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What Have They Been Thinking? Home Buyer Behavior in Hot and Cold Markets: A Ten-Year Retrospect

ABSTRACT This is an update of a paper that we published with Karl E. Case in *Brookings Papers on Economic Activity* in 2012. The paper analyzes data from our annual questionnaire survey of US home buyers to understand their expectations for future home price changes. We again see a period of rapid price increase as we did in our surveys a decade ago. We find that home buyers were generally well informed, and their short-run expectations were conservative, typically underreacting to the year-to-year changes in actual home prices. Housing bubbles can be seen in their long-term (annualized ten-year) home price expectations. The long boom that preceded the 2007–2009 crisis was associated with changing public understanding of speculative bubbles. During the early years of this decade-long rebound, both short- and long-term expectations were out of line with actual changes in prices. Since 2013, long-term expectations have converged with short-term expectations and actual price changes in most locations, and all three series have moved in synch. With the onset of COVID-19, in 2021 actual and anticipated appreciation diverged once again. This time, however, short-term expectations surged above long-term expectations but remained far below actual appreciation rates. Buyers presumed a coming slowdown in the market that has yet to materialize.

Conflict of Interest Disclosure: Robert J. Shiller works with the Chicago Mercantile Exchange on home price index futures and serves on the S&P CoreLogic Case-Shiller Index Committee of Standard and Poor's S&P Global. He also consults for Barclays Bank. The authors did not receive financial support from any firm or person for this paper or, other than the aforementioned, from any firm or person with a financial or political interest in this paper. Other than the aforementioned, they are currently not an officer, director, or board member of any organization with an interest in this paper.

Brookings Papers on Economic Activity, Spring 2022: 307–344

We report here on a continuation of our questionnaire survey study on the expectations and understandings of real estate markets by the general home buying public in the United States during the early years of the twenty-first century, 2003–2021, encompassing the 2007–2009 financial crisis and the COVID-19 pandemic. We last reported on our study ten years ago in this forum (Case, Shiller, and Thompson 2012). The aim, as before, is to better understand some extreme and surprising movements in home prices.

Our questionnaire survey was first conducted in 1988. It resumed in 2003 and has since been conducted annually at the Yale School of Management. It is the longest-running regular survey of residential real estate expectations. It also differs from all other housing expectations surveys in that it samples home buyers who purchased a house just prior to the survey date rather than public opinion at large. In markets with high costs of trading or other barriers to trading, it may be that market prices reflect the views of those people who are most enthusiastic or active in the market rather than the public at large.

The survey is unusual in that our paper questionnaire invites the participants to offer comments, in their own words, amid our questions. We then count how often they bring up certain concepts or narratives. In this sense, our survey is more like a focus group than most surveys. It allows participants to explain themselves, and for us to quantify their explanations.

We have attempted throughout to keep our questions in everyday language that people commonly use. We do not ask about real prices or real interest rates, even though economists would like to know what people think about such things. The reality apparently is that most people don't think about such things at all. In all of our questionnaires through 2021, only one respondent ever left a comment using the phrase "real price," and not a single respondent left a comment using "real interest rate."

People often sit for years thinking that they should move to a different house or from renting to owning but wait for some stimulus to push them to actually make the change. There is no paradox in seeing maximal price increases over the last year amid only moderate expectations for future long-term price increases. The upswing in home prices is not so improbable if we reflect that these have been disruptive times (with the aftermath of the 2007–2009 financial crisis and then the COVID-19 pandemic). Lives were disrupted by unemployment and by the stress of lockdowns, quarantines, and deaths in the family, which have left people stewing about their living situations. Family stresses have been rife, and these have been matched by rising crime rates and political polarization. These pressures may be

driving some people to find the perfect house with space for meaningful new and different activities, enough to dominate sales of homes. There may soon be currents of change in the housing market caused by rising interest rates. In addition, the impact of the war in Ukraine is beyond the purview of typical econometric forecasting models and thus difficult to predict.

If we really want to understand why home prices have surged, we need to look at the people who paid these prices. We are in just such a home price boom now. Home prices have been soaring lately. The monthly S&P CoreLogic Case-Shiller U.S. National Home Price NSA Index increased by 114 percent in the decade from the February 2012 post–financial crisis bottom to February 2022.[1] In real, CPI inflation–corrected terms, this was a 71.9 percent increase. In one year alone, from August 2020 to August 2021, the national index increased 20 percent. In real terms, this was a 14 percent increase. This was bigger than any year during the housing boom that ended in a crash at the time of the Great Recession or the financial crisis of 2007–2009. According to our data, this was the biggest one-year increase since 1946, when soldiers returning from World War II found an inadequate supply of houses. The beginning of the baby boom was then driving demand for more floor space, but the War Production Board had shut down most housing construction to free up resources for the war. We might call the COVID-19 pandemic a sort of war, but this war is not over and this time there is no baby boom: the birth rate is unusually low. It is also a time when questions are being asked about the suitability of location and layout of existing homes in the post-pandemic economy, questions which some say ought to depress existing home prices.

This housing boom has certainly been widely noted despite the pandemic. Candidate explanations for this boom of course often refer to expansionary monetary policy. The Federal Reserve kept the effective federal funds rate near zero for a record seven years, from 2009 to 2016 and as low as seven basis points at the end of 2011, just before the current housing boom took flight. In March 2020, the Federal Reserve again cut the federal funds rate to near zero, just as the World Health Organization declared COVID-19 a pandemic. Congress then passed the $2.2 trillion Coronavirus Aid, Relief, and Economic Security (CARES) Act. But these factors are not likely thought of as the exclusive causes of the boom. The crisis ultimately began from the people, not stabilization authorities. Their understanding, their motives for action, must also be understood.

1. S&P Dow Jones Indices, "S&P CoreLogic Case-Shiller U.S. National Home Price NSA Index," https://www.spglobal.com/spdji/en/indices/indicators/sp-corelogic-case-shiller-us-national-home-price-nsa-index/#overview.

Turning points in economic series do not correspond closely to major policy announcements. For example, the first-time home buyer tax credit—10 percent of purchase price capped at $7,500—created by the Housing and Economic Recovery Act of 2008 (and expanded to a cap of $8,000 in the American Recovery and Reinvestment Act signed by President Obama in 2009) softened the blow to the housing market in 2010, bringing in new home buyers and boosting prices. However, the expansion was short-lived. It expired in 2010, causing prices to slip again in 2011, before the current housing boom began in 2012. The Federal Reserve's announcement in March 2020 of an extreme program of monetary stimulus and the passage of the CARES Act that same month appear to have arrested the sharp March-April slide in stock prices but do not explain the further rise to new highs by the end of 2021. A number of federal bills, if signed into law, would have directly supported the housing market. A bill entitled the First-Time Homebuyer Act of 2021, which would raise the maximum credit to $15,000, was introduced in the House of Representatives on April 28, 2021. The bill never passed the Senate. The Build Back Better Act of 2021 would have raised the maximum credit to $20,000. The possibility that something like one of these bills, or some state bills, would pass must have encouraged some home buyers. We do see mention of a home buyer tax credit in the comments written by respondents on our questionnaires. However, it was mentioned just seventeen times and limited to the 2010–2012 survey responses.

To help sort through the reasons for the price increase, we turn to our more recent home buyer surveys. The survey asks a random sample of recent home buyers for their thoughts, impressions, and expectations. Our 2012 paper aimed to give better understanding of the path of the housing market before, during, and after the financial crisis of 2007–2009. The objective of this 2022 update is to analyze the perceptions of home buyers over the current decade-long housing recovery.

The natural question then is to explore similarities and differences of the situation in the housing boom leading to the 2007–2009 crisis and now. Fortunately, our surveys carry a lot of information about what people were actually thinking in crisis and noncrisis times. We need to consider their thinking to complement the understanding offered by the literature on the 2007–2009 financial crisis. We noted in our 2012 paper that there have been many theories of the financial crisis and its connection to pricing anomalies in real estate. There are theories that emphasize complacency of lenders about the riskiness of their loans (Mian and Sufi 2009; Demyanyk and Van Hemert 2011) and theories relating to money illusion at a time of changing inflation rates (Brunnermeier and Julliard 2008). Add to these theories about

rating agencies' conflict of interest (Mathis, McAndrews, and Rochet 2009) and theories about failures to regulate the shadow banking system (Gorton 2010). But these theories of complacency or failures to regulate must themselves be understood in terms of changing thinking of the general public.

I. Our Survey of Home Buyers

Our first survey, mailed in the late spring of 1988, consisted of a ten-page questionnaire, which we sent to a random sample of 500 home buyers in each of four locations within metropolitan areas around the country: Alameda County, California (Oakland and much of the East Bay, in the San Francisco-Oakland-Fremont, CA Metropolitan Statistical Area); Middlesex County, Massachusetts (Cambridge and the areas north and west, in the Boston-Cambridge-Quincy, MA-NH Metropolitan Statistical Area); Milwaukee County, Wisconsin (the core of the Milwaukee-Waukesha-West Allis, WI Metropolitan Statistical Area), and Orange County, California (which includes Anaheim and Irvine in the southern part of the Los Angeles-Long Beach-Santa Ana, CA Metropolitan Statistical Area). These four were chosen to represent what were viewed at the time as two "hot" markets (Los Angeles and San Francisco), a "cold" (post-boom) market (Boston), and a relatively stable market (Milwaukee).

Annual surveys, which began in 2003, followed the model of the 1988 survey. The questionnaires were identical except for the names of the local areas across the four survey locations. Participation was limited to those who had actually closed on a home that spring. In a typical year, only about 5 percent of the nationwide housing stock changes hands. Thus, our respondents do not necessarily represent the universe of homeowners, home seekers, or home sellers.

The response rate, shown in table 1, to that 1988 questionnaire survey was strong: of 2,030 surveys mailed, 886, or 43.6 percent, were ultimately completed and tabulated. Case and Shiller (1988) 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 having any knowledge of fundamentals. This means that housing price booms will persist as home buyers become destabilizing speculators" (45). In addition, we found significant evidence that housing prices were inflexible downward, at least in the absence of severe and prolonged economic decline.

After a gap of fifteen years, we replicated the 1988 survey for the *BPEA* conference in the same four counties. We have repeated the questionnaire

Table 1. Home Buyers Survey Response Rates, 1988–2021

Year	*Surveys returned*	*Response rate (%)*
1988	886	43.6
2003	705	35.3
2004	456	22.8
2005	441	22.1
2006	271	13.6
2007	300	15.0
2008	545	27.3
2009	370	18.5
2010	375	18.8
2011	319	16.0
2012	332	16.6
2013	368	18.4
2014	248	12.4
2015	296	14.8
2016	299	15.0
2017	320	15.9
2018	289	14.5
2019	284	14.2
2020	329	16.5
2021	266	13.3
All years	7,699	19.2

Source: Authors' calculations.

survey in the late spring of each year since then. Except for the addition or deletion of some new questions at the end, the questionnaire has remained almost exactly the same in all surveys. In Case, Shiller, and Thompson (2012), which went to press just as the housing recovery began to take shape, we noted that short-term expectations of home prices had strengthened while long-term expectations had weakened. We concluded "although a recovery may be plausible . . . we do not see any unambiguous indication in our expectations data of a sharp upward turnabout in demand for housing" (293).

We now have completed the process a total of twenty times, and this paper presents a first look at the aggregate results. The response rate has varied over time. It has remained below 20 percent since 2009. In 2014, it reached a low of 12.4 percent. The 2021 response rate was 13.3 percent.

II. Home Buyers Are Knowledgeable about the Latest Year's Actual Price Change

In table 2 we compare the actual behavior of home prices in the four metro areas with what respondents thought was happening in their area at the time. For each metro area across all twenty survey years, we calculated the

Table 2. Correlation between Perceived and Actual Price Trends by Survey Location 2003–2021

	Actual price trends				
Perceived price trend	*Alameda County, CA*	*Middlesex County, MA*	*Milwaukee County, WI*	*Orange County, CA*	*All*
Rising rapidly	0.735	0.783	0.826	0.790	0.749
Falling rapidly	–0.831	–0.647	–0.697	–0.697	–0.729

Source: Authors' calculations.

Note: Results are simple correlations for 2003–2021 between the percentage of respondents in the indicated location who gave the indicated response and the actual percentage change in the S&P CoreLogic Case-Shiller Home Price Index for that metropolitan area (measured from the second quarter of the year before to the second quarter of the survey year). Data for each location and pooled across all twenty survey years.

correlation of the actual year-to-year change in the second-quarter average of the local S&P CoreLogic Case-Shiller home price indexes with the percentage of respondents in the corresponding survey area in that year's survey who said prices were "rising rapidly" and with the percentage who said "falling rapidly." If buyers were well informed, one would expect to see a high positive correlation of the year-over-year price increase with the percentage saying "rising rapidly" and a high but negative correlation with the percentage who said "falling rapidly."

The simple correlation coefficients were high in 2012 when the housing recovery began. The additional ten years of survey data have not altered this relationship. In 2021, the correlation coefficients were close to 2012 levels. These measures are high in all four locations, and all have the correct sign, indicating that respondents' perceptions of actual recent price changes have been largely on target for the past twenty years.

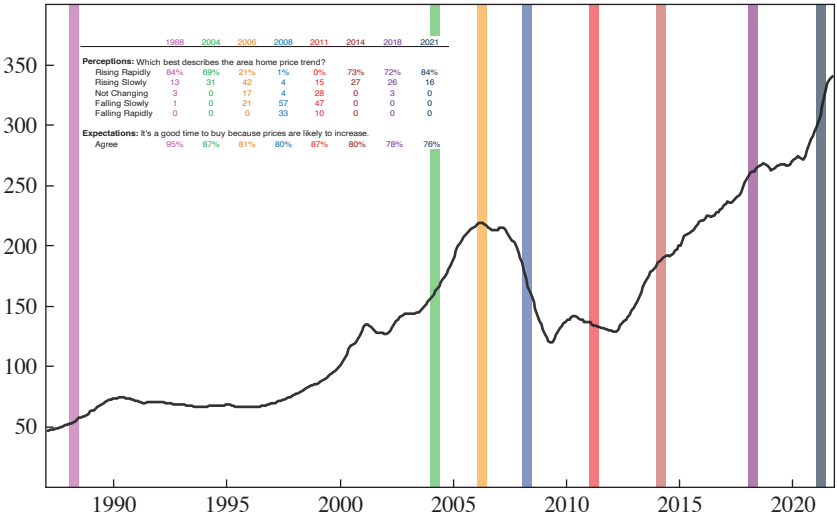
Figure 1 provides more detail. It plots the nominal S&P CoreLogic Case-Shiller home price indexes for all four metro areas since 1987; the tables within each panel report the full breakdown of responses to the question about price trends (question 13 in the questionnaire) and expectations (question 26E) in eight of the annual questionnaire surveys (whose dates are indicated in the figure by vertical bars). In all four locations the responses reflected a reasonable knowledge of what was happening at the time of the survey. There was not always consensus, but there was an extraordinary consistency in the results across time and between metro areas.

