

Comments and Discussion

COMMENT BY

ADAM M. GUREN It is unusual to be asked to discuss a paper that is already a classic, but that is the predicament in which I find myself. This paper is a useful update on the pathbreaking and influential work in the authors' prior paper, Case, Shiller, and Thompson (2012). The natural place to start discussing this ten-year retrospective is thus with a ten-year retrospective discussion of the original paper. Explaining why it has been so influential and what its impact means for the current paper will give me an opportunity to discuss its methodology and the related literature and provide a brief user's guide to their data. I will then turn to discussing the analysis of the last ten years in housing markets and particularly the current pandemic housing market.

My overall message is that the authors should be applauded for their important contribution: the field of housing economics is unquestionably better due to their adding survey expectations to our tool kit. I also think their big idea—that high, long-run expectations can be used to diagnose a housing bubble, much like a yield curve inversion is used to predict a recession—is a useful one, although I think that survey evidence on expectations should be used in conjunction with other evidence rather than on its own.

SURVEY EVIDENCE ON HOUSE PRICE EXPECTATIONS

The influence of Case, Shiller, and Thompson (2012). When the authors of this paper began surveying home buyers on their expectations about the future path of house prices in the late 1980s, the idea that one would ask economic agents about their behavior and expectations was outlandish. Even in 2003, when they revived the survey, it was novel. Today, however, survey evidence on expectations is widespread and accepted as a crucial tool.

The authors deserve a great deal of credit for pioneering and legitimizing survey evidence on expectations in housing markets. Their survey was, to my knowledge, the first to go beyond the Michigan Surveys of Consumers' question on whether it is a good or bad time to buy a house and actually ask for expectations of house price growth over various horizons as well as buyers' subjective views about the state of the market. Their work helped demonstrate the value of survey evidence for understanding housing markets and cycles and make its use commonplace, although survey evidence must be taken with a grain of salt and evaluated carefully.¹

The original paper helped launch a large body of literature, which has been recently and comprehensively surveyed by Kuchler, Piazzesi, and Stroebel (2022). Given space constraints, I only note a few highlights relevant to the current paper here.

First, several key observations that Case, Shiller, and Thompson (2012) made in their initial paper, which included only ten years of data for four metro areas, have been shown to be key features of expectations after more comprehensive analysis. In particular, Case, Shiller, and Thompson (2012) hypothesized that there was the underreaction of short-term (one year ahead) expectations and overreaction of longer-run (ten years ahead) expectations, a finding that shows up again in section V of this update. Recently, Armona, Fuster, and Zafar (2019) used a novel informational experiment to show convincingly and causally that short-run expectations underpredict the degree of short-run momentum and long-run expectations do not fully account for mean reversion in house prices. Similarly, Case, Shiller, and Thompson (2012) postulated that sentiment about house prices spreads through the media and by word of mouth. Bailey and others (2018) validated this using Facebook data, showing that individuals' expectations are formed in part by the price appreciation of their out-of-town friends. Overall, with ten years of hindsight, the original paper seems uncannily prescient.

Second, since Case, Shiller, and Thompson (2012), surveys like theirs have proliferated both in the United States and abroad, which is important for two reasons. First, having more surveys and additional countries provides both more data to do the type of analysis for which the authors advocate and a richer baseline set of facts. Second, in the United States there

1. Influential work by Coibion and Gorodnichenko (2012) that uses survey evidence on inflation expectations to discriminate between models also played an important role in popularizing the use of survey evidence outside of housing markets. The wider acceptance of survey evidence in macroeconomics played a role in its growing acceptance in housing economics.

are now high-quality surveys of house price expectations by the Michigan Surveys of Consumers and the Federal Reserve Bank of New York which come out monthly and with very little lag. These surveys make data on house price expectations a viable real-time tool for policymakers and economic forecasters. Case, Shiller, and Thompson (2012) famously pointed out that in the 2000s boom, long-run expectations ballooned to the point that they were higher than short-run expectations, which they said indicated a bubble. The presence of these sorts of data will hopefully aid in identifying bubbles as they occur.

