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House Price Booms, Then and Now

House prices rose rapidly in the run-up to the crash of 2007, but not everywhere. Understanding why can help us prepare for future recessions.

BY BURCU EYIGUNGOR

House prices boomed in the early 2000s, but not everywhere. Many places experienced only mild price increases.

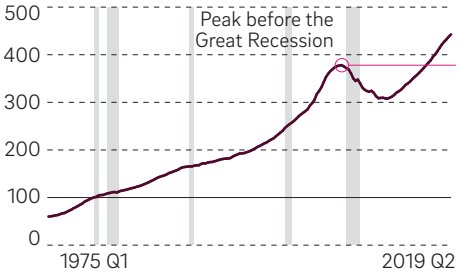
Economists have two explanations for this diversity in the increase in house prices across locations. One is that demand increased everywhere, but prices increased more where supply could not easily expand. I call this the aggregate demand view. In the second explanation, demand increased more in densely settled areas where additional construction was difficult. As more people wanted to live in those locations, aggregate house prices rose. I call this the reallocation view.

I explore the evidence for both views. Although both mechanisms probably contributed to this diversity of house prices during the boom, one was likely dominant. Understanding which was dominant is especially important now, as prices have risen again. The Federal Housing Finance Agency's (FHFA's) all-transactions house price index has passed its previous peak, and, when discounted by the GDP deflator, the index is very close to the previous peak in real terms, too (Figures 1-2). The previous house price increase was followed by a large bust leading to the Great Recession. Are we risking another house price bust today?

FIGURES 1 AND 2

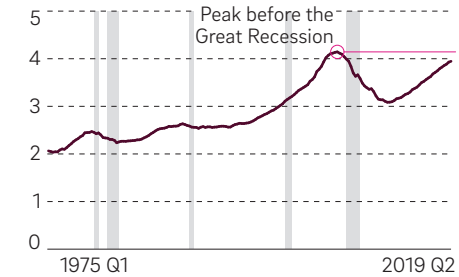
The House Price Index Has Passed Its Peak and Almost Equals It When Deflated

U.S. FHFA All-Transactions House Price Index



Note: 1980=100. **Sources:** FHFA/Haver Analytics.

Deflated FHFA All-Transactions House Price Index



Note: House Price Index is deflated by GDP Implicit Price Deflator. Grey bars represent recessions.
Sources: FHFA/Haver Analytics.

Two Views on the Aggregate House Price Boom

According to the aggregate demand view, the demand for housing increased roughly similarly across locations, which led to the house price boom.

An increased desire for homeownership may have directly boosted demand. As more people want to buy homes, consumption of housing typically increases. Or something indirect may have increased demand. Low interest rates or a relaxation of borrowing constraints could have made homeownership more accessible, leading to more demand for housing.

Regardless of cause, a demand shock would have spurred households to want to consume more housing everywhere, but prices would have increased even more where supply could not expand easily (that is, where there was low supply elasticity). In these locations, higher prices would have prevented locals from consuming more housing and nonlocals from moving in.

Several economists embrace this view and have searched for an aggregate shock that could have led to the aggregate house price increase. Either their models do not differentiate by geography,[1] or they use different house supply constraints across space to predict the differential house price growth.[2] Either way, these economists assume that places with more stringent house supply restrictions were no more attractive to live in during the boom.

But according to the reallocation view, a reallocation shock made some locations more attractive than others. For this to lead to higher *aggregate* house prices, people must have wanted to move from less-dense areas (where housing could be created cheaply) to areas where housing could not easily expand.[3]

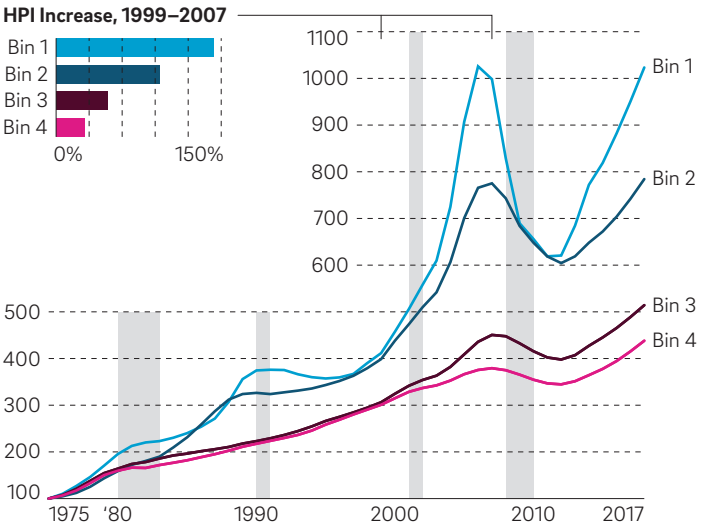
Economists who embrace the reallocation view posit several reasons why denser locations might have become more appealing. For example, the service sector, which has supplanted the industrial sector in many parts of the country, benefits from a density of population and requires less land than factories do.

