figure 10. Estimated Percent of Articles with Words “Home as Investment” by Decade 1800-1970, annual 1980-2010. Source: authors calculations using Proquest Historical Newspapers (decadal averages through 1970s) and Lexis-Nexis (annual data starting 1980).

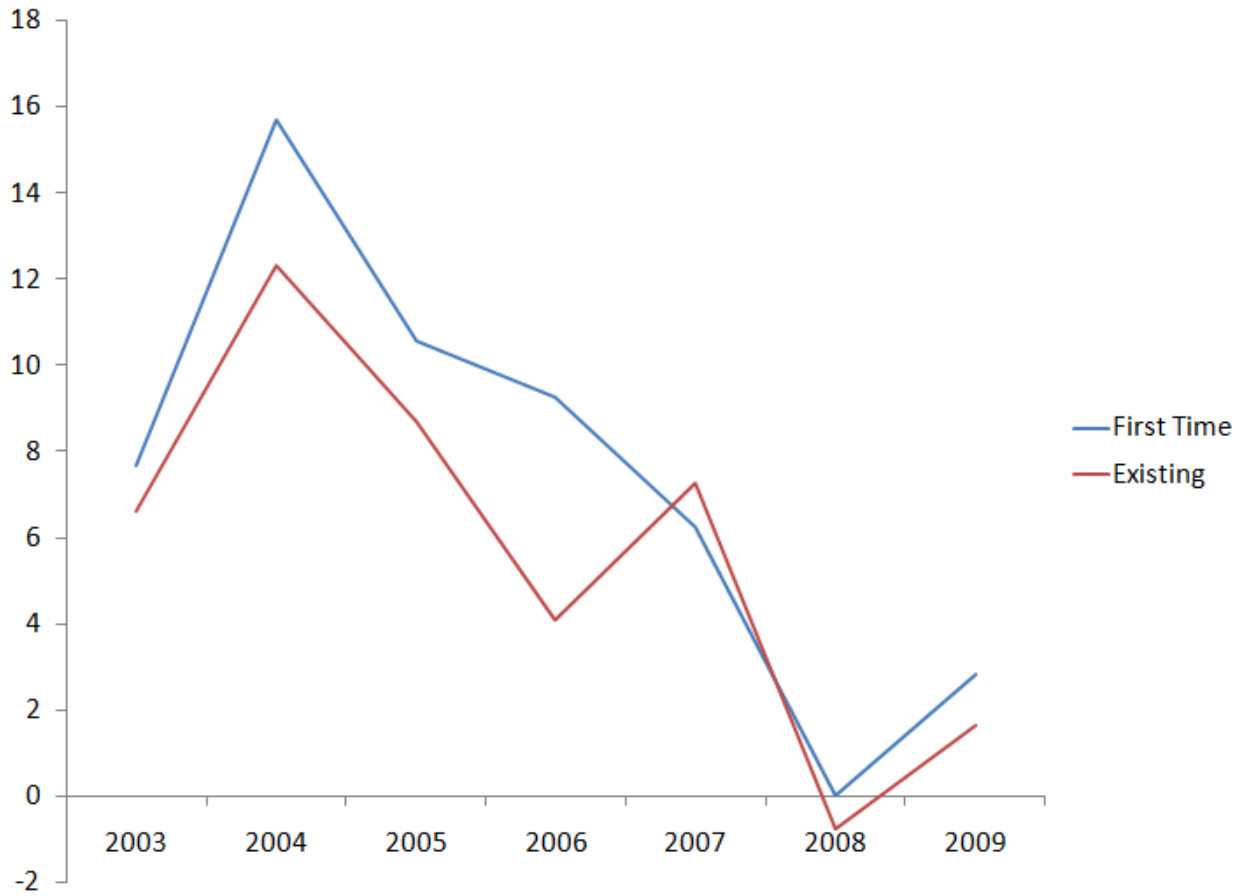


Figure 11. 6. How much of a change do you expect there to be in the value of your home over the next 12 months? _____% (Percent Change) 1. INCREASE 2. DECREASE
 Source: Case-Shiller home buyer surveys as described in text.