In Case, Shiller, and Thompson (2012) we noticed a generally realistic expectation of the next year's price increase in the local county but not always so sober an evaluation of the next ten years. Looking at figure 1, one sees that the home price index is quite smooth over time, in contrast to

Figure 1. S&P CoreLogic Case-Shiller Home Price Indexes, 1987–2021

Alameda County, CA (San Francisco metro area)

Index, January 2000 = 100



Middlesex County, MA (Boston metro area)

Index, January 2000 = 100

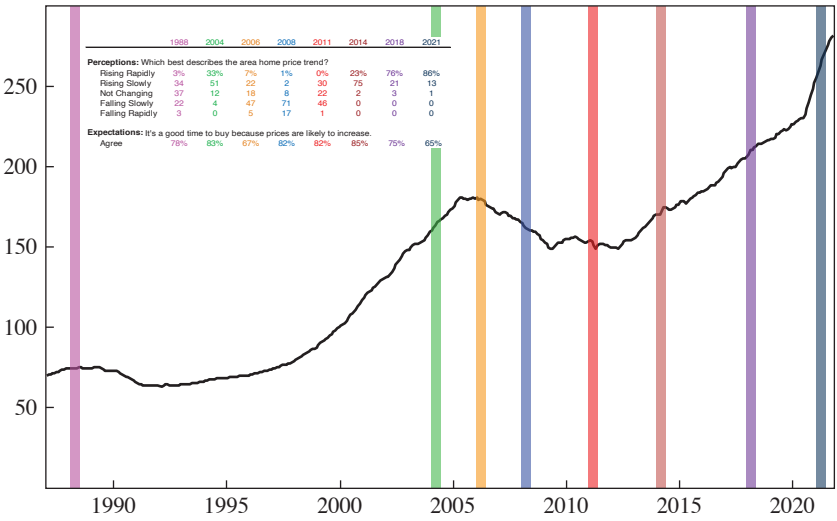
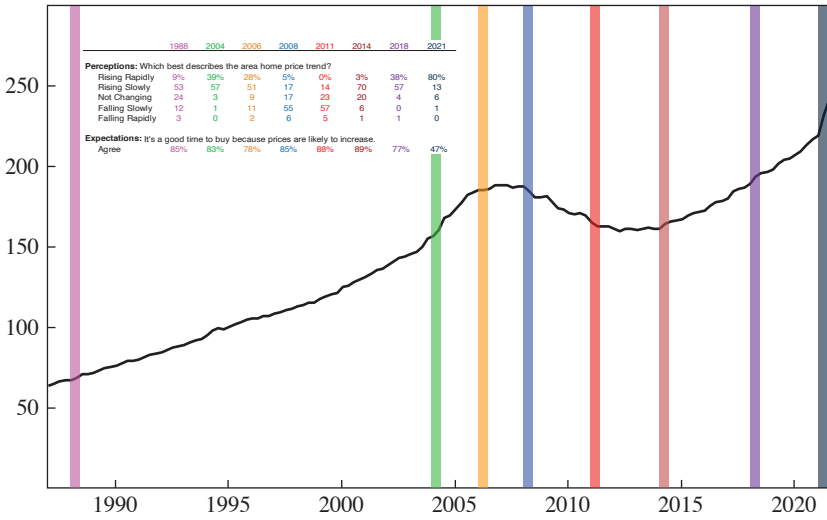


Figure 1. S&P CoreLogic Case-Shiller Home Price Indexes, 1987–2021 (*Continued*)

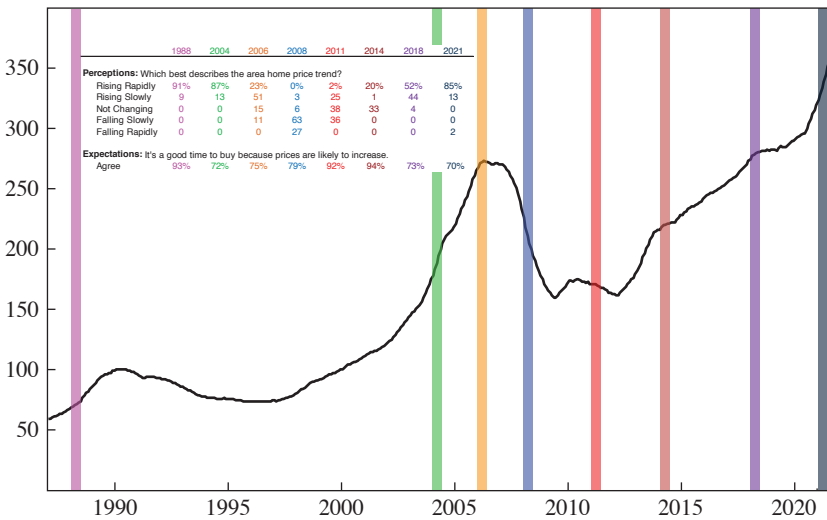
Milwaukee County, WI

Index, January 2000 = 100



Orange County, CA (Los Angeles metro area)

Index, January 2000 = 100



Sources: S&P CoreLogic Case-Shiller and authors' calculations.

Note: Vertical lines indicate quarters in which the home buyer survey perception and expectations are shown. The questions in each table are from survey questions 13 and 26E; the full questionnaire is available at https://www.brookings.edu/bpea-articles/what-have-they-been-thinking-homebuyer-behavior-in-hot-and-cold-markets-a-ten-year-retrospect/.

stock market prices which tend to be very choppy, even from day to day. But longer-term price changes do not look easy to forecast.

From 2015 forward, expected one-year and annualized ten-year home price changes were closely aligned with actual price movement which continued to trend upward. Home buyers were optimistic about price trends. Over 90 percent of respondents in each year from 2015 to 2018 reported prices were trending higher. This was true in Orange County, CA, Alameda County, CA, and Middlesex County, MA. In 2015, 75 percent of Milwaukee County, WI, home buyers viewed prices as moving higher. This share steadily rose over the coming years and by 2018, over 95 percent of buyers in all four counties viewed prices as trending upward.

In 2019, home buyers' optimism began to moderate. Respondents were becoming increasingly apprehensive about another bubble. While 94 percent of Milwaukee home buyers reported prices were trending higher, the shares fell to 88 percent in Middlesex, 74 percent in Alameda, and 68 percent in Orange. These shares remained relatively stable in 2020, the first year of COVID-19. In 2021, however, nearly 100 percent of respondents in each county viewed prices as trending higher.

Figure 1 also shows results from a question asking whether they agreed with the statement, "It's a good time to buy a home because prices are likely to rise in the future"; the vast majority of respondents said yes. On average, through 2020, 85 percent of home buyers agreed with the statement. In every single survey in every county through 2020, the share agreeing with the statement was never less than 67 percent and in most it was over 80 percent. The unanticipated jump in prices in 2021 made buyers a bit more cautious with expectations of future appreciation falling below the previous low in all four counties. Still, the data for Orange (70 percent), Alameda (76 percent), and Middlesex (65 percent) show that buyers remained optimistic. Respondents in Milwaukee were less so, with just 47 percent expecting prices to rise in the future. In all our surveys, the questions about expectations come early in the questionnaire, so that respondents' thinking will not be influenced by narratives explored there.

Question 6 asks respondents how much they think their home is likely to increase or decrease in value over the next twelve months. Question 7 asks on average what they think will happen to the value of their home each year over the next ten years. The wording of these questions has never changed, nor has there been a change in preceding questions, though underlining was added to "on average" and "each year" after 1988, until 2013 when the underlining was omitted. Table 3 tabulates the answers for every year from 2003 through 2021.

Table 3. Short-Term and Long-Term Home Price Expectations, by Survey Location and Year, 2003–2021

	Alameda County, CA	*Middlesex County, MA*	*Milwaukee County, WI*	*Orange County, CA*	*All*
Q6: "How much of a change do you expect there to be in the value of your home over the next 12 months?"					
2003	6.9	4.4	5.5	9.0	6.3
2004	8.4	6.7	5.7	12.4	7.9
2005	9.7	6.4	6.6	8.8	7.7
2006	6.2	1.4	4.8	5.1	3.9
2007	4.7	2.8	6.2	–0.1	3.5
2008	–1.4	–0.6	2.0	–2.3	–0.5
2009	2.2	1.9	1.2	0.6	1.5
2010	3.8	2.2	2.8	3.8	3.0
2011	1.4	1.9	1.2	0.3	1.2
2012	4.4	2.2	2.3	3.6	3.1
2013	8.8	4.4	2.9	7.5	5.7
2014	10.0	4.1	5.3	6.1	5.9
2015	8.0	4.9	3.1	5.3	5.3
2016	5.7	4.2	3.6	6.0	4.7
2017	6.1	5.6	4.5	6.1	5.5
2018	7.0	5.7	5.0	4.6	5.6
2019	5.1	4.6	4.5	2.7	4.3
2020	2.2	3.6	4.5	3.4	3.4
2021	6.1	6.1	7.5	6.4	6.3
*Q7: "*On average *over the next ten years how much do you expect the value of your property to change* each year*?"*					
2003	9.2	6.5	6.1	10.4	7.6
2004	12.7	8.7	8.8	13.3	10.5
2005	10.2	8.3	10.5	10.4	9.6
2006	7.7	7.2	8.7	8.1	7.7
2007	9.1	5.3	7.2	7.6	7.0
2008	7.6	6.4	6.4	9.0	7.3
2009	7.0	5.7	7.7	6.3	6.6
2010	9.8	4.6	6.0	6.0	6.4
2011	6.4	3.8	4.4	7.1	5.2
2012	4.4	3.0	3.2	5.0	3.8
2013	4.9	3.1	3.5	5.4	4.1
2014	7.4	3.8	4.2	7.4	5.3
2015	6.2	3.8	3.0	7.1	4.6
2016	4.7	4.8	3.4	6.0	4.4
2017	5.5	4.3	2.9	6.4	4.5
2018	5.3	3.7	3.4	3.6	3.9
2019	6.2	4.2	3.1	4.8	4.4
2020	3.9	3.1	3.3	4.6	3.7
2021	4.4	4.1	4.0	4.5	4.1

Source: Authors' calculations.

Note: For question 6, means are 10 percent trimmed means, that is, the highest and lowest 5 percent of responses were dropped before calculating the mean. For question 7, values ten times or more from question 6 were set to question 6 values, and 10 percent trimmed means were then calculated. Starting with the 2013 surveys, the words *on average* and *each year* in question 7 on the survey were underlined.

III. Changing Patterns of Short-Term versus Long-Term Price Expectations

The numbers in table 3 are trimmed means, calculated after dropping the top 5 percent and the bottom 5 percent of observations. Prior to trimming, we set any question 7 values that were ten or more times the question 6 response to the question 6 value. This was done to correct for potential misinterpretation of question 7. We then did the trimming because a fair number of responses suggested that the respondent did not understand the question or was simply giving a frivolous answer.[2] To some economists the expectation of price increases in excess of 8 percent per year for ten years, as occurs at least once in each of the four locations, will seem absurd. But when one computes the actual rates of nominal appreciation in the S&P CoreLogic Case-Shiller 10-City Home Price Index (a nationwide measure) from 1996 to 2006, just before the peak, it turns out to be a little above 10 percent per year on average for that ten-year period. Indeed, more than half of our city-specific indexes show ten years of returns averaging in excess of 10 percent per year. This was taking place precisely as the expectations that we are describing in our survey were being formed.

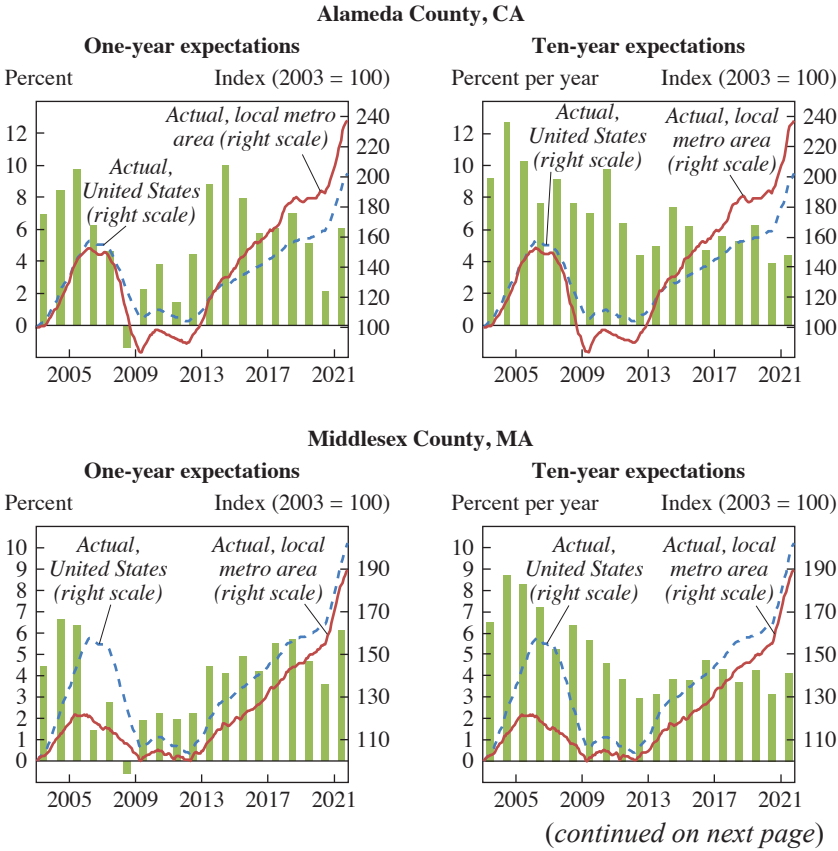
In figure 2 the bars in each of the left-hand panels show, for each year from 2003 to 2021, the trimmed mean of our respondents' one-year expectation for home prices in each of our four survey locations, with the S&P CoreLogic Case-Shiller 10-City Home Price Index shown on the scale to the right. The right-hand panels show the trimmed means of our respondents' annualized ten-year expectations, again by location.