FIGURE 3

House Prices Increased More in Some Bins

In 2000s, house price growth was concentrated in top two bins.

U.S. FHFA all-transactions house price index, 1975–2017, 1975=100



Source: FHFA.

Also, innovators benefit from proximity to other innovators. Indeed, the rate of invention goes up with urban density.[4]

These views beget different policies. If the demand increase for housing is similar across locations, federal policymakers may want to diminish the magnitude of the boom-bust cycle through regulation or monetary policy. Doing so would lower the cost of a recession that might follow a large house price boom. But if aggregate house prices rise because of reallocation, then federal policymakers might not be able to stabilize house prices through regulation or monetary policy. Instead, it would be up to local governments to increase the housing supply and stabilize house price increases by relaxing zoning and building restrictions.

Analyzing the Two Views

To analyze the relative importance of each view, I rank locations according to their house price increase from 1999 to 2007. I split locations into four separate bins, with each bin having a roughly equal share of employment in 1999. Throughout the analysis, the first (or top) bin saw the highest house price growth, the second bin the second-highest house price growth, and so on.

There was a substantial house price increase during the early 2000s in the top two bins, but the increase was mild for the bottom two bins (Figure 3). House prices in the first bin, which had the highest house price increase during the early 2000s, are once again booming, so maybe there is something different about these locations—something that gives them more pronounced boom-bust cycles.[5]

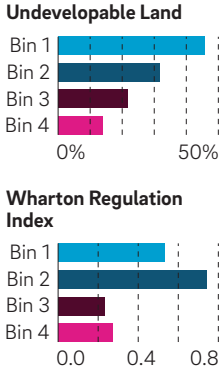
House supply elasticity varies across locations, and this plays a crucial role in both views. If aggregate demand increases, people everywhere would like to consume more housing, but if housing cannot expand in one location, house prices rise more in that location. This dissuades locals from consuming more housing or nonlocals from moving in. But if reallocation leads to higher aggregate prices, people should be moving into higher-priced locations where housing cannot expand easily. In both views, prices increase more where housing cannot easily expand, but for different reasons.

Economists have two ways to assess how hard it is to expand housing. One is the Wharton Regulation Index (WRI), which measures the regulatory hurdles new development faces in different locations. The other, the Saiz measure, documents the share of undevelopable land in the most populous 100 metropolitan areas.[6] Figure 4 displays the average WRI and Saiz measure for all four bins. (Each location is weighted by its employment in 1999.) Consistent with both views, constructing new housing is hardest in the top two bins, which had the highest price increases.

FIGURE 4

More Barriers to Development

Two measures show it was harder to expand housing in markets that saw highest increase in home prices.



Source: Saiz (2010); University of Pennsylvania.

Relative Housing Demand

One way to distinguish between the two views is by looking at the correlation between house price growth and employment growth during the house price boom of 1999-2007. If an aggregate demand shock was dominant, places with higher house price growth should have experienced lower employment growth—that is, the correlation between house price growth and employment growth across locations should have been negative. This is because where supply cannot expand easily, house prices rise more and employment growth suffers. But if the reallocation forces are strong enough, then we would see that places with higher house price growth also have higher employment growth (that is, a positive correlation). In spite of higher house price increases, the demand increase is so much stronger in these locations that employment growth is higher as well.

To assess whether a location had strong employment growth, it helps to know its initial employment. Employment in big cities, which have less developable land, might not be able to grow as fast as in small cities. Three percent employment growth in a year might be very strong for a big city but unexceptional for a small city.

This is why Figure 5 shows the logarithm of initial employment in 1999 on the x-axis and employment growth between 1999 and 2007 on the y-axis. Blue dots denote locations in the top two bins with the highest house price growth. Red dots denote locations in the bottom two bins with the lowest house price growth. Each dot represents the average of 20 locations. All the blue dots are above the red dots, which means that, on average, places with higher house price growth also had higher employment growth. This indicates that reallocation was dominant during this period.[7]

Reallocation was strongly at play during the boom years, but how does this compare to other periods? To find out, I look at how employment has evolved across the different bins. Employment grew faster in the first bin: From 1969, the first year data are available, to 1995, employment in the first bin grew at an annual rate of 2.9 percent; from 1995 to 2007, it grew at 2.4 percent. In other words, we do not see an acceleration in the growth of employment in the first bin during the period with higher aggregate house price growth (Figure 6).