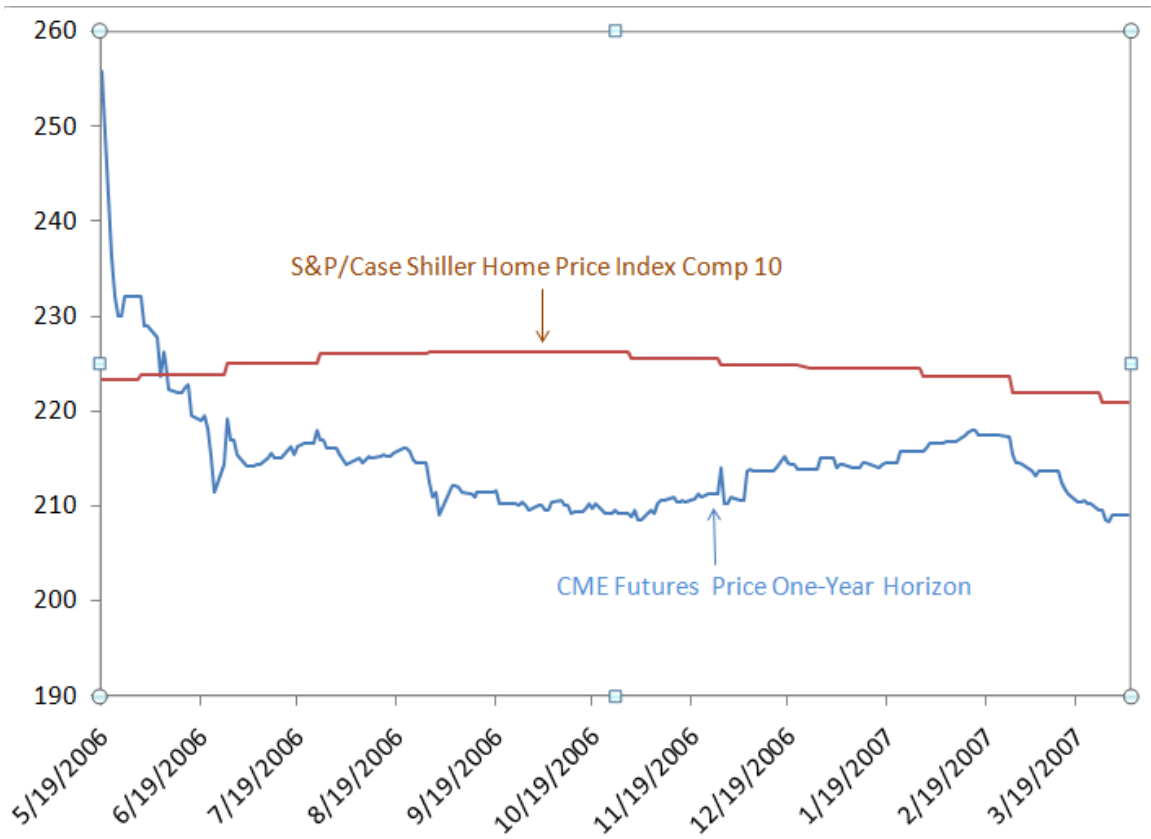


Figure 12. One-Year Futures Prices with Spot Prices, CME 2006-7

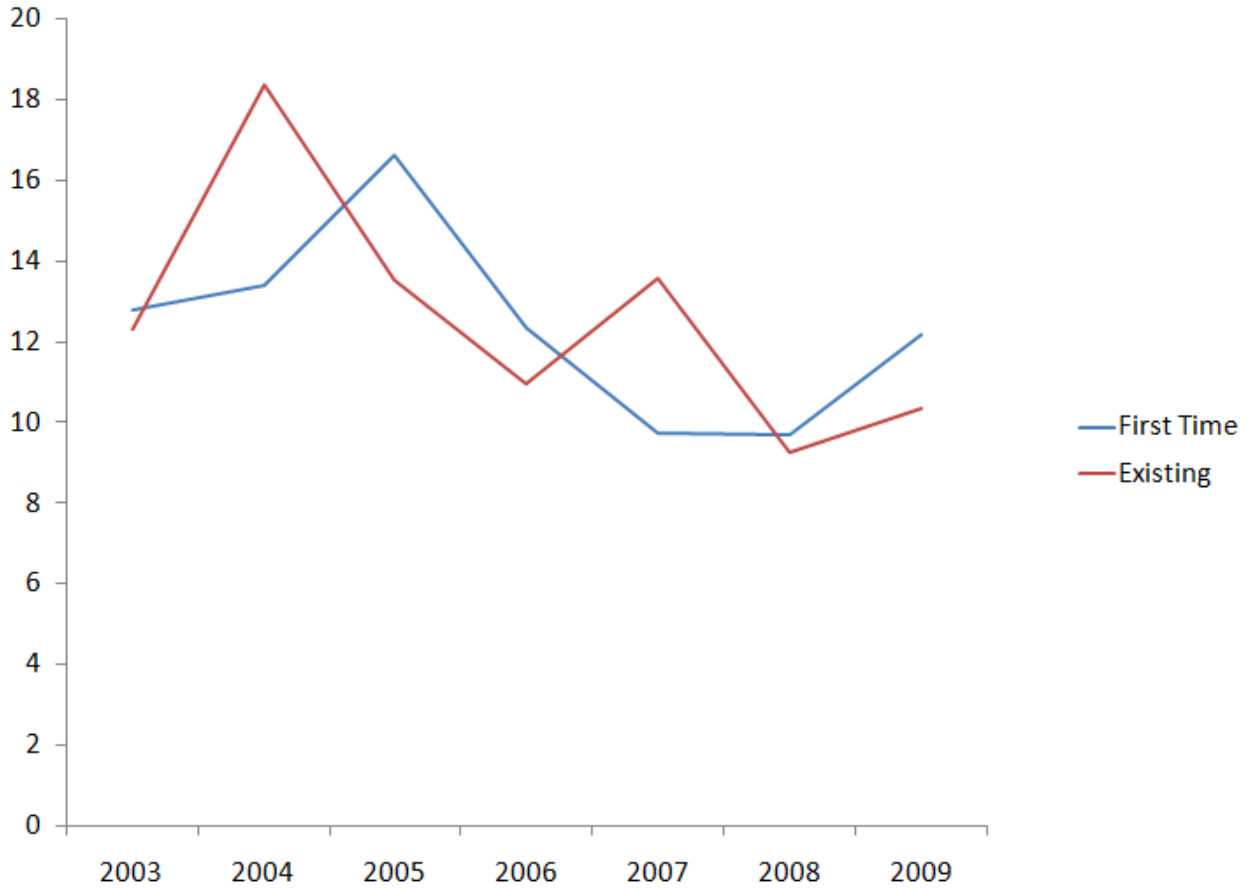


Figure 13. 7. On average over the next ten years how much do you expect the value of your property to change each year? _____% (Percent Change) 1. INCREASE 2. DECREASE. Source: Case-Shiller home buyer surveys as described in text.