Finally, Case, Shiller, and Thompson (2012) helped motivate a literature that uses nonstandard expectations to explain the 2000s cycle. At this point, essentially every legitimate explanation of the 2000s housing cycle ascribes a significant role to overoptimistic or out-of-line expectations, although there remains disagreement on the relative role of out-of-line expectations relative to other explanations like a credit supply expansion and on the source of the out-of-line expectations. Furthermore, many papers use the Case-Shiller-Thompson (CST) data to help discipline explanations and models of what happened in the boom and bust and to discriminate between various models of nonrational beliefs, a point to which I return below.²

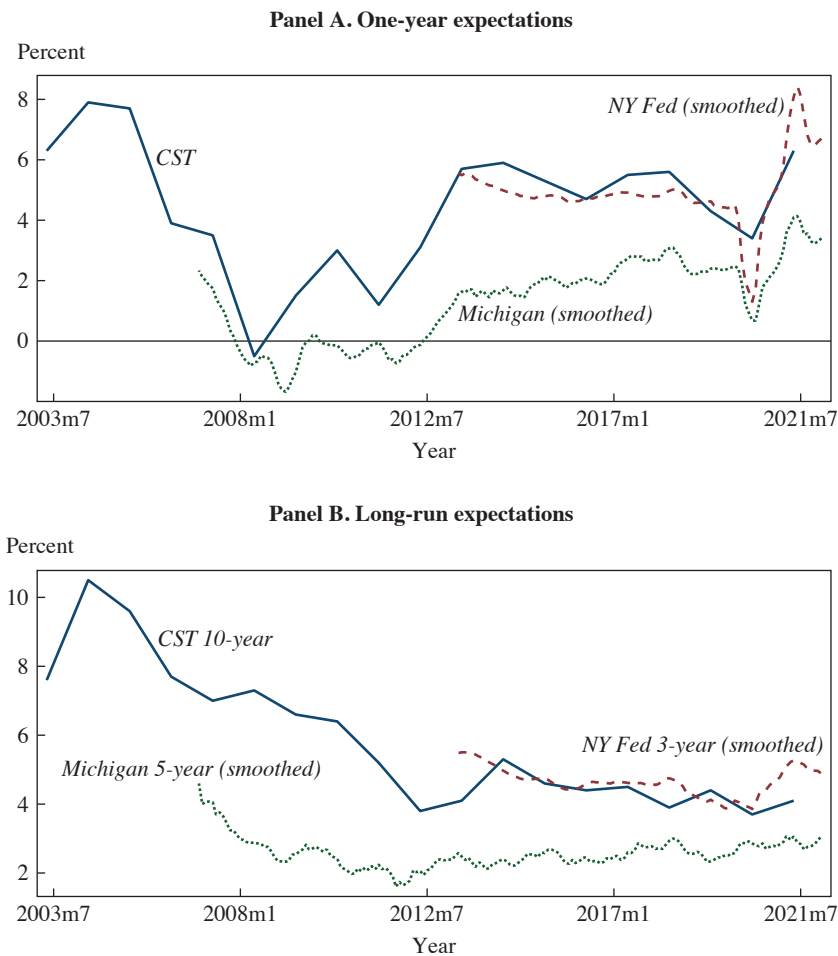
What is unique about their survey? The success of the original paper in inspiring several similar surveys somewhat limits the novelty of the findings about the last ten years in this update. While the authors point out that their survey is unique and preferable to others because it has the longest panel and because it covers recent active market participants rather than the public at large, the surveys from the Federal Reserve Bank of New York and Michigan Surveys of Consumers come out more frequently, are weighted to be representative of a full population, and use modern best practices in survey design.

Figure 1 compares these three data sources. Panel A shows one-year expectations and panel B shows long-run expectations. In both panels, the thick solid lines show the CST data in this paper (I add the late and great Chip Case's name to acknowledge his contribution), the dashed lines show data from the Federal Reserve Bank of New York Survey of Consumer Expectations (NY Fed), and the dotted lines show data from the Michigan Surveys of Consumers (Michigan).

These three surveys have different survey methodologies, phrase the questions differently, ask about various time horizons, and survey different

2. See, for example, Burnside, Eichenbaum, and Rebelo (2016), Kaplan, Mitman, and Violante (2020), and Chodorow-Reich, Guren, and McQuade (2021).

Figure 1. Comparison of House Price Expectation Surveys



Sources: Federal Reserve Bank of New York Survey of Consumer Expectations and University of Michigan Surveys of Consumers.