In Case, Shiller, and Thompson (2012), large differences were observed between the one-year and the ten-year expectations. The one-year expectations are much more volatile and at times negative, whereas the ten-year expectations followed a simpler pattern, peaking around 2004 and then only gradually declining.

Both kinds of expectations are important. If one-year expectations are high, home sellers will have an incentive to wait another year to sell while buyers will have an incentive to buy now rather than next year. But when it comes to the decision of whether to buy at all, and comparing the expected rate of return on the investment with the mortgage rate, the longer-term expectations are likely to be more important.

2. For a full discussion, see the appendix to Case, Shiller, and Thompson (2012).

Figure 2. Expected Home Price Growth and Actual Home Prices, 2003–2021



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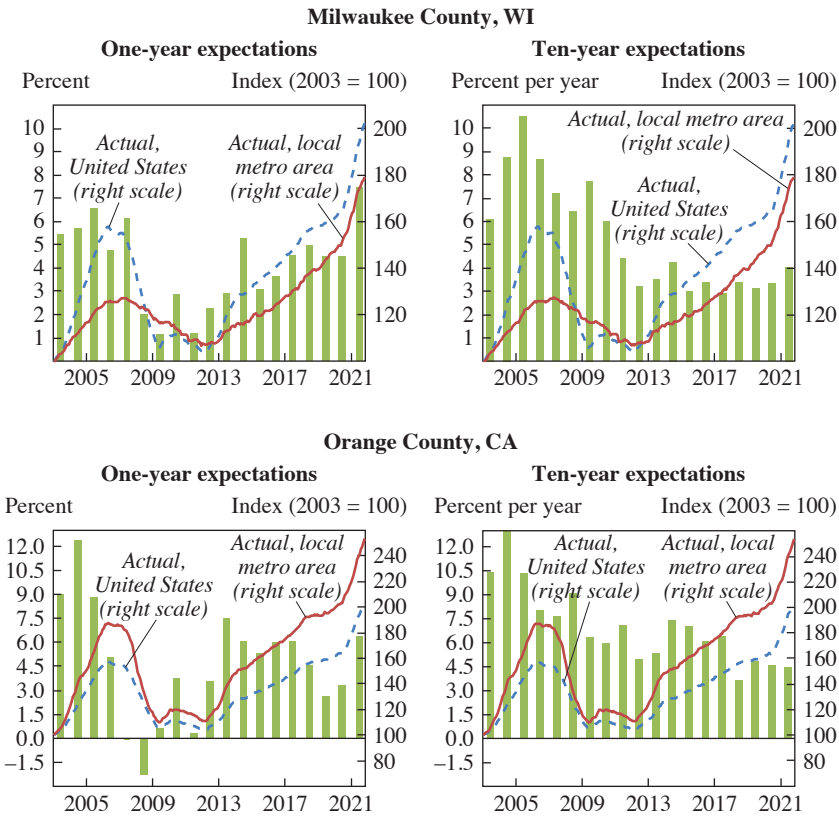
When we presented our 2012 paper at the *BPEA* conference, discussants questioned whether respondents understood the question about ten-year expectations. They may not be comfortable with defining an average of one-year expectations for ten years. So in our survey the following year, we asked respondents to translate their annualized ten-year expectation to a total ten years' increase. We put an additional question 7B at the very end of the 2013 questionnaire, so as not to change the context of other questions on the questionnaire: "7B. (Clarifying question 7 answer) How much higher do you expect home prices to be, in percentage terms, in 10 years?" In all four counties, 232 respondents answered both question 7 and question 7B. Of these, 22 percent gave the same answer on both, suggesting that they misunderstood the question. The average over the four counties of the question 7B median answer to the question 7 median answer was 6.1. Only

Figure 2. Expected Home Price Growth and Actual Home Prices, 2003–2021 (*Continued*)



Sources: S&P CoreLogic Case-Shiller and authors' calculations.
Note: Bars indicate expected growth (left scale).

one respondent mentioned compounding. This sole respondent said that the ratio should be over 10, because of the power of compounding.

Table 4 presents yet another way of looking at the expectations data. Here we look at expectations since 2003, both short- and long-term, and at actual rates of change in nominal home prices annually from 1996 through 2021 for Orange and Middlesex Counties.

When asked to project how much their home's value would increase or decrease in the next twelve months as well as in each of the following ten years, home buyers in both locations were optimistic. But even these expectations were not unreasonable given the performance of the market before 2006. Price increases in Orange County were actually accelerating

Table 4. Actual versus Expected Short- and Long-Term Home Price Expectations in Orange, CA, and Middlesex, MA, Counties

	Expected annual value increase			
Year	*Next year (%)*	*Annualized next ten years (%)*	*Actual one-year price increase (%)*	*Implied value of a home worth $100,000 in 2000*
Orange County, CA				
2000	n.a.	n.a.	—	100,000
2001	n.a.	n.a.	9.8	109,801
2002	n.a.	n.a.	11.8	122,727
2003	9.0	10.4	18.3	145,130
2004	12.4	13.3	31.2	190,457
2005	8.8	10.4	18.6	225,916
2006	5.1	8.1	15.1	259,942
2007	–0.1	7.6	–3.2	251,605
2008	–2.3	9.0	–24.3	190,505
2009	0.6	6.3	–19.7	153,027
2010	3.8	6.0	8.8	166,465
2011	0.3	7.1	–3.1	161,350
2012	3.6	5.0	–2.2	157,723
2013	7.5	5.4	19.1	187,794
2014	6.1	7.4	12.1	210,556
2015	5.3	7.1	6.0	223,154
2016	6.0	6.0	5.5	235,381
2017	6.1	6.4	5.4	248,123
2018	4.6	3.6	7.7	267,204
2019	2.7	4.8	1.6	271,367
2020	3.4	4.6	3.8	281,685
2021	6.4	4.5	16.8	328,987
Middlesex County, MA				
2000	n.a.	n.a.	—	100,000
2001	n.a.	n.a.	16.4	116,359
2002	n.a.	n.a.	10.7	128,809
2003	4.4	6.5	11.2	143,235
2004	6.7	8.7	9.5	156,846
2005	6.4	8.3	8.4	170,062
2006	1.4	7.2	–1.3	167,824
2007	2.8	5.3	–4.1	160,952
2008	–0.6	6.4	–5.9	151,460
2009	1.9	5.7	–6.9	141,003
2010	2.2	4.6	4.3	147,093
2011	1.9	3.8	–3.3	142,244
2012	2.2	3.0	–0.2	141,985
2013	4.4	3.1	7.3	152,324
2014	4.1	3.8	8.0	164,452
2015	4.9	3.8	2.3	168,186
2016	4.2	4.8	5.2	177,003
2017	5.6	4.3	6.3	188,076
2018	5.7	3.7	6.8	200,798
2019	4.6	4.2	3.7	208,177
2020	3.6	3.1	4.0	216,477
2021	6.1	4.1	17.4	254,061

Sources: S&P CoreLogic Case-Shiller and authors' calculations.

after 2000, and long-term expectations remained solid as long as prices continued to rise. In general, expectations were not as volatile on the upside and less so on the downside. On the upside, they underestimated the magnitude of the increase in 2004 by 19 percent. When prices started falling sharply in 2007 and 2008, buyers continued to expect healthy 56 appreciation each year over the next ten years, and even their one-year expectations resisted the idea that the severe price drops that were already occurring would continue into the next year. They underestimated the scale of the decline by more than 20 percent in 2008. The range of actual price changes from 2003 to 2009 varied from –24.3 percent to 31.2 percent, a 56 percentage point range. The expected one-year (15 percent) and annual ten-year (7 percent) were far lower. Middlesex County observed similar, but less pronounced, differences between actual and expected rates of change.

While actual prices in both counties improved alongside the home buyers' tax credit in 2010, they headed lower once the credit was no longer available. Prices turned the corner again in 2013, rising month-over-month and year-over-year in all four counties. In Orange County, prices rose by double-digit rates in 2013 (19.1 percent) and 2014 (12.1 percent). Home price appreciation was more tempered in Middlesex County, rising 7.3 percent in 2013 and 8.0 percent in 2014. In both counties, short- and long-term expectations fell below actual appreciation in both years and the annualized expected increase in home prices for each of the next ten years fell below the one-year expectations for the first time in 2013.

The rate of growth in home prices in both counties fluctuated between 2015 and 2020. In Orange County, growth varied between 1.6 percent and 7.7 percent. Middlesex County saw appreciation range between 2.3 percent and 6.8 percent during the six-year period. Actual one-year and ten-year and one-year expected home price changes were closely in synch. Prices in all four counties soared in 2021. Orange County prices jumped 16.8 percent from a year earlier and Middlesex County prices surged 17.4 percent. Alameda (18.4 percent) and Milwaukee (14.5 percent) also saw prices jump in 2021. All counties vastly underestimated the change in prices over the coming year. Why such steep price gains occurred in the midst of the COVID-19 pandemic is a question we will try to begin to answer later in this paper.

IV. The Housing Bubble Narrative

Our sample period includes two major turning points in the housing market: the sudden historic end of the housing bubble around 2006 and the ten-year upswing in the market that began in 2012. Understanding these turning

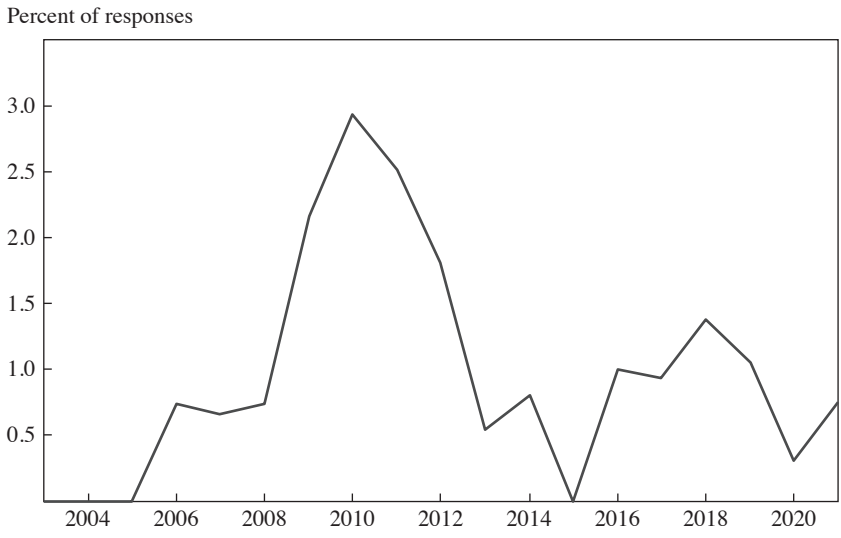
points is central to our objectives. Unfortunately, we observe just two such events in our sample period. But we do have some qualitative information.

Between 2004 and 2007 long-term home price expectations dropped 3.5 percentage points per annum. Ferreira and Gyourko (2011) found that while the beginning of the real estate boom took place at different times in different regions, in all regions the end came at roughly the same time, by 2006. The common themes among respondents in our 2004 survey included a "shortage of houses," a large number of "immigrants," "scarcity of land," "lack of building space," "too many people," and "the desire to have it all." These answers are mostly consistent with perceptions of a shortage of supply. Only occasionally did respondents mention in 2004 that affordability might be an issue. By 2006, the optimistic themes of 2004 were still in evidence but were less prevalent. The most common theme in 2006 was "rising interest rates." Some themes were mentioned repeatedly, in different forms, as suggested by answers such as the following: "high prices," "no equivalent rise in wages," "overvalued homes," "numerous newspapers and media articles speculating on or reporting on slowing sales," and "astronomical price spikes of previous two years simply cannot be sustained."

While the tone of responses went from positive to negative between 2004 and 2007, the opposite occurred between 2009 and 2013. The most common theme in 2009 was the economic downturn and recession, with nearly 25 percent of respondents mentioning this problem. Other common themes in 2009 were "rising unemployment," "foreclosures," "banking crisis," "stock market decline," and "subprime loans." In 2013, the improving economy was mentioned by more than 25 percent of respondents. Other common responses in 2013 included "fewer foreclosures," "rising consumer confidence," "low interest rates," "low inventory," and "investors."

As figure 3 shows, the phrase "housing bubble" did not appear in a single handwritten response in 2004, although one respondent used the term in 2003. By 2006, however, the phrase was being volunteered by a few respondents. As time went on after the crisis, the percentage mentioning "housing bubble" rose until by 2010 over 3 percent of the respondents were volunteering the term. It fell back in 2011 and between 2013 and 2015, "housing bubble" appeared in fewer than 1 percent of responses. The phrase reappeared in 2016 and continued to appear in survey results through 2021. In all of these cases respondents were anticipating a coming bubble, not referring to the financial crisis. The 2010 first-time home buyer tax credit was frequently mentioned that year. Alongside this credit there was a sharp increase

Figure 3. Appearance of the Housing Bubble in Home Buyers Survey Responses, 2003–2021



Source: Authors' calculations.
Note: Share of respondents who used the phrase "housing bubble" anywhere in their answers to the home buyer survey.

in the percentage of respondents that mentioned they preferred not to rent. This share has remained above 15 percent since that point.

V. Short-Term Rationality

The rationality of expectations and the relationship between expected home price changes and realized changes is one of the core applications of our survey. We have compiled an additional decade of data since Case, Shiller, and Thompson (2012) and find that this longer sample reinforces our findings that there is a tendency to underreact rather than overreact. This is significant given the starkly different economic conditions during the first decade of the survey relative to the past decade. We describe the nature of the tests and the impact of the additional data in this section.