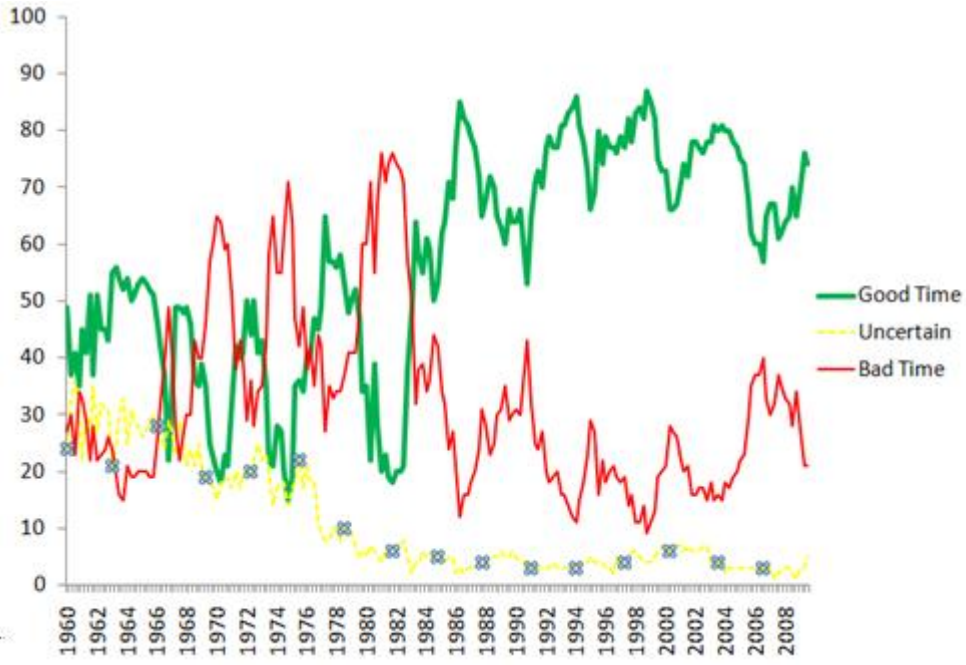


Figure 14. Michigan Institute for Social Research “Good Time to Buy a House” 1960-2009-III

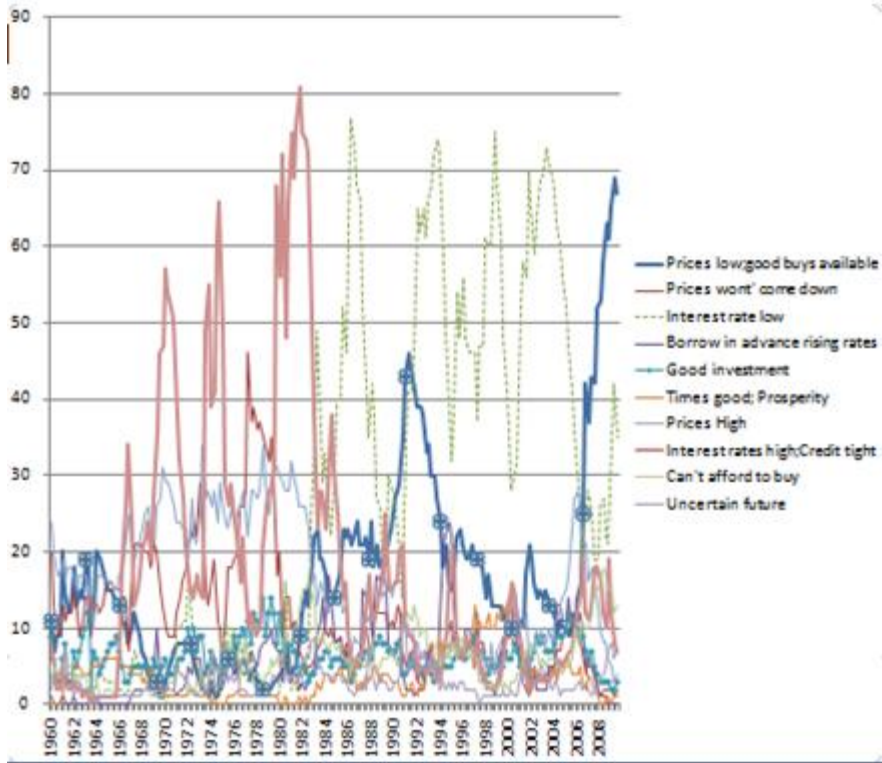


Figure 15. Reasons given for “good time to buy” question. Source: University of Michigan Institute for Social Research