Note: The Case-Shiller-Thompson (CST) data are from table 3 of the paper, and the longer-run expectation is average annual house price growth over the next ten years from the survey date. The Federal Reserve Bank of New York (NY Fed) data are monthly data smoothed using a five-year moving average, and the longer-run expectation is price growth between twenty-four and thirty-six months from the survey date. The Michigan survey data are monthly data smoothed using a five-year moving average, and the longer-run expectation is average annual price growth over the next five years from the survey date. Data are accurate as of February 2022.

groups. These differences in survey design and phrasing can matter immensely. Specifically, the authors mail surveys to a random selection of recent home buyers in four distinct markets in the spring of each year, asking them for one-year-ahead and ten-year-ahead annual average appreciation beginning in 2003.³ The NY Fed uses an internet survey of a nationally representative group of household heads and asks them about national house price appreciation in the next year and from twenty-four to thirty-six months from the survey date beginning in 2014.⁴ The Michigan survey is a nationally representative telephone survey of households that asks them about the appreciation of “homes like yours in your community” over the next year and annual averages over the next five years beginning in 2007.⁵

Despite the differences, one can see that both the one-year and longer-run expectations are similar for the periods they overlap. In particular, the authors’ and NY Fed survey’s expectations are close to overlapping, with a more prominent drop early in the pandemic and spike late in the pandemic for the higher-frequency NY Fed data. The Michigan data, by contrast, generally give lower average expectations but similar time paths. Nonetheless, the key patterns that the authors highlight in this paper, namely, the fact that longer-run and shorter-run expectations largely overlap since 2012 and do not appear out of line in the pandemic, are both visible in the NY Fed and Michigan surveys. The fact that in the bust short-term expectations fall by more than long-term expectations is visible in both the CST and Michigan data.

3. The authors ask, “How much of a change do you expect there to be in the value of your home over the next 12 months?” and “*On average* over the next ten years how much do you expect the value of your property to change *each year*?” (their emphasis, which was added starting in the 2012 survey). They have a response rate of 12–44 percent. Their survey asks only about house prices.

4. The NY Fed survey says, “Think about home prices nationwide” and asks, “*Over the next 12 months*, by about what percent do you expect the average home price to increase/decrease?” and “*Over the 12-month period between* [twenty-four months from survey date] *and* [thirty-six months from survey date], by what percent do you expect the average home price to increase/decrease?” (their emphasis). The survey is weighted to be representative given response rates. The survey asks about a broad range of expectations, with the house price questions coming immediately after questions about income and credit availability in the middle of the survey.

5. The Michigan Surveys asks, “By about what percent do you expect prices of homes like yours in your community to go up/down, on average over the next twelve months?” and “By about what percent per year do you expect prices of homes like yours in your community to go up/down, on average, over the next five years or so?” The survey is weighted to be representative given response rates. The survey asks about a broad range of expectations, with the house price questions coming after questions about inflation, and specifically gas prices, toward the end of the survey.

What makes the CST data unique is that it is the only survey that covers the entirety of the 2000s boom and bust. This cycle is the largest and most consequential on record, so having data that show just how out of line expectations—and in particular longer-run expectations—were in the boom is crucial to being able to use expectations data to diagnose a bubble in real time going forward. Indeed, the authors' observation that long-run expectations do not seem out of line in the pandemic boom is only revealing in comparison to their findings on the 2000s. The NY Fed survey may capture the later period, but since we do not know what this time series would look like in a significant boom and bust, it is hard to know how to interpret the COVID-19-era data. The same goes to a lesser extent for the Michigan data, which do not cover the 2000s boom.

That being said, given that data are released in near real time, the NY Fed and Michigan surveys are the early warning system for policymakers and economic forecasters. To maximize the impact of their research and big ideas about how survey expectations of house prices can be used to assess the direction of the housing market, I hope that Shiller and Thompson can work with the NY Fed and Michigan to compare survey designs and questions. By asking each other's questions with each other's phrasings for several years going forward—and possibly asking lab participants to answer multiple different survey questions and phrasings in multiple different scenarios—one can get to the bottom of whether these surveys behave differently due to the groups surveyed, the phrasing and sequencing of the questions, or other factors. This will help us ascertain how the real-time surveys might look in a 2000s-like housing cycle and help policymakers assess the trajectory of the housing market with this sort of survey data. In other words, by treating these other surveys as complements, not competitors, I think Shiller and Thompson can dramatically increase the influence and use of the type of survey data they pioneered.

A user's guide to the CST data. There are two important things that users of the CST data should know.