To test the rationality of expectations, we need only regress actual home price changes on the expected changes. If expectations are rational, the coefficient of expected changes should be close to one and the constant term zero. With our present data set we can do this only for the one-year expectations, since we have limited ten years of subsequent price data. The

Table 5. Regressions Testing for Rational Expectations of One-Year Change in Home Prices

	Survey location				
	Alameda County, CA	*Middlesex County, MA*	*Milwaukee County, WI*	*Orange County, CA*	*All*
Using S&P/CoreLogic/Case-Shiller Home Price indexes					
Constant	–4.64	–2.39	–2.24	–6.68	–4.87
	(6.41)	(2.91)	(2.88)	(3.73)	(1.94)
Trimmed-mean own-city Expected twelve-month change (Q6)	1.84	1.57	1.32	2.64	2.07
	(1.02)	(0.70)	(0.67)	(0.64)	(0.37)
N	18	18	18	18	72
R^2	0.17	0.24	0.19	0.51	0.31
Using FHFA home price data					
Constant	–2.07	–1.87	–2.09	–5.88	–3.91
	(4.18)	(2.87)	(3.40)	(3.45)	(1.62)
Trimmed-mean own-city Expected twelve-month change (Q6)	1.38	1.41	1.31	2.56	1.89
	(0.67)	(0.70)	(0.79)	(0.59)	(0.31)
N	18	18	18	18	72
R^2	0.21	0.20	0.15	0.54	0.34

Sources: S&P CoreLogic Case-Shiller, FHFA Home Price Indices, and authors' calculations.

Note: Each column in each panel reports results of a single regression for a location. The dependent variable is the actual percentage home price change in the city from the second quarter of the year to the second quarter of the following (future) year. The independent variable is the expected future twelve-month price change (10 percent trimmed mean) from our surveys in the current year. Standard errors are shown in parentheses. All FHFA transactions were used in the 2012 version of this paper. The FHFA index here is limited to purchases-only transactions.

majority of the surveys in each year were returned in the second quarter, so we calculated for the dependent variable the actual price change in each metro area as the percentage change in the S&P CoreLogic Case-Shiller home price index for that area from one second quarter to the next.

Table 5 reports the results. In all four survey locations the slope coefficients are statistically significant and have the right sign, but they are always greater than one. This may be interpreted as implying that homeowners had information that was relevant to the forecast but were not aggressive enough in their forecasts. While the significance and sign of our results here concur with the results in Case, Shiller, and Thompson (2012), there are differences in magnitude. The previous R^2 values were much higher across all locations and the constants and slopes were lower. This can be explained in part by the reduction in outliers over the past decade.

Table 5 shows that home buyers were not overreacting to information with their one-year expectations, but rather underreacting to it. However, this is not necessarily inconsistent with the presence of a bubble. Certainly, the longer-term expectations, whose rationality is harder to judge, seem likely to have been more in line with information in the early years of our sample when they were predicting appreciation of over 8 percent a year for the next ten years.

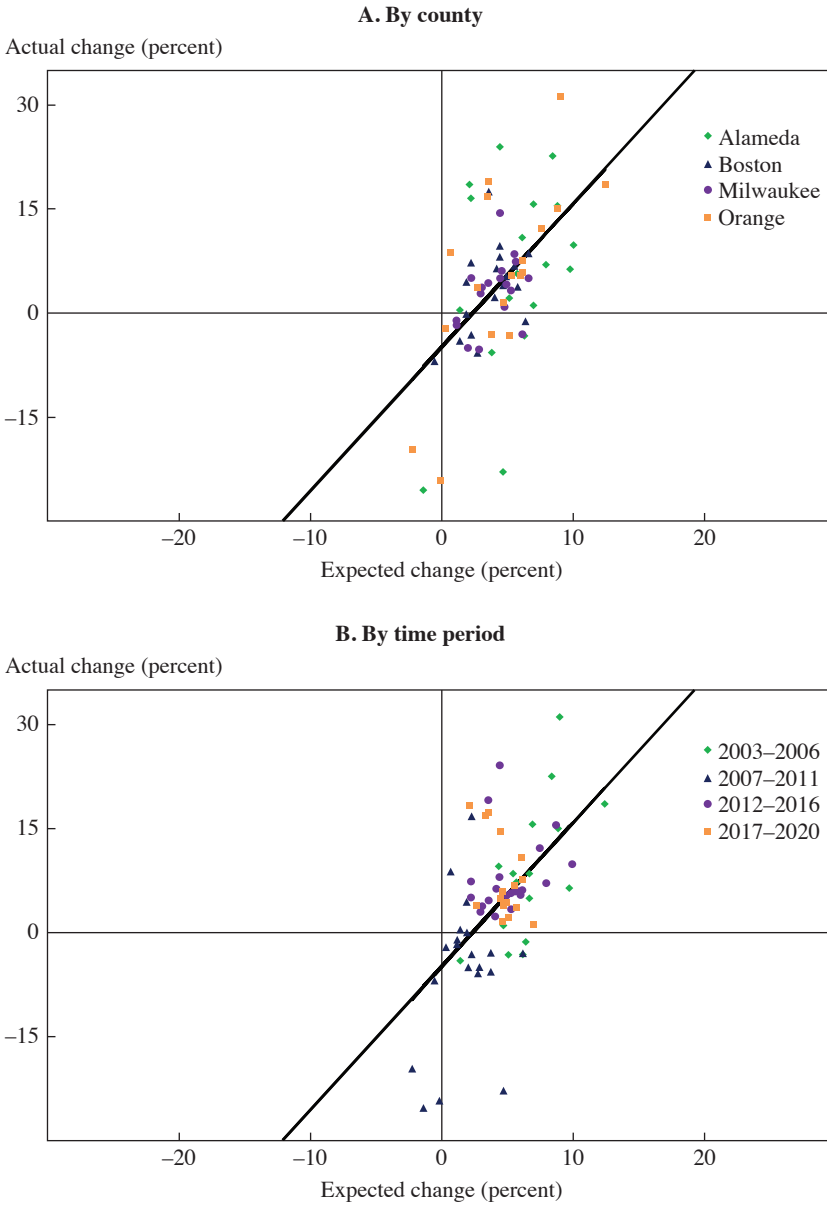
These results do not depend on using the S&P CoreLogic Case-Shiller home price indexes to measure actual price changes. Substituting the home price indexes of the Federal Housing Finance Agency (FHFA, formerly the Office of Federal Housing Enterprise Oversight) purchase-only index yields rather similar results, shown in table 5.

Scatter diagrams of actual against expected one-year price changes for the four counties (figure 4, panel A) and four different time periods (figure 4, panel B) convey how far individuals misjudged the full magnitude of home price movements. This is true both on the downside and the upside. While individuals in all areas underestimated price movements, Alameda and Orange Counties stand out in terms of the scale of misestimation.

Examining these relationships over time reveals that the degree of miscalculation on the upside was largest from 2003 to 2006, when actual price changes greatly exceeded expectations. Not surprisingly, on the downside this occurred between 2007 and 2011. Although prices were plummeting, few expected them to decline at all, and certainly not to the degree that they did. The outliers from 2012 to 2016 occurred primarily in 2012 and 2013. Respondents were cautious coming out of the market collapse but prices rebounded, especially in Alameda and Orange Counties. The 2017 to 2021 extremes all occurred over the last year. The double-digit 2020–2021 jump in home prices that occurred during the pandemic across all four metro areas and nationwide came as a surprise to almost all of our respondents.

Further testing of the rational expectations hypothesis is possible by adding to the regression other information variables available to home buyers when their expectations were recorded. These other variables should have a coefficient of zero if their expectations were rational. We tried two such variables: the actual lagged twelve-month price change in the same metro area and the actual lagged twelve-month price change for the United States as a whole, as measured by the S&P CoreLogic Case-Shiller 10-City Home Price Index. Rational expectations would imply that the coefficient of the one-year expectation should remain at one and the other variables and constant term should be zero. As table 6 reports, both of these variables are insignificant. This is consistent with the rational expectations hypothesis for

Figure 4. Expected versus Actual One-Year Change in Home Prices, 2003–2020



Sources: S&P CoreLogic Case-Shiller, and authors' calculations.

Note: Each observation represents one of the four survey locations in a single year. Actual change shows actual change in metro area home prices from the second quarter of the survey year to the second quarter of the next year. Expected change shows trimmed mean of respondents' expected change in home prices for the next year.

Table 6. Regressions Testing for Rational Expectations of the One-Year Change in Home Prices with Additional Information Variables

Independent variable	*All cities*
Constant	–5.15
	(2.78)
Own-metropolitan area twelve-month price change (%)	2.17
	(0.73)
Lagged own-metro twelve-month price change (%)	–0.03
	(0.23)
Lagged national (ten-city) actual twelve-month price change (%)	–0.01
	(0.21)
N	72
R^2	0.30

Sources: S&P CoreLogic Case-Shiller 10-City Home Price Index and authors' calculations.

Note: The dependent variable is the percentage home price change in the city from the second quarter of the year to the second quarter of the following (future) year. The first independent variable is the expected future twelve-month price change from our surveys, the second is past actual annual price change from the same city, and the third is the past annual US national home price change. Standard errors are in parentheses. The own-metropolitan area twelve-month price change is from trimmed mean of responses to question 6 of the home buyers survey.

Table 7. Regression of Expected One-Year Change in Home Prices on Lagged Actual Price Changes, 2003–2021

	Survey location				
Independent variable	*Alameda County, CA*	*Middlesex County, MA*	*Milwaukee County, WI*	*Orange County, CA*	*All*
Constant	4.53	2.85	3.25	3.20	3.49
	(0.44)	(0.31)	(0.27)	(0.37)	(0.18)
Lagged own-city actual twelve-month Home price change (%)	0.18	0.25	0.27	0.24	0.22
	(0.03)	(0.04)	(0.04)	(0.03)	(0.02)
N	19	19	19	19	76
R^2	0.67	0.67	0.71	0.84	0.72

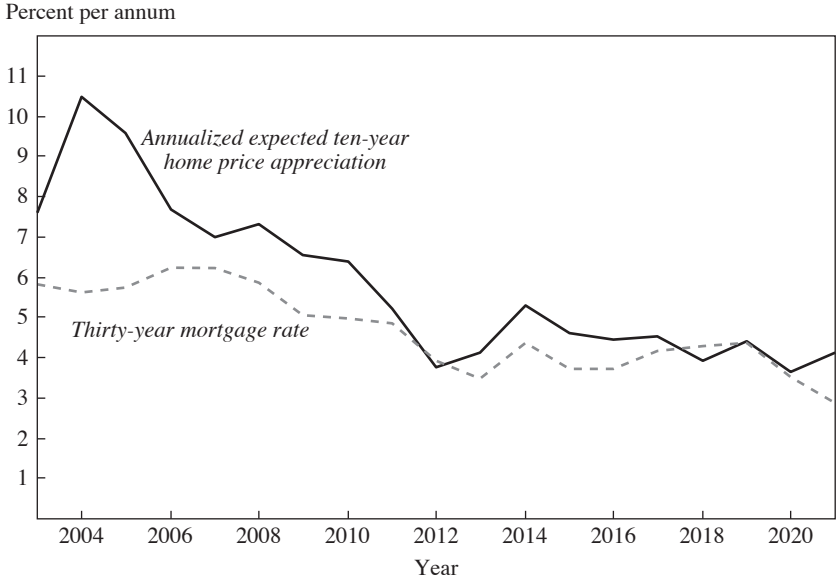
Sources: S&P CoreLogic Case-Shiller Home Price Index and authors' calculations.

Note: Each column reports results of a single regression. The dependent variable is the trimmed mean of the expected one-year change in home values in the indicated location. Standard errors are in parentheses.

the one-year forecasts: respondents are not missing this other information in making their forecasts.

Table 7 reports results of regressions in which the actual and expected price changes switch sides in the equation and the time lag is reversed: we regress the one-year expectation on the lagged actual one-year price change. This allows us to see whether there is a simple structure to expectations. In these regressions R^2 is substantial and in line with our previous

Figure 5. Ten-Year Annualized Home Price Expectations and Thirty-Year Mortgage Rate, 2003–2021



Sources: Authors' calculations and Freddie Mac Primary Mortgage Market Survey.
Note: The annualized ten-year expectation is trimmed mean of responses to the survey question. Average of trimmed means for all survey respondents.

work, ranging between 0.67 and 0.84. Of course, the slope coefficient is less than one because, as we have noted, expectations are less volatile than actual price changes.

Thus, the one-year expectations are fairly well described as attenuated versions of lagged actual one-year price changes, and yet we know from table 6 that they also contain significant information about future price changes beyond what is contained in the lagged actual price change. This conclusion does not mean, however, that any story of feedback in determining price should be modeled in rational terms. Long-term expectations also matter importantly for demand for housing because, as previously noted, they are important to people's decision about whether to buy a home at all.

In figure 5 we see annualized ten-year expectations of home price appreciation from our survey, averaged across our four locations, along with the national average thirty-year mortgage rate, from 2003 to 2021. These expectations, if they could have been trusted, implied enormous profit opportunities in buying a home around 2004: the spread between the two series

was roughly 5 percentage points. Given these expectations, it is no wonder why there was irrational exuberance in the housing market then.

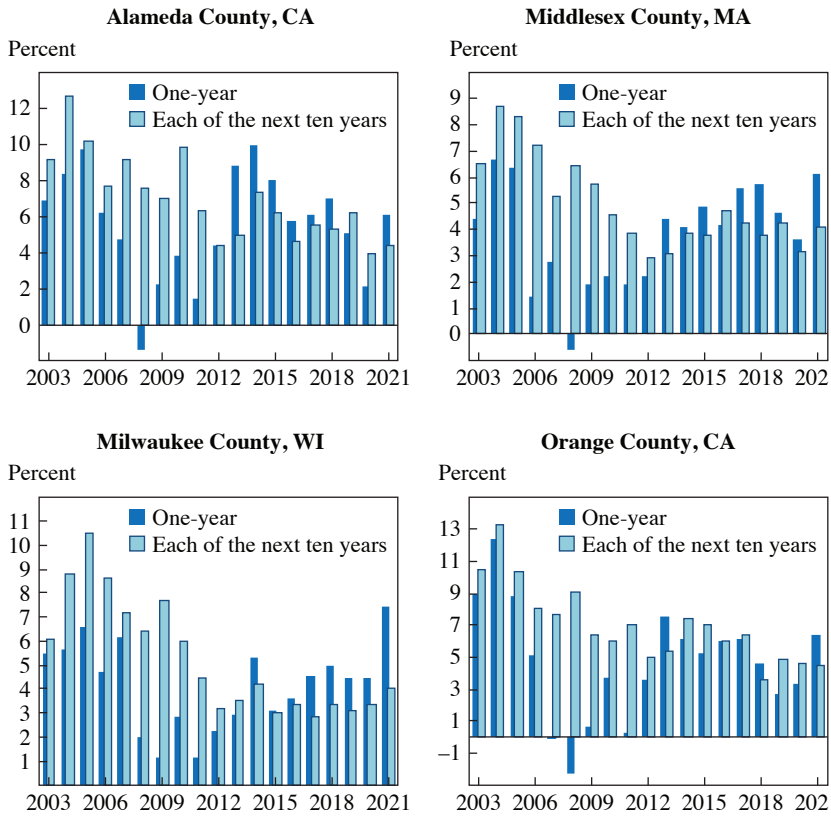
After 2004, however, long-term expectations fell faster than mortgage rates. The apparent profit opportunity narrowed, sharply at first and then more gradually. Neither monetary stimulus nor the other policy measures applied in the wake of the financial crisis succeeded in lowering mortgage interest rates by anything like the decline in expectations.