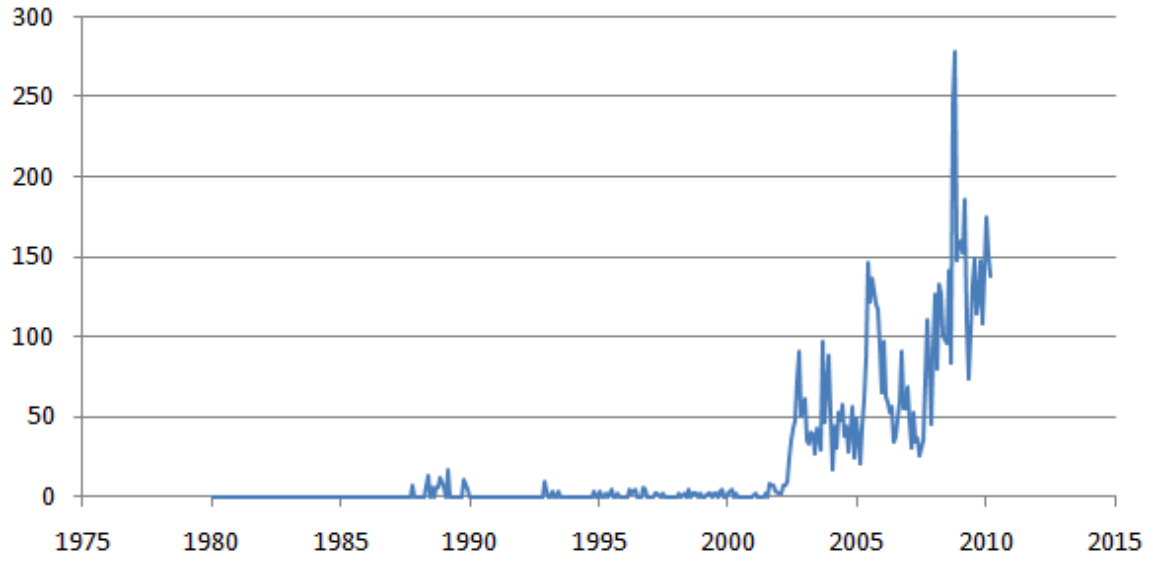


Figure 16. Scaled News Word Count for “Housing Bubble” Monthly Jan 1980-Mar 2010

References

- Akerlof, George A., and Rachel Kranton, *Identity Economics*, Princeton: Princeton University Press, 2010.
- Akerlof, George A., and Robert J. Shiller, *Animal Spirits: How Psychology Drives the Economy and Why It Matters for Global Capitalism*, Princeton: Princeton University Press, 2009.
- Brunnermeier, Markus, and C. Julliard, “Money Illusion and Housing Frenzies,” *Review of Financial Studies*, 2008.
- Case, Karl E., “The Real Estate Cycle and the Economy: Consequences of the Massachusetts Boom of 1984-7,” *Urban Studies*, 29(2):171-83, 1992.
- Case, Karl E., and Robert J. Shiller, “The Behavior of Home Buyers in Boom and Post-Boom Markets,” *New England Economic Review*, pp, 29-46, 1988, reprinted in Robert J. Shiller, *Market Volatility*, MIT Press, Cambridge MA, 1989, pp. 403-30.
- _____, “Is There a Real Estate Bubble?” *Brookings Papers on Economic Activity*, 2:2003, pp. 299-362.
- Case, Karl E., John M. Quigley and Robert J. Shiller, “Comparing Wealth Effects: The Stock Market vs. the Housing Market,” *Advances in Macroeconomics*, 2005.
- Durkheim, Émile, *The Rules of Sociological Method*, 1895, translated by W. D. Walls, Macmillan, 1982.
- Friedman, Milton, *Essays in Positive Economics*, Chicago: University of Chicago Press, 1953.
- Keynes, “The General Theory of Employment,” *Quarterly Journal of Economics*, 51(2):209-23, 1937.
- Shiller, Robert J., *Irrational Exuberance*, 2nd Edition, Princeton University Press, 2005.
- Wu, Lynn, and Erik Brynjolfsson, “The Future of Prediction: How Google Searches Foreshadow Rising Housing Prices and Quantities,” International Conference on Information Systems, ICIS 2009 Proceedings, Association for Information Systems, Year 2009.