First, the CST data suffer particularly in the boom (2003–2005) period from extremely high reported ten-year expectations. While the authors argue that 10 percent expected price inflation over the next ten years is not out of line with what actually happened over the prior ten years, any model that attempts to match the level of expected ten-year appreciation they find will dramatically overpredict the size of the boom. Indeed, all papers that use the CST data as a calibration target that I know of find a way to artfully dodge the ten-year house price expectations in 2004 and 2005 for this

very reason—either by using the one-year expectations, by using an average of many years of the ten-year expectations, or by using the CST ten-year expectations starting in 2006.

My concern, and the concern of David Laibson (2012), who focused his discussion of the original Case, Shiller, and Thompson paper on this issue, is that some of this is due to respondents misunderstanding the question. Prior to 2012, the survey did not underline and bold that the ten-year expectation was supposed to be “on average” and a growth rate for “each year,” and Laibson argues that some households misread this question in particular by conflating the average and total return. Given this, Laibson writes that the ten-year expectations “cannot be interpreted literally” (301). The authors clearly took this seriously, as they explored this in the 2013 survey and found that 22 percent misunderstood the question. I share some of Laibson’s hesitance, but I am pleased to report that in this ten-year retrospective paper the authors do a better job adjusting for the sorts of survey confusion that concerned Laibson prior to 2012. Rather than reporting raw 10 percent trimmed means (dropping the highest and lowest 5 percent of responses and then calculating a mean), the authors now replace cases where the respondent gave a ten-year annual average expectation more than ten times their one-year expectation with the one-year expected values and then calculate a 10 percent trimmed mean. This brings down some of the more extreme expectations—for instance, in 2004 and 2005 in Orange County, the average expectation for annual appreciation over the next ten years is 13.3 percent and 10.4 percent, respectively, rather than 17.4 percent and 15.2 percent. While these results should still be taken with a grain of salt and used carefully, the new figures are preferable.

Second, given the improvements in calculating the ten-year expectations in the new version, I urge researchers to use the updated expectations data from this 2022 version rather than the 2012 paper. That being said, I think there are still potential improvements. For instance, it is not clear that replacing the ten-year expectation with the one-year expectation when the ten-year expectation is implausible is desirable. For this reason, I hope that Shiller and Thompson are able to release anonymized micro data so that researchers can implement their own trimming procedures as appropriate (not to mention analyze things like disagreement that one can only consider with micro data).

THE 2012–2020 REBOUND Part of the authors’ analysis focuses on the “second” or “current” boom from 2012–2020. They compare this boom—in which short-run and long-run price expectations have remained stable

and in line with mortgage interest rates—to the 2000s boom when short- and particularly long-run expectations skyrocketed. One interpretation of their findings is that expectations were more rational in the second boom.

I want to present an alternate view, which I develop with Gabriel Chodorow-Reich and Tim McQuade in a recent paper (Chodorow-Reich, Guren, and McQuade 2021), that the 2012–2020 boom is not a second boom but instead the rebound phase of a single, twenty-year boom-bust-rebound cycle. We begin with the observation that in the cross section, areas with the largest booms (1997–2006) and busts (2006–2012) also had the largest rebounds (2012–2019). Indeed, the bust and the rebound are as highly correlated in the cross section as the bust and boom are. Furthermore, the boom is highly correlated with the overall 1997–2017 boom-bust-rebound price growth, with an R^2 of 0.62. The extremely high correlations across the three phases are indicative of a single boom-bust-rebound cycle rather than a boom-bust followed by a second unrelated boom. Furthermore, high correlation between the boom and longer-term price growth from 1997 to 2019 is suggestive of the boom being an overreaction to real improvements in fundamentals, an idea we explore systematically both in the data and using a model in the remainder of our paper.

We first pursue this interpretation of fundamental improvements driving long-run price growth empirically using a structural urban framework. We extract a city-level fundamental as a function of instruments for income, amenities, and supply and show that our estimated fundamental is correlated not only with long-run house price growth but also with the amplitude of the boom-bust-rebound cycle and the severity of the foreclosures crisis in the bust.