By 2012 long-term expectations had fallen to a level practically equal to the mortgage rate. Home buyers no longer perceived a long-term profit opportunity by borrowing and investing in a home. This has not changed much over the past decade. Both long-term expectations for home price increases and mortgage rates have been relatively stable. A survey of professional forecasters conducted by Pulsenomics LLC suggests that these professionals became less optimistic than our respondents. Their average expectation for annual home price appreciation for 2012–2016, reported in the June 2012 Pulsenomics survey, was 1.94 percent, about half the ten-year expectation of the home buyers in our 2012 survey. Their average expectation for annual home price appreciation for 2014–2018 in their fourth-quarter 2014 survey was 3.64 percent, closer to, but still below, the ten-year expectation of home buyers in our 2014 survey. The fourth-quarter 2018 Pulsenomics survey included average annual expected price change through 2023. In 2020 and 2021 the average was 2.48 percent, below the annualized 3.9 percent rate predicted by home buyers and far lower than the actual change in the S&P CoreLogic Case-Shiller 10-City Home Price Index, where annual growth averaged 10.5 percent in 2020 and 2021.

Figure 6 clearly shows changes in short-term and annual long-term expectations over the past twenty years. During the housing boom between 2003 and 2006, home buyers' long-term expectations were unrealistically optimistic across all markets. Home prices were soaring, and buyers projected the rate of growth to accelerate in the coming years. When the market took a turn for the worse in 2007, expectations of short-term price growth moderated and turned negative in some metro areas in both 2007 and 2008. Long-term expectations became more unrealistic, with the gap between short- and long-term projections widening significantly. This made sense to some degree, as few would have purchased a home if they expected depreciation. However, the view that the slowdown would be short-lived and prices would rebound significantly and continue to surge was irrational.

The steep drop in prices that occurred between 2007 and 2012 appeared to tame home buyers' expectations. When prices began to rebound in 2012, home buyers were more cautious about both short- and long-term rates

Figure 6. Expected One-Year and Annualized Ten-Year Value Change by County



Source: Authors' calculations.

of appreciation. From 2012–2020, short-term price expectations remained largely below the levels leading up to the crisis across all four metro areas. Even more striking is the steep drop in long-term expectations. Not only have long-term expectations largely remained below 2003–2011 levels over the past decade, but they have fallen below the one-year expectations in 2021.

VI. COVID-19 Takes Center Stage: 2020

The first confirmed case of the novel coronavirus in the United States was reported on January 20, 2020. The virus spread in the United States and abroad, and on March 13, 2020, the US government declared COVID-19 a national emergency. By summer the epidemic looked much worse.

Our 2020 home buyer survey was sent out in early July to those who closed on a home in the first quarter of the year. Thus, most of those surveyed had purchased their home before the national emergency was declared, but after a huge amount of attention was paid to the coronavirus in the media.

A Google Trends search for "coronavirus" shows a sharp peak in March 2020. This was a panic time, with a 33.9 percent drop in the S&P 500 in just over a month from February 19 to March 23, 2020, and an increase in the unemployment rate to 14.7 percent in April 2020, the highest since the Great Depression. A search of ProQuest News and Newspapers shows that the phrase "since the Great Depression" was used 3,368 times in April and May 2020 alone, invariably making a comparison between then and now of unemployment or other indicators of the economy. The newspapers' reporting of these comparisons appears to be motivated by a desire to give a dramatic interpretation to current events, when in fact the Great Depression and the pandemic were really two very different things.

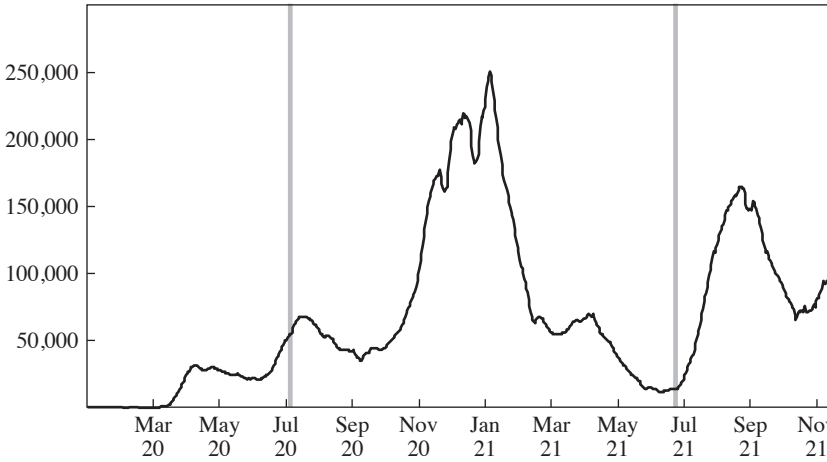
On the very day of the end of the stock market debacle—March 23, 2020—the Federal Open Market Committee of the Federal Reserve came to the rescue with an announcement of aggressive steps that would be taken to stimulate the economy. The announcement, which even said measures would be taken "in the amounts needed to support smooth market functioning," called to mind some famous words of Mario Draghi, of the European Central Bank. During the European Union's euro crisis on July 26, 2012, Draghi said that the bank would do "whatever it takes" to save the euro (Draghi 2012). Newspaper reports on this statement were numerous.

Figure 7 shows the count of COVID-19 cases and the weeks the surveys were mailed. In 2020, COVID-19 cases were rising sharply prior to the mailing. By summer, just as our respondents were completing the survey, fear and uncertainty about the pandemic's full impact was intense. Due to a new wave of virus cases across the country, we chose to add a few questions at the end of our survey in 2020 to gauge whether the spreading coronavirus had altered respondents' perspectives.

Public attention, figure 8, to the coronavirus does not correspond closely to the actual path of the epidemic. A Google Trends search of "coronavirus" or "COVID" shows continued strength of the narrative not closely related to waves in the counts of new cases. There were separate waves of public attention to the coronavirus, following their own epidemic curves, contagion of the narrative only intermittently supported by waves of actual COVID-19 cases.

A similar ProQuest search of US newspapers, blogs, podcasts, and websites showed a similar pattern. In April 2020, nearly 50 percent of these

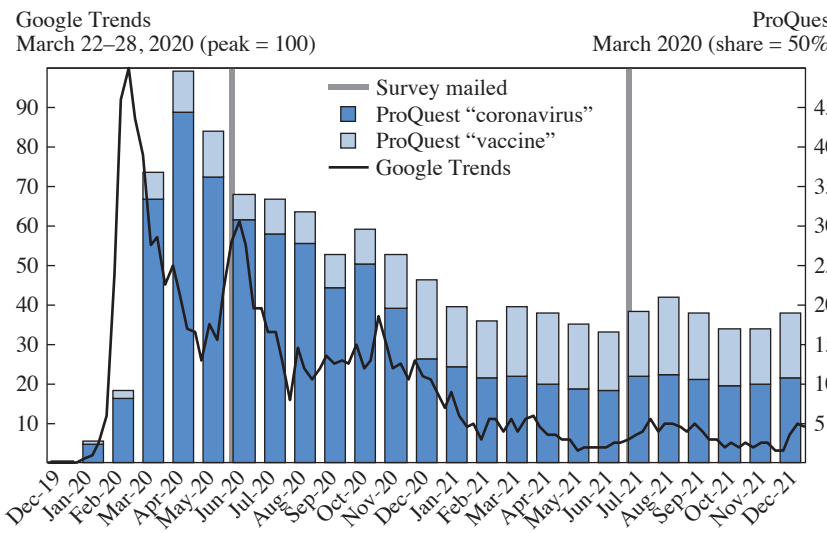
Figure 7. Number of Covid-19 Cases and Survey Mailing Dates



Source: US Centers for Disease Control and Prevention, "Daily Trends in Number of COVID-19 Cases in the United States Reported to CDC," COVID Data Tracker, https://covid.cdc.gov/covid-data-tracker/#trends_dailycases.

Note: Seven-day moving average.

Figure 8. Google Trends Index of Searches and ProQuest Share of Searches for "Coronavirus" or "COVID"



Sources: Google Trends and ProQuest.

Note: Google Trends, "Explore," https://trends.google.com/trends/explore?date=all&geo=US&q=coronavirus%20or%20covid-19. ProQuest (www.proquest.com), using search terms coronavirus* or covid*, and vaccine*.

media articles mentioned COVID-19 or coronavirus. A separate search with the addition of "vaccine" showed that there were relatively few early mentions of vaccines, but by the end of 2020 vaccines were discussed in over 40 percent of these articles.

Responses to the 2020 survey indicate that COVID-19 had certainly affected buyers' outlook, and the major theme was trepidation about the impact the pandemic would have on the housing market and the economy. This was evident not only in the questions added in 2020, but in significant changes in responses to previously asked questions. When asked if any event had changed the trend in home prices over the past two years, 34 percent included the words "covid," "coronavirus," or "pandemic." However, while COVID-19 was frequently mentioned, there wasn't a consensus on the type of impact it would have. Some expected it to drive prices up, but the majority anticipated it would lead prices to fall. A separate question asked respondents what was behind what was going on in terms of recent changes in home prices. COVID-19 was again a common response with 15 percent mentioning it. Other common themes in both questions were low mortgage or low interest rates, shortage of supply, and high demand. Respondents were also asked what they thought would cause current trends to stop. While some were skeptical that the pandemic would continue to hurt the economy, many were optimistic that the development of a vaccine would help the economy to recover.

The 3.4 percent expected one-year change in home values reported in our 2020 survey was the lowest since 2012. These expectations were significantly below the 19.8 percent increase in the S&P CoreLogic Case-Shiller US National Home Price NSA Index over the year ending in July 2021. Between the second quarter of 2020 and the second quarter of 2021, prices shot up 18.4 percent in Alameda County. Survey respondents in Alameda were also the least optimistic, anticipating a 2.2 percent gain in prices over the year, merely 11 percent of the actual price change. In Middlesex (17.4 percent versus 3.6 percent) and Orange (16.8 percent versus 3.4 percent), price gains were five times expectations. Milwaukee County home buyers projected prices would increase 4.5 percent over the year, compared to the 14.5 percent increase that occurred. While the 3.6 percent ten-year annualized expected appreciation for all counties was not as low as the one-year expectation, it was the lowest reported since the start of the survey.

When asked in 2020 whether their "outlook on the economy has worsened since I/we purchased this home," 55 percent of home buyers answered yes. Their view of COVID-19's impact on the housing market was less severe, with 15 percent responding yes to their "expectations for the housing market

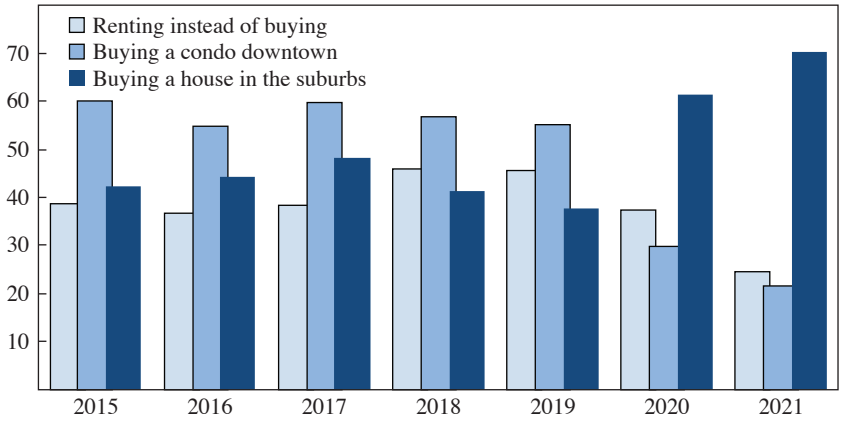
have worsened since I/we purchased this home." Answers to many other questions reveal the fear that home buyers were experiencing in the early days of COVID-19. While prices had tracked steadily higher since 2012, an eight-year low of just 36 percent agreed with the statement "Housing prices are booming; unless I buy now, I won't be able to afford a home later."

Another eight-year low of just 26 percent of respondents perceived home prices as rising rapidly recently. They also kept a close eye on information sources to help determine the price they were willing to pay. A record 92 percent of buyers relied on the internet, Multiple Listing Services (MLS), and newspapers to decide on their offer price.

These home buyers also expected the impact of the coronavirus on the economy to be long-lasting. Nearly 69 percent expected it to continue beyond fall 2020, and 89 percent believed the impact would persist for two or more years. They had purchased a home before COVID-19 had taken hold in the United States, and many had closed on their homes before the first case of the virus was reported here. They received the home buyer survey just as the economy was tumbling into recession. Over a third expected the recession would wreak havoc on the economy. More than 3 million COVID-19 cases in the United States had been reported, and fatalities were increasing. Businesses were closing and mass layoffs were taking place. The unemployment rate had jumped from 4.4 percent to 14.7 percent from March to April. While it fell back to 10.2 percent by July, it remained above the 10 percent peak during the Great Recession in 2007–2009. The S&P 500 remained below the peak on February 19, and home prices were flat. Clearly, 2020 home buyers were justifiably apprehensive about what havoc the coronavirus might heap on them, their friends and family, the value of their homes, their investments, and the country as a whole.