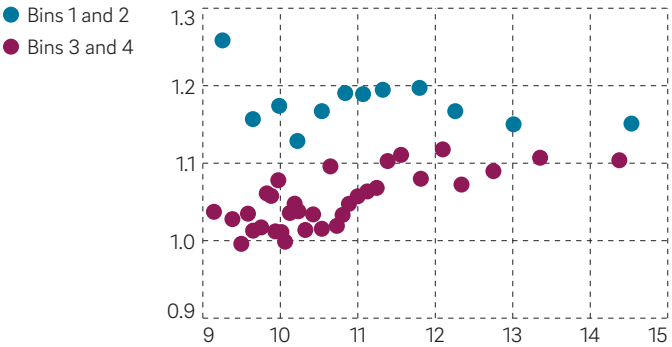
To clearly show the relative growth of the top bin, Figure 7 divides the average employment of the cities in each bin by the average employment in the fourth bin. We see that the top bin was composed of bigger cities overall, and it has grown faster relative to the bottom bin during the sample period. Again, we do not see an acceleration of this relative growth after 1995 (when real aggregate house price growth increased).

My analysis of the data leaves us with a mixed conclusion. Yes, there has been an ongoing reallocation across locations, and more desirable locations in the first bin have had faster employment and faster house price growth for a long time. But reallocation does not seem to have accelerated during the early 2000s, so it is at best an incomplete cause of that era's large price boom. Given that we are not able to settle the debate on what caused the steep increase in house prices during the 2000s and why it is happening again, we should keep an eye on risk factors that might lead to excessive risk-taking, exacerbating the boom-bust episodes.

FIGURE 5

Employment Grows Strongly in Top Two Bins

Logarithm of initial employment, 1999, on x-axis; employment growth, 1999–2007, on y-axis; each dot equals average of 20 locations

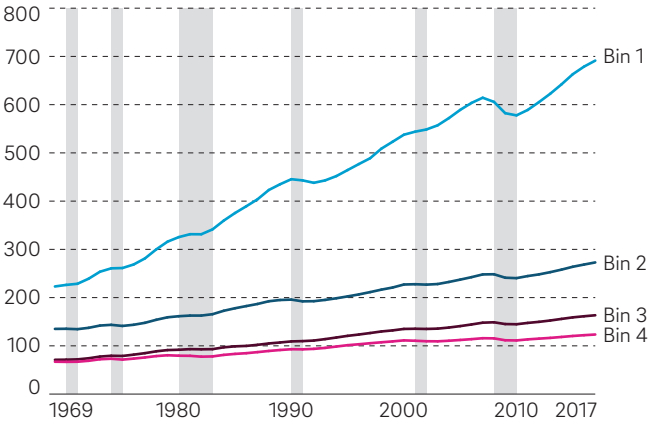


Source: FHFA and U.S. Bureau of Economic Analysis (BEA).

FIGURE 6

Employment Grows Most in First Bin...

Average employment in cities, thousands, 1969–2017

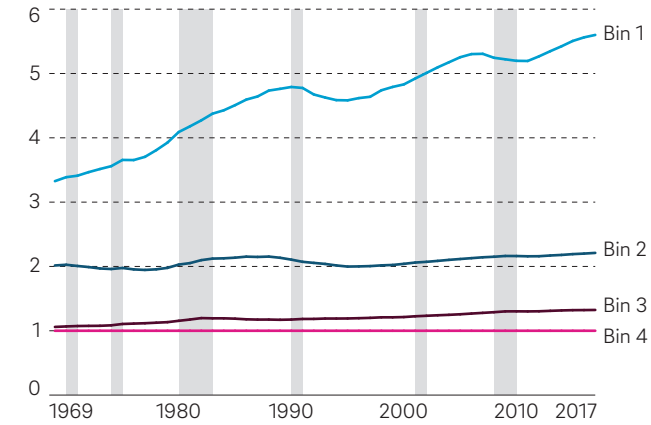


Source: BEA.

FIGURE 7

... Even When Normalized

Average employment in cities, thousands, 1969-2017, normalized by fourth bin

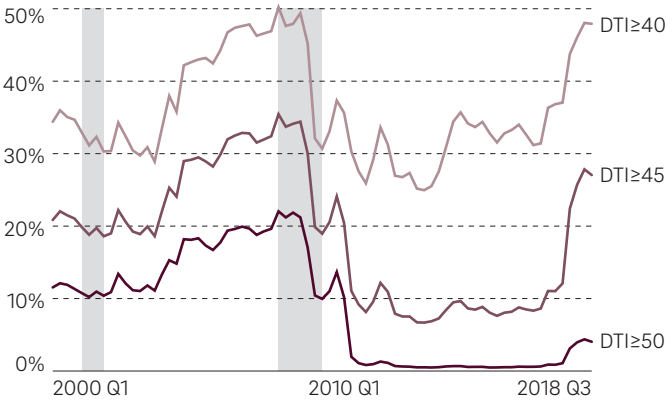


Source: BEA.