We then write down a model of a fundamentally rooted house price cycle. In the model, a single improvement in the drift term of the dividend to living in a city in the late 1990s leads to a boom-bust-rebound pattern consistent with the data. Intuitively, the boom is generated by overoptimism about the fundamental improvement, the bust occurs as beliefs correct, bringing down prices and leading to price overshooting due to foreclosures. Finally, the rebound occurs as foreclosures recede and prices converge to a new, higher-growth, balanced growth path. In the model, overoptimism occurs due to diagnostic expectations, which are nonrational expectations developed by Bordalo and others (2019) that embed a tractable formalization of Kahneman and Tversky's representativeness heuristic. The representativeness heuristic is that people tend to overweight the likelihood of a trait in a class when that trait has a higher likelihood in a class than in a reference population; for instance, people tend to overestimate the share of Irish with

red hair because red hair is more prevalent among the Irish. In the context of asset prices, the reference population is the full history of observed dividends and the class is recently observed dividends, with inference over the dividend drift rate. As people observe higher dividends, they overweight the probability of a very high dividend growth state, leading their long-run house price expectations to rise significantly. As people get more and more data, they realize their error, and their beliefs converge to the rational belief gradually from above. Combined with the overshooting on the downside from foreclosures, this delivers a boom-bust-rebound, which we show is quantitatively consistent with the cross section of boom-bust-rebounds across groups of cities. I see nothing in the authors' analysis of the 2012–2020 boom that is inconsistent with this story and consider it useful to think of the 2012–2020 boom this way in interpreting the authors' results.

Chodorow-Reich, Guren, and McQuade (2021) is also a good example of how the literature has used the CST expectation survey data to discriminate between various models of nonrational beliefs and discipline macro models of the 2000s housing cycle. Indeed, one of the main reasons we use diagnostic expectations is because they are consistent with the CST observation that long-run expectations do not overshoot in the bust and instead converge smoothly from above; most other candidate models of expectations do not give this prediction.⁶ The findings in here thus not only help reject rationality but also help narrow down the set of plausible nonrational models.

THE PANDEMIC HOUSING MARKET Much of the analysis in the paper concerns the recent surge in house prices seen since the onset of the COVID-19 pandemic. As mentioned above, the authors suggest that high long-run expectations can be used to diagnose a housing bubble in real time much like a yield curve inversion is used to predict a recession. They argue that ten-year expectations have not grown rapidly and so “we would not call the experience a bubble, at least not in the classic sense.” That being said, they do hedge themselves a bit by saying the market “resembles a bubble in the sense that it is driven by a kind of excitement or fear of missing out.”

At the risk of making an inaccurate prediction, I agree with the authors: the pandemic price surge does not look like the bubble we experienced in the 2000s, so it is unlikely we will experience a correction like the one we experienced in the 2000s. In coming to this conclusion, the authors' observation that long-run expectations have not increased significantly is an

6. Diagnostic expectations also create an independence between the amplitude of the cycle and the length of the boom and bust, which we observe in the cross-city data.

important data point, but it is not the only one. It is also important to note the lack of rapid credit expansion or speculation by short-term traders or house “flippers.” Various measures such as loan-to-value ratios, payment-to-income ratios, and credit scores of new mortgages suggest that we have not seen the type of credit expansion that occurred across the spectrum of borrower quality in the 2000s. For instance, one summary measure, the Mortgage Credit Availability Index published by the Mortgage Bankers Association, saw a huge expansion and contraction in the 2000s but has barely budged in the pandemic. This is important because authors like Greenwood and others (2022) have argued that rapid expansions in credit together with asset prices are predictive of bubbles and financial crises. Similarly, we do not seem to see a surge in the number of non-owner-occupant purchasers that we saw in the 2000s, which is a real-time proxy for the presence of speculators.⁷ This sort of speculative activity is another hallmark of asset bubbles. Overall, I agree with the authors that policy-makers and economic forecasters should use measures of long-term house price expectations in diagnosing a bubble, but I think they should be used in conjunction with other indicators rather than in a vacuum.

The other reason I am skeptical that the pandemic housing market is an expectation-fueled bubble is that there are good reasons to think that the pandemic has increased housing demand and constrained housing supply. On the demand side, the pandemic increased demand for housing space. Households began to work from home. City dwellers learned the value of additional space, particularly outdoors. Younger families decided to move to the suburbs sooner. At the same time, older households decided to age in place rather than downsizing or moving to senior living or a nursing home. All of these trends dramatically increased the demand for housing space. On the supply side, several factors have conspired to limit supply. For existing homes, the lack of downsizing by older households limited the supply of existing homes and led to record-low inventories of existing for-sale homes. Construction was also limited by material availability and supply chain disruptions as well as strong labor markets that drove up wages for construction workers, and particularly for skilled construction workers, who are in short supply. Immigration restrictions have also helped to drive up construction wages. The pandemic-induced expansion in demand and inelastic supply together led to a surge in house prices.