When the survey was mailed out in July 2021, the country had endured over a yearlong battle with COVID-19. While some home buyers' fears from the year before had come to pass, most had not. The outlook was relatively rosy. Coronavirus cases had receded to the lowest level since the start of the pandemic, vaccinations were widely available, and the Delta variant had yet to emerge. At the end of the second quarter 2021, the S&P CoreLogic Case-Shiller U.S. National Home Price NSA Index was up nearly 20 percent from a year earlier and 16.9 percent over the quarter. The S&P 500 had soared nearly 40 percent over the year and 7.5 percent—300 points—in the second quarter. At 5.4 percent, the unemployment rate was nearly half its level the previous year. While many schools and businesses remained physically closed, working from home had become widespread in some sectors with the aid of Zoom. The country was adapting to a new normal.

Figure 9. Survey Questions 33–35 "I Think People Are Becoming More Favorable to . . ."



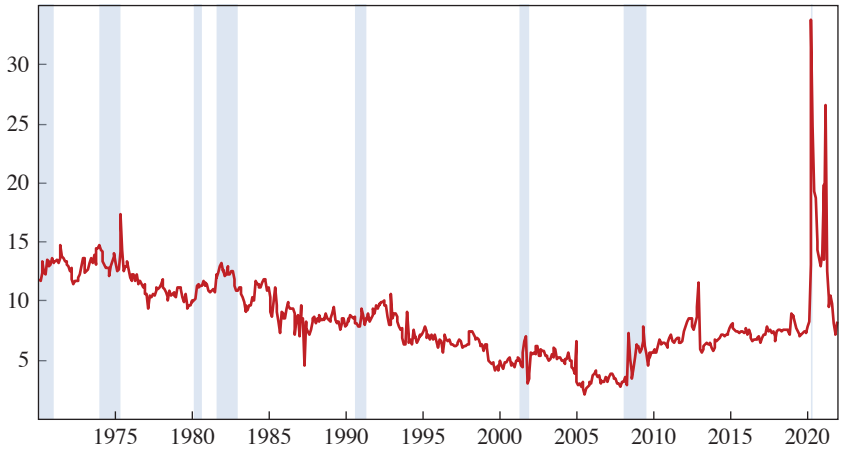
Source: Authors' calculations.

Changes in home buyer's perceptions and expectations between 2020 and 2021 were justifiably stark, the major exception being their view on locational preference. In 2015 we asked whether people were becoming more or less favorable to buying a house in the suburbs, a condo downtown, or renting. We added these questions as the downtown market appeared to be growing in popularity—many believed that retirees would downsize and relocate to the city. While this appeared to be the case through 2019, it changed dramatically with the onset of COVID-19.

Figure 9 shows a slight uptick in the favorability of purchasing a home in the suburbs from 2015 to 2017, followed by a downturn over the following two years. In 2020, preference for buying suburban homes rose nearly 25 percent, while purchasing a downtown condo fell over 25 percent. This trend continued in 2021. Respondents perceived 70 percent of people were amicable to purchasing a suburban home, just 22 percent to buying a condo downtown, and 24 percent to renting.

We supplemented our 2021 survey with additional questions regarding the pandemic, one of which was: "Why do you think home prices have risen so much despite the coronavirus?" While many of the replies mirrored those discussed above, there were additional insights into what drove prices up. The most frequent response to this question was that there was not much impact from COVID-19 on high-wage, white-collar, and tech jobs. Other common threads were that people wanted extra space or home offices because they had been living in cramped quarters during quarantine.

Figure 10. Personal Savings Rate



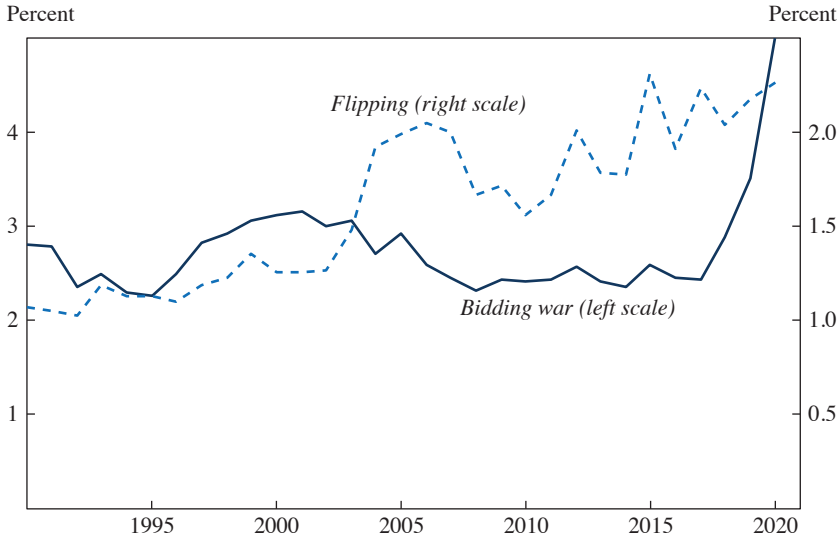
Source: US Bureau of Economic Analysis.
Note: Shaded areas indicate US recessions. The personal savings rate is a percentage of disposable personal income, calculated by the BEA.

Over 87 percent replied that it had become more important to have "a home with one or more office/work rooms." The desire to relocate to the suburbs and change from renting to owning a home were both frequently mentioned. In fact, a record 60 percent were first-time home buyers. In 2020, 28 percent of those replying were age 35–44. This age cohort jumped to a record 35 percent in 2021, over 50 percent of whom reported income of $225,000 or more.

Many noted their spending had slowed during lockdown and they had benefited from stimulus dollars and thus were able to save money for a down payment. Figure 10 shows growth in savings was very atypical during 2020. The personal savings rate, the percentage of disposable income that people save, averaged 16.3 percent in 2020, nearly double the average over the previous fifty years. Therefore, when working from home became the norm, more thought they could be on a path to afford to purchase their first home or upgrade.

When asked why sellers often get multiple offers above the asking price on the day the homes are listed, a record 72.4 percent attributed this to panic buying that caused prices to become irrelevant. These home buyers were getting caught in bidding wars. During their search for a home, a record 50 percent had offered more than the asking price, and 52 percent settled on a price above the asking price. In 2018, we began asking if

Figure 11. ProQuest Web Search for Bidding War and House Flipping, 1991–2021



Source: ProQuest.

Note: ProQuest (www.proquest.com), using search terms home* or hous* and real estate with bid* war* or flip*.

buyers had their offers rejected because someone offered more. In 2021, just 46 percent had their first offer accepted, the remainder had placed bids on other properties that were rejected, and 16 percent had four or more offers rejected before buying their home.

The general vibe in the market had transitioned sharply over the year 2020–2021. The real estate market was hot in 2021, and buyers were well aware of it, with 84 percent describing home prices in the area as rising rapidly. Still, their projected one-year increase in value was just 6.3 percent. In 2021, prices rose 17 percent nationally, 9.4 percent in the second half of the year alone.

VII. The Medium-Term Growth in the Perception of Houses as Speculative Investments

There was a real exuberance in home price expectations in the years leading up to the financial crisis of 2007–2009. This is confirmed by the ProQuest News & Newspapers search shown in figure 11. A "house flipping" narrative took hold, with many stories of fortunes being made by amateur buyers of houses who resell in a matter of months to win great profits. We see that

attention to flipping took hold in 2004 alongside the boom and crested in early 2007, following the 2006 peak in the US housing market. Narratives from before the crisis made some flippers into minor celebrities.

In the run-up to the home price market peak in 2006, there were some viral economic narratives. For example, the reality television show *Flip This House* (2005–2009) on A&E made heroes out of people who got rich buying, fixing up, and quickly reselling houses. One of these was Armando Montelongo, a real estate speculator and motivational speaker, who published a book, *Flip and Grow Rich: The Heart and Mind of Real Estate Investing* (Montelongo 2008).[3] Montelongo was depicted on television as decisive, tough, manly, a fighter, but at the same time down-to-earth. Many viewers of the TV show could identify with him. This show appeared at almost the same time as *The Apprentice* (and spin-offs *The Celebrity Apprentice* and *The New Celebrity Apprentice*) starring Donald Trump (NBC, 2004–2017), which had a similar theme idolizing property speculators.

The attention to house flipping faded away for a few years during the 2007–2009 financial crisis. But a social trend toward "property voyeurism" was not so easily stopped (Harwell 2016). The US housing market began to rise again in 2012, and a number of new reality television shows sprouted up during the following years. Among these were *Property Wars*, which debuted on the Discovery Channel in 2012, and *Flip or Flop* (2013) and *Masters of Flip* (2015) on HGTV. During this flipping revival a number of shows focusing on metropolitan areas were also introduced. Our data show that expectations for future home price increases also rose in 2012, following the same feedback response to actual price increases that we observed in Case, Shiller, and Thompson (2012), as shown for short-term expectations in table 7.

Celebrities like Montelongo were still trying to cash in on investor excitement that was so strong in the years before the 2007–2009 financial crisis. In the 2012 edition of *Flip and Grow Rich* Montelongo wrote, "Housing prices are hitting all-time lows, and this will be the greatest time to make money for the next 40 years. Imagine making more money in 24 months than in the next four decades" (1). He was factually wrong in saying that housing prices were hitting historic lows, but he was right about the real estate market of the coming few years and on how to entice people into speculating in real estate.

3. The title was a parody of Napoleon Hill's 1937 classic self-help book, *Think and Grow Rich.*

These stories, and others like them, have been very much on the minds of the general public, in contrast to the rarer references to institutional investors. People in the television show production business might say that narratives about professionals may not be "aspirational," meaning that they do not feed most viewers' imaginations on how they themselves could really achieve on a high level and ultimately win more respect.

In the 2020s there has been a lot of talk in the news media about institutional investors who are massively investing in homes they will rent out. But these narratives may not have the same currency as those of the flippers. They do not stir emotions among people who have never tried to imagine themselves as institutional investors.

Few home buyers flip houses; instead, they are buying a place to live in. But in making the decision to offer a large sum of money and tying themselves into a long stream of future mortgage payments, they can imagine themselves as being like those speculators.

Most Americans have very little experience with bidding wars. Most of the purchases people make are retail, at a price which is nonnegotiable, ever since the nineteenth century when department stores like Le Bon Marché and Wanamaker's began to advertise that they demand exactly the asking prices to all customers; prices were strictly nonnegotiable.

The idea of bidding wars in real estate, where multiple interested parties make offers on the same property, rose during the late 1990s and early 2000s before tapering off toward the end of the housing boom. Today, bidding wars are a prevalent phenomenon in real estate.

An average of just 2.5 percent of housing and real estate articles mentioned bidding wars between 1991 and 2019. In 2020 it rose to 3.5 percent and surged to 5.0 percent in 2021.

Prior to listing a property, sellers are guided by real estate agents and, increasingly, by internet searches on how to price their home.[4] In a tight market, this often includes strategies to induce a bidding war.[5] Many home buyers, particularly those new to homeownership, face a steep learning curve. Bidding wars are an unfamiliar experience for many at the beginning of their home search but frequently a familiar one by the time they close on a home.

As with sellers, buyers often turn to realtors and the internet for home buying tips. The media is flooded with articles on the best strategies to use

4. See, for example, Zillow, "How to Price Your Home to Sell," https://www.zillow.com/sellers-guide/how-to-price-home-to-sell/.

5. See, for example, Myers (2021).

to increase a buyer's chance of winning a bidding war.[6] You might even think that asking prices should be irrelevant, since actual sale prices occur both below and above the asking price. But they are not irrelevant, since a substantial fraction of sales are exactly at the asking price (Han and Strange 2016). There is an inscrutable psychological game developing in the housing market that may increasingly favor speculative impulses (Gadd 2006).

Redfin, a full-service real estate brokerage website, reports bidding war rates based on offer competition. Among Redfin realtors, the rate has increased dramatically since they began compiling this information. In April 2020, near the start of the COVID-19 crisis, a seasonally adjusted 33 percent of Redfin offers faced competition (Katz 2022). By January 2021 this rate had risen to 61 percent, and in January 2022 it reached 70 percent. One can't help but wonder whether growth in bidding wars is a contributing cause to the rise in home prices during the pandemic.

VIII. Conclusion

Our analysis of our surveys of home buyers in 1988 and from 2003 to 2021 shows that home buyers' expectations are fairly rooted in reality for the short run, underreacting in the short run, but given to flights of fantasy for the longer run. The shorter-run expectations were pretty much on target throughout the period. This is not really a surprise: looking at plots of the data, like those in figure 1, we see that home prices are quite smooth through time and hence easily forecastable by simple extrapolation for a short time after the survey, in sharp contrast to stock prices, which somewhat resemble random walks. But forecasting the longer run presents a real challenge and tends sometimes to go to extremes that are at odds with reality.

Since the strong uptrend in home prices that started in 2012 and strengthened with the COVID-19 pandemic in 2020 is not associated with high ten-year expectations for price increase, and since home buyers mostly stay in their homes for years or decades, we would not call the experience a bubble, at least not in the classic sense.

But it resembles a bubble in the sense that it is driven by a kind of excitement or fear of missing out (FOMO, in today's internet lingo). The excitement is associated with having to deal with bidding wars and worries about being outbid if one does not bid aggressively enough. The public mood among those actively bidding is one of fear of being jilted, losing a house they may have fallen in love with to a more aggressive competitor.

6. See, for example, LaPonsie (2021).

Forecasting house prices at this point in history is not just a matter of judging the progress of a hypothetical bubble. While the rapid increase in home prices is a cause for concern, forecasters must go beyond simple models to forecasting the COVID-19 epidemic and its future variants, or forecasting international tensions such as those raised by the Russian invasion of Ukraine in February 2022 and Vladimir Putin's veiled threats to use atomic weapons against nations who support Ukraine. They must also consider the change in supply of housing and in communications technology, the changing geographical distribution of business activity, and the evolution of popular narratives about these things.

In concluding, we should also remind that the patterns of expectations we describe are not immutable. The volatility in these popular expectations can be made less impactful if financial institutions are improved. The home price futures market that we advocated (Case, Shiller, and Weiss 1993), which was created by the Chicago Mercantile Exchange in 2006 based on the S&P CoreLogic Case-Shiller home price indexes, does allow an investor to hedge home price risk, though to this day the market is not very liquid. A number of attempts have been made over the last thirty years to make possible better risk management of home price volatility (Fabozzi, Shiller, and Tunaru 2020). Eventually, such risk management may make homeownership less of a gamble in the future.