FIGURE 8

Higher-Risk Mortgages Spike After Rules Loosened

DTI ratio of 30-year fixed mortgages at origination, 2000–2018



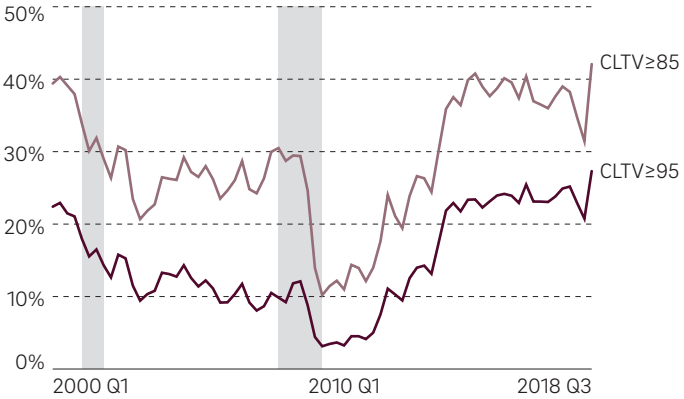
Source: Fannie Mae loan performance data.

FIGURE 9

Riskier Loans Rise

After FHFA directed GSEs to increase maximum LTV, share of riskier mortgages gradually increased.

Combined LTV ratio of 30-year fixed mortgages at origination, excl. refinance loans



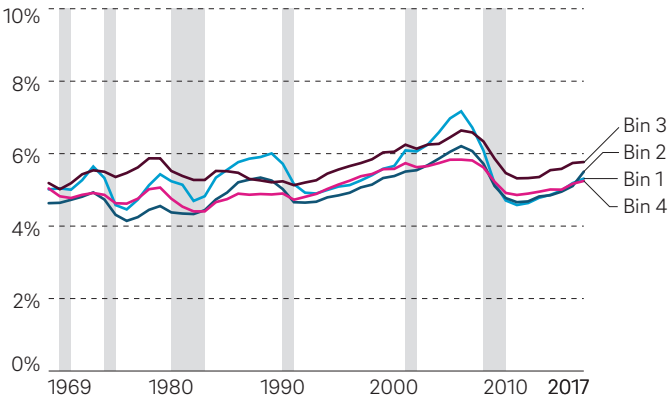
Source: Fannie Mae loan performance data.

FIGURE 10

Only a Mild Increase in Construction Employment

Construction share of employment increased sharply during the early 2000s, mildly since 2012.

House price growth and construction share in employment, 1969–2017



Source: BEA.

Risk Factors Facing the Economy

Three macroeconomic variables may have contributed to the boom and bust of the 2000s: looser borrowing constraints, a construction boom, and backward-looking credit scoring.

During (especially long-lasting) booms, risks may be forgotten and creditors might relax borrowing constraints. When a recession hits, creditors reinstate those constraints, exacerbating the bust.

To measure the effect of looser borrowing constraints, I focus on loans acquired by government-sponsored enterprise (GSE) Fannie Mae. Fannie Mae acquires only conforming mortgages. To conform, the mortgage must not exceed the maximum debt-service-to-income (DTI) ratio and the maximum loan-to-value (LTV) ratio.

The loosening of the DTI constraint may have led to the housing boom.[8] Prior to 2008, GSEs Fannie Mae and Freddie Mac purchased mortgages with DTI ratios up to 65 percent. In early 2010, when loose lending standards were blamed for the high mortgage default rates after the recession hit, the GSEs reduced the DTI limit to 50 percent. Fannie Mae imposed additional credit score requirements for mortgages with a DTI ratio between 45 and 50 percent.

Those constraints have recently been loosened. In April 2017 the FHFA eliminated additional requirements for mortgages up to 50 percent DTI. The rule change had an immediate effect on Fannie Mae mortgages: The percentage of 30-year fixed-rate mortgages that originated with a DTI ratio greater than or equal to 45 percent rose from 8.6 percent in the fourth quarter of 2016 to 27 percent in the third quarter of 2018 (Figure 8).