7. “Speculators” do not include institutional investors who are buying properties to hold and rent out. The market share of this type of investor has grown recently.

Of course, the fact that we will likely not experience a correction like the one we experienced last time does not mean there will not be a different type of correction. We tend to fight the last war but there are other factors to think about in the pandemic housing market that may not be as easily diagnosed using survey expectations. In particular, in assessing the risks of a different correction, housing economists should be paying attention to future supply and preferences for housing space.⁸

First, an eventual supply response could lead to a correction. The housing market currently appears to be supply constrained even in cities typically considered to be long-run elastic. Eventually supply should respond and construction should accelerate. But when and by how much? And perhaps more importantly, are market participants accounting for a medium-run supply response when forming their expectations today? Or are market participants neglecting the future supply response (Greenwood and Hanson 2015)? Joseph Gyourko is an expert on housing supply and discusses these questions at length in the next comment, so I will be brief: I share his concerns about how much we can learn from survey expectations when those expectations may not incorporate future supply responses fully.

Second, it is unclear whether the pandemic-induced change in preferences will reverse or be permanent. As I discussed above, the pandemic led to a significant increase in demand for housing space due to everything from working from home to people spending more time at home and valuing having more space to the desire to have outside space to older households wanting to age in place. One could imagine a world in which this reverses and prices decline significantly. One could just as easily imagine a world in which many of these changes in tastes are long-lived and housing demand stays strong.

In thinking about the pandemic, I am often drawn to the work of Malmendier and Nagel, who show that living through a traumatic economic event such as the Great Depression (Malmendier and Nagel 2011) or Great Inflation (Malmendier and Nagel 2016) has long-lasting impacts on economic agents' preferences, risk tolerances, and expectations. I suspect the COVID-19 pandemic will have similar long-run effects on preferences, but it is hard to know exactly how and whether preferences relevant to housing

8. In the very short run, inflation and interest rates are also a risk for the housing market. At the time of writing, mortgage rates have surged from about 2.8 percent in the fall to 5.3 percent in May 2022. Rising mortgage rates will put a damper on housing demand and could cool the market off and potentially lead to a correction.

markets like working from home and wanting more space will continue long-term. Economists are generally bad at forecasting changes in preferences. I thus think we need to be humble in our forecasts of housing prices and housing demand more generally.

I want to conclude where I began: the authors should be applauded for introducing and popularizing survey expectations about house prices as an important tool in analyzing housing markets. The more data on this subject that are available the better. I hope that going forward the authors are able to open up their tremendous treasure trove of data—including micro data—to researchers so that we can better understand house price expectations and their role in shaping the dynamics of housing markets.

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COMMENT BY

JOSEPH GYOURKO It is a pleasure and honor to comment on this paper. Not only is it of broad interest to professional economists, but it can profitably be read by policymakers and practitioners in housing markets. The ongoing data collection effort that underpins the paper was visionary when begun in 1988 and now constitutes a valuable public good for the economics profession. The repeated cross sections date back far enough in time to cover more than a full housing cycle—spanning the long boom leading up to the global financial crisis, the subsequent great decline, the long recovery, and now the sharp upsurge in prices during the COVID-19 crisis. The length of that time span makes it unique compared to newer surveys of price expectations. I only wish that Chip Case, an original collaborator on this research program, was here to help present this second ten-year review of results for Brookings. He is much missed, especially by those of us who study housing markets.

The paper is well written and provides detailed descriptions of many of its key results. I see no reason to summarize or critique much of that material, although I do provide specific commentary in select instances. Hence, most of my comments are wide-ranging in nature. They include a suggestion to link this paper's survey and results to other research that was initiated more recently and often inspired by the Case, Shiller, and Thompson series. Doing so would help the economics profession see what it can learn from better integrating this effort with that of others. Hopefully, the result will be greater than the simple sum of the individual parts (i.e., of the different surveys of expectations). I also include a detailed discussion of the COVID-19 period. The authors provide substantial detail on this period, too, as it has been a remarkable time for housing markets. I do not think there is much to improve upon in terms of their discussion of the 2020 and