ACKNOWLEDGMENTS The authors are indebted to the US National Science Foundation, which funded the 1988 survey, and to the Yale School of Management, with a grant from Whitebox Advisors which supports our recent surveys. Cathy Adrado, Laurence Black, Daniel Boston, Leigh Clark, Zachary Dewill, Milad Nozari, Virginia Shiller, David Still, and Olga Vidisheva provided help for this research.

This paper is dedicated to the memory of Karl "Chip" Case, our coauthor on the paper the three of us published ten years ago in *Brookings Papers on Economic Activity*, which was a predecessor. Chip contributed heavily to our joint work before his death on July 15, 2016.

References

Board of Governors of the Federal Reserve. 2020. "Federal Reserve Issues FOMC Statement." Press release, March 23. https://www.federalreserve.gov/newsevents/pressreleases/monetary20200323a.htm.

Brunnermeier, Markus, and Christian Julliard. 2008. "Money Illusion and Housing Frenzies." *Review of Financial Studies* 21, no. 1: 135–80.

Case, Karl E., and Robert J. Shiller. 1988. "The Behavior of Home Buyers in Boom and Postboom Markets." *New England Economic Review* (November/December): 29–46.

Case, Karl E., Robert J. Shiller, and Anne K. Thompson. 2012. "What Have They Been Thinking? Homebuyer Behavior in Hot and Cold Markets." *Brookings Papers on Economic Activity*, Fall, 265–98.

Case, Karl E., Robert J. Shiller, and Allan N. Weiss. 1993. "Index-Based Futures and Options Markets in Real Estate." *Journal of Portfolio Management* 19, no. 2: 83–92.

Demyanyk, Yuliya, and Otto Van Hemert. 2011. "Understanding the Subprime Mortgage Crisis." *Review of Financial Studies* 24, no. 6: 1848–80.

Draghi, Mario. 2012. Speech given at the Global Investment Conference, London, July 26. https://www.ecb.europa.eu/press/key/date/2012/html/sp120726.en.html.

Fabozzi, Frank J., Robert J. Shiller, and Radu Tunaru. 2020. "A 30-Year Perspective on Property Derivatives: What Can Be Done to Tame Property Price Risk?" *Journal of Economic Perspectives* 34, no. 4: 121–45. https://www.aeaweb.org/articles?id=10.1257/jep.34.4.121.

Ferreira, Fernando, and Joseph Gyourko. 2011. "Anatomy of the Beginning of the Housing Boom: U.S. Neighborhoods and Metropolitan Areas, 1993–2009." Working Paper 17374. Cambridge, Mass.: National Bureau of Economic Research. https://www.nber.org/papers/w17374.

Gadd, Jane. 2006. "Picking a Price Can Be Perilous." Globe and Mail, June 23. https://www.theglobeandmail.com/real-estate/picking-a-price-can-be-perilous/article711489/.

Gorton, Gary B. 2010. *Slapped by the Invisible Hand: The Panic of 2007*. Oxford: Oxford University Press.

Han, Lu, and William C. Strange. 2016. "What Is the Role of the Asking Price for a House?" *Journal of Urban Economics* 93:115–30.

Harwell, Drew. 2016. "How 'House Hunters' Became the Most Unstoppable Juggernaut on TV." *Washington Post*, January 25. https://www.washingtonpost.com/news/business/wp/2016/01/25/how-house-hunters-became-the-most-unstoppable-juggernaut-on-tv/.

Katz, Lily. 2022. "January Was the Most Competitive Month on Record for Homebuyers." Redfin News, February 23. https://www.redfin.com/news/real-estate-bidding-wars-january-2022/.

LaPonsie, Maryalene. 2021. "How to Win a Bidding War on a House." *U.S. News and World Report*, June 7. https://realestate.usnews.com/real-estate/articles/how-to-win-a-bidding-war-on-a-house.

Mathis, Jérôme, James McAndrews, and Jean-Charles Rochet. 2009. "Rating the Raters: Are Reputation Concerns Powerful Enough to Discipline Rating Agencies?" *Journal of Monetary Economics* 56, no. 5: 657–74.

Mian, Atif, and Amir Sufi. 2009. "The Consequences of Mortgage Credit Expansion: Evidence from the U.S. Mortgage Default Crisis." *Quarterly Journal of Economics* 124, no. 4: 1449–96.

Montelongo, Armando. 2008. *Flip and Grow Rich: The Heart and Mind of Real Estate Investing*. Armando Montelongo Worldwide; 3rd edition, 2012.

Myers, Emily. 2021. "Pulling Off a Bidding War: A Seller's 8-Step Guide." Blog post, Brick Underground, June 9. https://www.brickunderground.com/blog/2014/05/managing_bidding_war.

APPENDIX

Controlling for Outliers

We executed two steps to control for outliers among home buyers price expectations. In our first step we replaced annual ten-year expectations that were ten times the one-year expectations with the one-year values. Respondents who entered such a value likely misinterpreted the question and this was a simple method to solve this issue. We then used the trimmed mean to remove extreme observations at the upper and lower ends of the distribution, making analysis of the data more resistant to outliers. The degree of trimming can, however, produce significantly different mean values in widely dispersed data with long tails. Our 1-year expectations data fell within a relatively tight range. As the top panel of figure A.1 shows, differences between trimming had a minor impact. The difference between the 10 percent and 50 percent trimmed means (removing 5 percent and 25 percent of observations from each tail, respectively) is below one for all years. The greatest difference was in 2004, the peak of homebuyer optimism. Not surprisingly, in the bust years the outliers were on the low end of the spectrum. In 2008, 59 percent of homebuyers expected prices to remain level or fall over the following year, compared with just 3% of the 2004 respondents.

Annual 10-year expectations among surveyed homebuyers were more optimistic and more skewed in the upper tail, as shown in the bottom panel of figure A.1. This was especially true in the boom years of 2004 and 2005, when year-over-year gains in monthly home prices exceeded 15 percent in numerous counties, and many respondents believed prices would continue to rise. In 2004, the ten percent trimmed mean expectation was 8.1 percent. Although high, this was far below the actual annual rate of appreciation. Using the 50 percent trimmed mean reduces the expected annual rate of appreciation by 3.1 percentage points, to 5.0 percent, far below reality. The bottom panel of figure A.2 shows that 15 percent of all 2004 survey respondents expected home prices to appreciate by more than 20 percent in each of the following 10 years.

From the beginning of the housing bust through 2011, the spread between the 10 percent and 50 percent trimmed means averaged just 1.6 percentage points. By 2012 the trimmed means were closely aligned, with a difference of less than 1 percentage point.

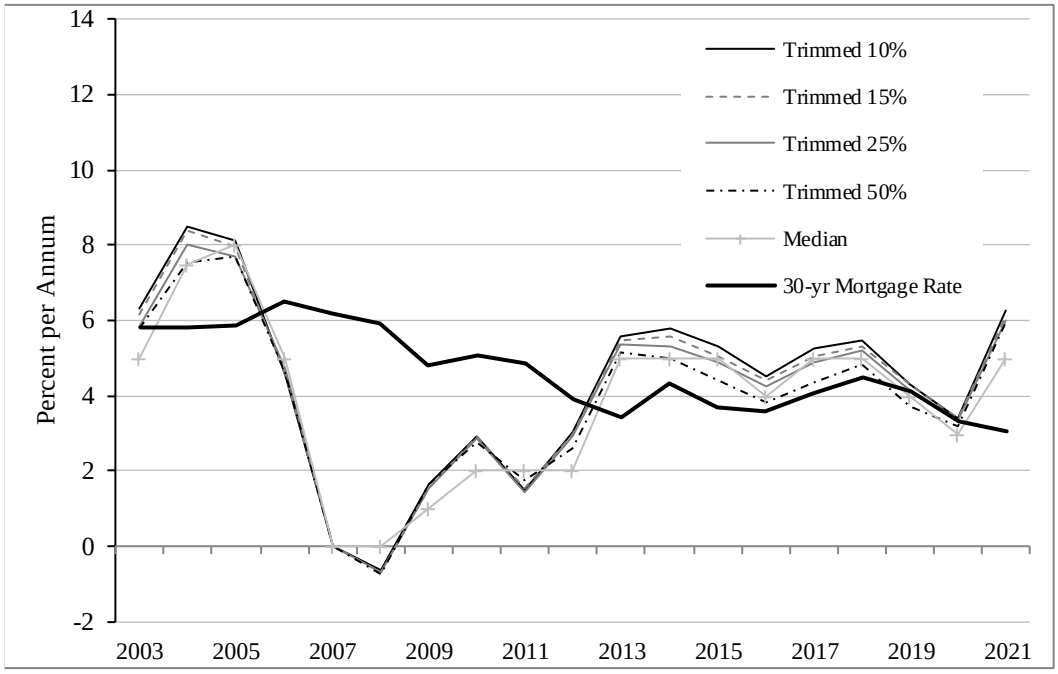
Market exuberance and errors interpreting the questions were not the only reasons for high expectations for appreciation. Another factor that likely influenced expectations was the failure to understand the impact of compounding. For example, a survey respondent who expects prices to double over the next decade might mistakenly report an expected annual increase of 10 percent. In fact, a compound 10 percent annual increase would bring the price of a $250,000 home to nearly $650,000, not $500,000.

Most people are not used to making 10-year forecasts and have trouble knowing whether prices might double or triple or anything else. We could ask even more questions about what scenarios and probabilities they consider plausible, but in asking such detailed questions we would run the risk that our questioning was educating them and making them think even more clearly about future home prices than they had before. As survey pioneer George Katona (1975) stressed, most people have only the vaguest long-term expectations and have to struggle to express them in any quantitative terms. Yet the fundamental problem for economists is that these vague expectations are likely to be extremely important in determining the demand for housing.

Figure A1: Expected One-Year Home Price Growth using Alternative Trimming of Outliers and the Thirty-Year Mortgage Rate, 2003 -21

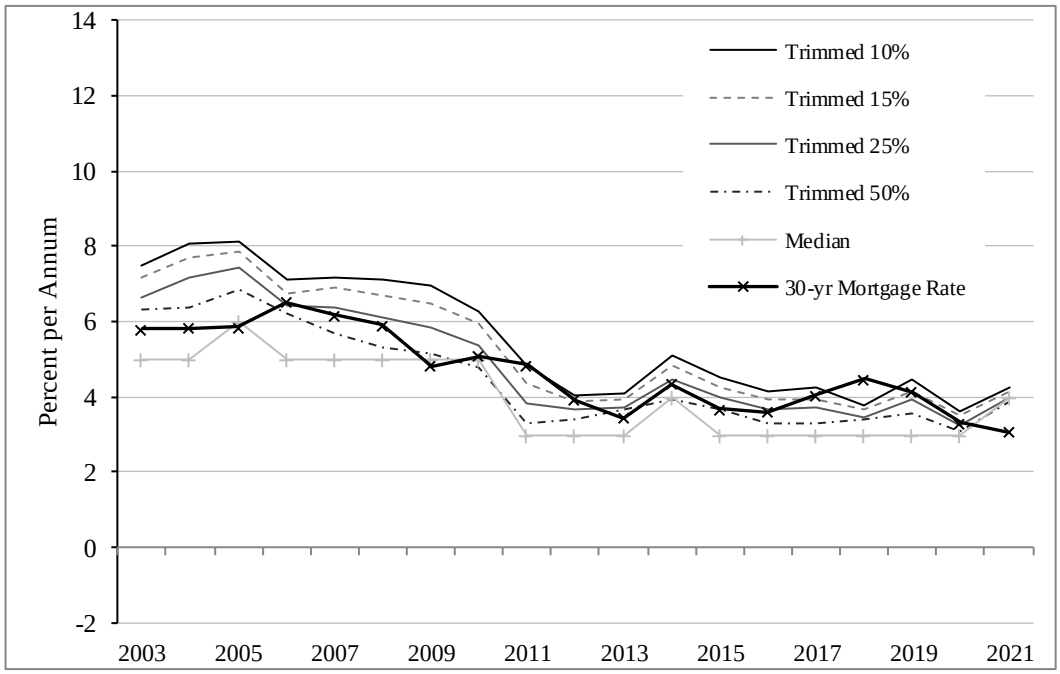
One-Year Home Price Expectations

Percent



Ten-Year Home Price Expectations (annualized)

Percent per year

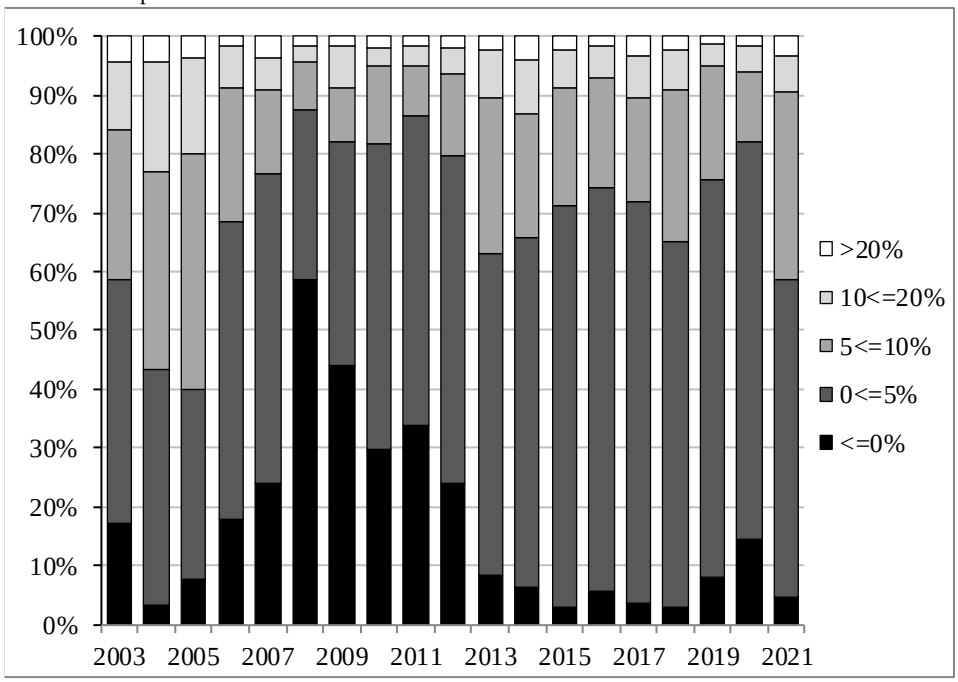


Source: Freddie Mac's Primary Mortgage Market Survey and authors' calculations from homebuyers survey data