Meanwhile, in 2015, the FHFA directed the GSEs to increase the maximum LTV from 95 percent to 97 percent. In response, the share of 30-year fixed-rate mortgages with an LTV ratio greater than 95 percent gradually increased to its highest level since 2000. Today these mortgages constitute around 25 percent of the loans at origination (Figure 9). This gradual increase began in 2011, around the time that house prices began their rise.

Although these numbers indicate that there is increasing risk in the market for conforming loans, loans with a DTI ratio greater than 50 percent are far less common today than they were before the Great Recession, and many of the highly risky nonconforming mortgages—such as balloon loans and no-interest loans—no longer exist.

A second risk factor is a construction boom. Some economists argue that the construction boom of the early 2000s created an excess supply of housing, which led to the subsequent house price crash.[9]

Whereas the construction share of employment increased sharply during the early 2000s, the increase since 2012 has been mild (Figure 10). This might be good news: If the economy slows down, house prices may decline less than they did in the 2000s. (The bad news: House prices may have been rising recently because not enough housing was being built.)

Backward-looking credit scoring, when combined with a swing in bankruptcy rates, is a third risk factor that may magnify boom-bust cycles.

Figure 11 shows the bankruptcy rate for the different bins. A 2005 change in bankruptcy law led to a large increase in bankruptcy filings. (That is, many people rushed to file in 2005

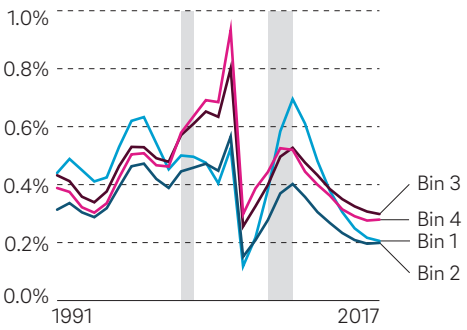
before the change took effect.) Other than this spike, the bankruptcy rate fell fast in the first bin during the house price boom: Before 1999, the first bin had the highest bankruptcy rate; between 1999 and 2006, it had the lowest.

FIGURE 11

Bankruptcy Rate Fell Fast

First bin had highest bankruptcy rate before 1999, lowest 1999–2006.

Bankruptcy rate, 1991–2017



Source: BEA.

There are three reasons why rising house prices might lead to a drop in the bankruptcy rate. First, households can dip into their rising housing equity to pay back their obligations. Second, households don't want to risk losing their homes–and their rising equity–in bankruptcy. And third, the housing boom might lead to a stronger local employment market and thus higher incomes for households.

Regardless of the cause of this lower bankruptcy rate, backward-looking credit scoring in the first bin would have led to higher credit scores for those households and possibly looser credit constraints.

During the recession that started in 2007, places that had previously seen the largest increase in house prices and lowest bankruptcy rate now had the largest decline in house prices and the highest bankruptcy rate. Although the households in the first bin would have had the highest credit scores during the boom (in backward-looking credit scoring), they were in fact the riskiest borrowers when future risks are taken into account. Rising credit scores for these bankruptcy-prone households may thus exacerbate boom-bust cycles by making it too easy for them to get credit.

Conclusion

The second house price boom within two decades shows that the 2000 boom was not a one-off event. However, the current cycle may be different. Although real house prices are very close to their previous peak, construction growth is mild, and we're not seeing a return of the riskiest type of mortgages, so the house price decline in the next recession (which may now be upon us) might be milder than during the Great Recession. Nonetheless, discovering why house price cycles have become more pronounced in the last two decades should help us prevent a large bust from following future booms. EI

Notes

1 See Favilukis et al. (2017), Garriga et al. (2019), Greenwald (2018), He et al. (2015), and Justiniano et al. (2019).

2 See Mian et al. (2013) and Mian and Sufi (2014).

3 See Gyourko et al. (2013), Davidoff (2016), and Howard and Liebersohn (2019a, 2019b).

4 See Carlino et al. (2007).

5 The first bin's most populous locations are these metropolitan statistical areas: Los Angeles-Long Beach-Anaheim (CA), Washington-Arlington-Alexandria (DC-VA-MD-WV), San Francisco-Oakland-Hayward (CA), and Miami-Fort Lauderdale-West Palm Beach (FL).

6 See Saiz (2010).

7 Indeed, some of the cities in the first bin have had quite large employment growth. For example, between 1999 and 2007 employment in Las Vegas-Henderson-Paradise (NV), Phoenix-Mesa-Scottsdale (AZ), and Riverside-San Bernardino-Ontario (CA) grew more than 30 percent while housing supply expanded and house prices rose.

8 See Greenwald (2018).

9 See McNulty (2009).

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