Figure A2: Distribution of One-Year and Ten-Year Home Price Expectations

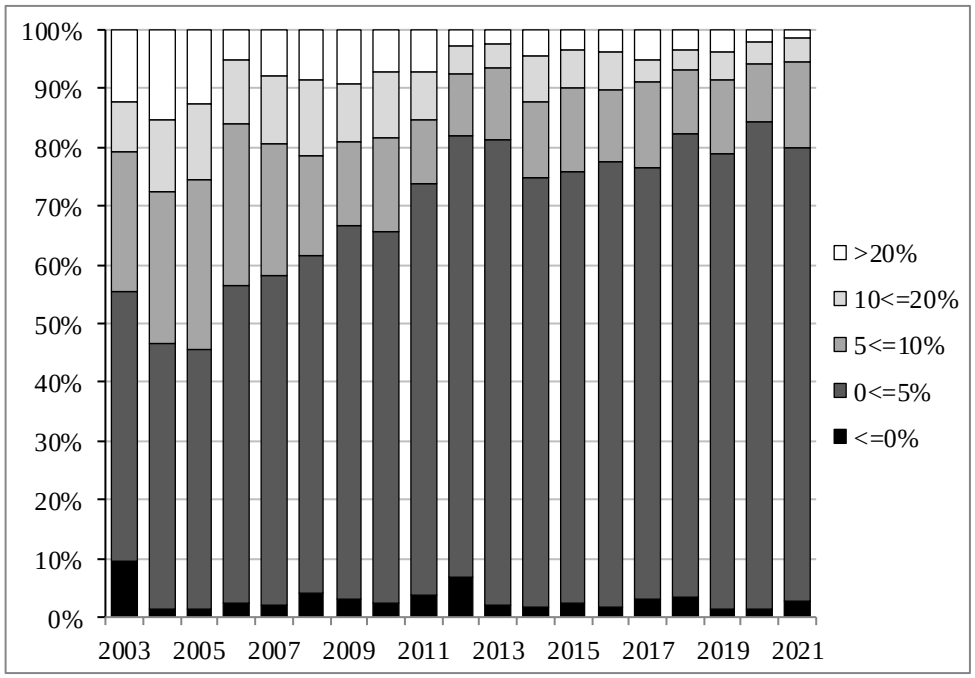
One-Year Home Price Expectations

Percent of respondents



Ten-Year Home Price Expectations (annualized)

Percent of respondents



Source: Authors' calculation from homebuyer survey

Boston Area (Middlesex County) Questionnaire 2021

PLEASE ANSWER ALL OF THE QUESTIONS
FEEL FREE TO WRITE COMMENTS ANYWHERE ON THE QUESTIONNAIRE
Thank you very much for your help with our research

1. A. What type of property did you purchase? [Please circle one number]

1. Single family home	**3.** Condominium or cooperative
2. Duplex	**4.** Other:_____

B. What type of mortgage did you get? [Please circle one number]

1. Conventional fixed rate for _____ years
2. Adjustable rate (ARM), initial fixed rate period _____year(s)
3. Other _____
4. No mortgage

2. Why did you buy the home that you did? [Please circle one number]

1. To live in as a primary residence.
2. To live in part of the time as a second residence without renting it to others.
3. As a second residence that you will also rent out.
4. Only to rent out to others.
5. For some other reason:_____

3. Circle the number that best describes your reason for buying a home at this time:

1. Changing residence because of a job change.
2. Moving due to a change in family circumstances such as a marriage, divorce, birth of a child, etc.
3. Trading up (buying a better property than I lived in before).
4. Buying strictly for investment purposes.
5. For some other reason:_____

4. Are you a first-time home buyer? [Please circle one number]

1. Yes	**2.** No

5. Do you think that home prices in the Boston Area will increase or decrease over the next several years? [Please circle one number]

1. INCREASE	**2.** DECREASE

6. How much of a change do you expect there to be in the value of your home over the next 12 months? (Fill in number and circle 1. or 2.)

_____% (Percent Change)	**1.** INCREASE	**2.** DECREASE

7. <u>On average</u> over the next ten years how much do you expect the value of your property to change **<u>each year</u>**? (Fill in number and circle 1. or 2.)

_____% (Percent Change)	**1.** INCREASE	**2.** DECREASE

8. In deciding how much you were willing to pay for this house to what extent did you rely on information obtained from the following sources. [Please check one box for each question A through F]

1. Heavily	2. Somewhat	3. Not at all	
			A. Advice from or appraisals by real estate agents.
			B. First or second hand knowledge of comparable sales prices.
			C. Stories about the real estate market in the media: Internet, newspapers, magazines, TV or radio.
			D. Internet, MLS or newspaper listings of other properties for sale.
			E. Listings of other properties that had sold.
			F. Knowledge of recent changes in your state's economy.

9. Was your first offer on the property that you purchased: [Please circle one number]

1.	Above the asking price
2.	Below the asking price
3.	Equal to the asking price

10. Did you finally settle on a price that was: [Please circle one number]

1.	Above the asking price
2.	Below the asking price
3.	Equal to the asking price

11. Did you place an offer on any other property that was rejected because someone offered more? [Please circle one number]

1.	No. This was the first and only property I/we placed an offer on.
2.	One other offer was rejected.
3.	Two or three other offers were rejected.
4.	Four or more other offers were rejected.

12. In deciding to buy your property, did you think of the purchase as an investment: [Please circle one number]

1.	Not at all
2.	In part
3.	It was a major consideration

13. Which of the following best describes the trend in home prices in the Boston Area in recent months: [Please circle one number]

1.	Rising rapidly
2.	Rising slowly
3.	Not changing
4.	Falling rapidly
5.	Falling slowly

Q13. Comments:

14. Roughly how long had the trend you have observed when you purchased your home been going on:

Since: (month [MM]) _____
(year [YYYY]) _____

15. Was there any event or events in the last two years that you think changed the trend in home prices?

16. What do you think explains recent changes in housing prices in the Boston Area? What, ultimately is behind what is going on?

17. Which of the following better describes your theory about recent trends in Boston Area home prices?

1. It is a theory about the psychology of home buyers and sellers.
2. It is a theory about economic or demographic conditions such as population changes, changes in interest rates or employment growth (decline).

18. How long do you think that present housing price trends will continue?
_____ (Number of months)

19. If you think that present trends will **not** continue forever, what do you think will cause them to stop?

20. In conversations with friends and associates over the last few months, conditions in the housing market were discussed: (circle the one which best applies)

1. Frequently	**2.** Sometimes	**3.** Seldom	**4.** Never

21. Buying a home in the Boston Area today involves:
(Please circle the one which best applies):

1. A great deal of risk
2. Some risk
3. Little or no risk

22. Does the following describe your feelings? "I bought now because I felt that I had to even though I might have done better financially if I had waited"

1. Yes	**2.** No

23. Immediately prior to buying this home, did you sell or try to sell another home?

1. Yes	2. No

IF YOU ANSWERED YES TO QUESTION 23, PLEASE ANSWER Q23a and Q23b, OTHERWISE SKIP TO Q24.

23a. If you tried to sell another home, what is the current status of that other property?

1. It was sold
2. It is still for sale
3. Other: _____

23b. When you set the initial asking price, did you set it above, below, or equal to what you thought the property was realistically worth?

1. Above	2. Below	3. Equal

24. There has been a good deal of excitement surrounding recent housing price changes. I sometimes think that I may have been influenced by it.

1. Yes	2. No

25. In a "hot" real estate market, sellers often get more than one offer on the day they list their properties. Some are even over the asking price. There are also stories about people waiting in line to make offers. Which is the better explanation?

1. There is panic buying, and price becomes irrelevant.
2. Asking prices have adjusted slowly or sluggishly to increasing demand.

26. For each of the following indicate whether you have heard the statement recently and whether or not you agree with it: [Please check first column if heard it **and also** whether agree or disagree]

1.Heard	2.Agree	3.Disagree	
			A. Since housing prices are unlikely to drop very much, the best strategy in a slow market is to hold on until you get what you want for a property.
			B. Housing prices have boomed in the Boston Area because lots of people want to live here.
			C. The real problem in the Boston Area is that there is just not enough land available.
			D. Housing prices are booming; unless I buy now, I won't be able to afford a home later.
			E. It's a good time to buy a home because housing prices are likely to rise in the future.
			F. It's a good time to buy a home because interest rates are relatively low and are likely to rise in the future.
			G. It's not a good time to buy a home because housing prices are likely to decline in the future.
			H. It's not a good time to buy a home because interest rates are likely to fall in the future.
			I. When interest rates rise, homes become less affordable, and it is just a matter of time before home prices drop.
			J. One major problem in the Boston Area is that there is a shortage of homes available for sale.
			K. Many homes in the Boston Area are purchased by builders or investors planning to renovate or replace them and put them up for sale.

27. 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 on scale from 1 to 5]

Strongly Agree	Agree Somewhat	Neutral	Disagree Somewhat	Strongly Disagree
1	2	3	4	5

28. 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."
[Please circle one number on scale from 1 to 5]

Strongly Agree	Agree Somewhat	Neutral	Disagree Somewhat	Strongly Disagree
1	2	3	4	5

Comments:

29. Before you bought this house, did you actively think of not buying any house at all, staying out of real estate ownership?

1. Yes	2. No

30. If you answered yes, what factors were on your mind when you thought about NOT buying, and what made you finally buy?

31. Have you been thinking of buying yet another house, keeping the one you just bought and owning two (or more) houses?

1. Yes	2. No

32. What factors were on your mind when you have thought about buying yet another house?

33. I think that people are becoming [1. More, 2. Less, 3. Unchanged] favorable to buying a house in the suburbs for the long term: [Please circle one number]

1. More
2. Less
3. Unchanged

34. I think that people are becoming [1. More, 2. Less, 3. Unchanged] favorable to buying a condo downtown in a city for the long term: [Please circle one number]

1. More
2. Less
3. Unchanged

35. I think that people are becoming [1. More, 2. Less, 3. Unchanged] favorable to renting, instead of buying, their homes for the long term: [Please circle one number]

1. More
2. Less
3. Unchanged

36. What is the approximate square footage of:
    a. Your current home? _____ square feet
    b. Your previous residence? _____ square feet

37. How long, in years, have you lived in the Boston Area? _____ years

38. What best describes the home you purchased?

1. New
2. Built within the past five years.
3. Renovated extensively within the past two years (e.g. kitchen/bath/addition).
4. Unaltered

39. Do you have any major renovations (kitchen/bath/other) or additions planned for the home?

1. Yes	2. No

40. What was the purchase price of your home? [Please circle one number]

1. Less than $100,000
2. $100,000 - $175,000
3. $175,000 - $250,000
4. $250,000 - $350,000
5. $350,000 - $500,000
6. $500,000 - $650,000
7. $650,000 - $800,000
8. $800,000 - $1.0 million
9. $1.0 - $1.5 million
10. Over $1.5 million

41. Into which age cohort does the head of your household fall? [Please circle one number]

1. Under 25 Years
2. 25-34 Years
3. 35-44 Years
4. 45-54 Years
5. 55-64 Years
6. 65+ Years

42. What best describes your household [Please circle one number]

1. One adult - no children at home
2. Two adults - no children at home
3. One adult - one or more children at home
4. Two adults - one or more children at home
5. Other

43. What is your approximate household income? [Please circle one number]

1. Under $40,000
2. $40,000 - $60,000
3. $60,000 - $80,000
4. $80,000 - $100,000
5. $100,000 - $125,000
6. $125,000 - $150,000
7. $150,000 - $175,000
8. $175,000 - $225,000
9. $225,000 - $300,000
10. Over $300,000

44. The following questions attempt to gauge whether the coronavirus pandemic has altered your perspective on the housing market. [Please check one box for each question A through J]

1.Agree Strongly	2.Agree Somewhat	3.Do Not Agree	
			A. I chose to purchase a home further from the city center due to the Covid-19 pandemic.
			B. My outlook on the **economy** has worsened since I purchased my home.
			C. My expectations for the **housing market** have worsened since I purchased my home.
			D. I almost postponed my decision to purchase a home given the current impact of the Covid-19 pandemic.
			E. The impact of the coronavirus on the economy will be short lived with a recovery beginning by fall.
			F. The effects of the coronavirus on the economy will continue for two or more years.
			G. Among the general population, the desire to work from home is unlikely to go away.
			H. Among the general population, the desire for social distancing won't go away for many years.
			I. The coronavirus experience will raise suburban or rural home values relative to center-city values.
			J. Fewer homes were on the market and potential sellers were reluctant to have people enter their homes to view them.

45. The outbreak of the coronavirus has had a significant impact on everyday life over the past year. Please indicate whether you believe these property attributes have become more or less important among the general public as a consequence of the pandemic. [Please check one box for each question A through H]

1. More Important	2. Same Importance	3. Less Important	
			A. A larger home with more open living space.
			B. A larger home with more rooms.
			C. A home with one or more office/work rooms.
			D. A home in a quiet living environment.
			E. A home with a large yard.
			F. A home close to family, friends and acquaintances.
			G. A home close to work.
			H. A home close to stores, restaurants and cultural amenities.

46. Why do you think home prices have risen so much despite the coronavirus?

47. If you were given the option to respond to this survey online rather than by regular mail, would you have preferred (or chosen) that method? (Please note: the survey would still be sent to you via regular mail, and your anonymity would still be preserved). [Please circle one number]

1. Respond Online
2. Respond via Regular Mail

Please use this space for general comments/suggestions:

Date Questionnaire filled out (MM/DD/YYYY): ___/___/_____/

Thank you very much for your participation in this study.

Please return this questionnaire in the stamped, self-addressed envelope provided. If the envelope has been lost, please mail the questionnaire to:

Homebuyer Survey
Yale University
C/O CompuMail
P.O. Box 162
Southington, CT 06489

Office Control Number_____