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No Housing Bubble Yet

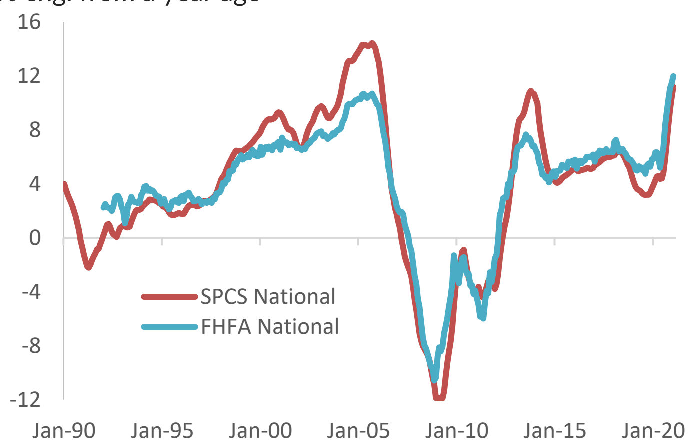
No housing bubble yet

- House price appreciation has reached double digits
- So far, this is a sign of supply shortage amid strong demand…
- …and not a bubble alarm
- Mortgage lending and house construction have not yet reached excessive levels
- Tougher regulation and a different mindset to prevent a déjà-vu

House prices in the US started to accelerate in the second half of last year. The nation-wide house-price-appreciation (HPA) rate rose from 4.4% last June to 11.2% in January according to S&P/Case-Shiller (SPCS).[1] The Federal Housing Finance Agency (FHFA) reported a similar rise in the national HPA rate (see Chart 1).

Chart 1: US house price appreciation

% chg. from a year ago



Source: S&P/Case-Shiller and FHFA [2]

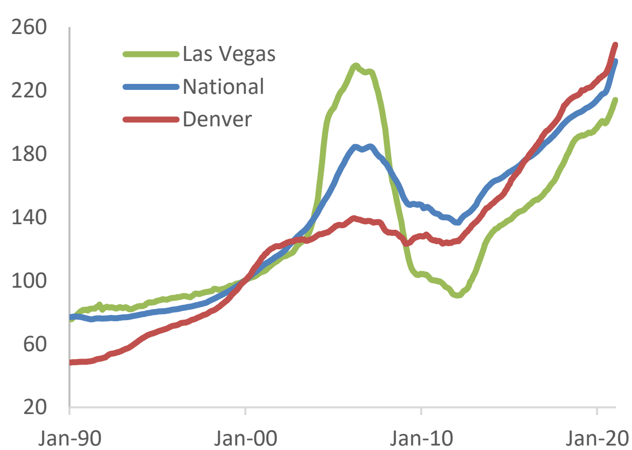
The increase in HPA rates is also quite similar across regions and cities. The FHFA reports HPA rates for all nine census regions in a range between 10% and 15% for January.[3] SPCS reports HPA rates in the range of 8% to 16% for the 20 major cities, with Phoenix at the top and Las Vegas at the bottom during the same period.[4]

National house prices also far exceed the peaks last seen prior to the financial crisis by 29% according to SPSC and by 40% according to FHFA.[5] House prices in all nine census regions are between 28% (Middle Atlantic) and 66% (West South Central) above previous peak levels.[6]

The only cities with house prices below the prior peak are Las Vegas (-9.2%), Chicago (-8.1%) and Miami (-2.1%), while Denver (+78.6%), Dallas (+68.8%) and Seattle (+57.3%) have house prices well above previous peaks.[7] Cities with less rampant HPA rates in the prior boom have typically seen house prices rise more since the financial crisis and vice versa (see Chart 2).

Chart 2: Selected US house price indices

2000 = 100



Source: S&P/Case-Shiller [8]

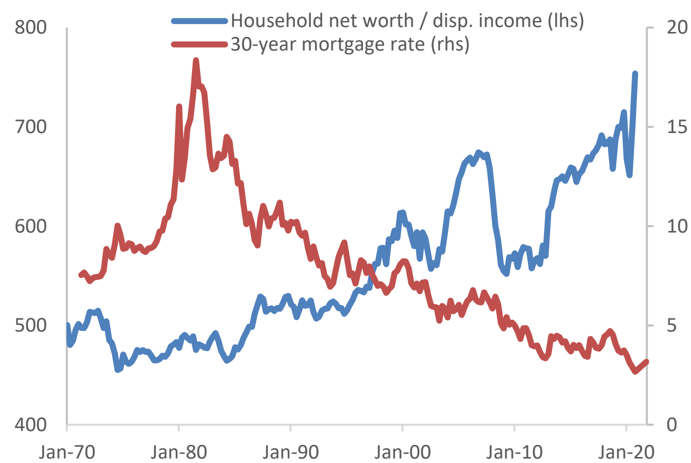
Bubble reminder

The rise in HPA rates as well as the level house prices have reached in most places since the last peak bring back memories of the housing bubble that led to the financial crisis.

Anyone who worries about a déjà-vu should be forgiven, especially with households sitting on a record net worth of 7.5 times their disposable incomes plus the extra cash from the latest fiscal stimulus package, mortgage rates still near record lows (see Chart 3) and optimism spreading rapidly with the vaccination progress.

Chart 3: Net worth & mortgage rate

% both scales



Source: Board of Governors of the Federal Reserve System and Freddie Mac [9]

It takes three to bubble

We take these concerns seriously, as well, but note that the situation has reached neither the dynamic nor the level of excesses that typically characterize a bubble.

Housing bubbles are speculative dynamics with three components:

- Self-fulfilling price expectations that push actual prices far above their sustainable equilibrium levels.
- An oversupply of housing due to people seduced by rising price expectations.

- Unsustainable levels of leverage to pay for rising house prices as well as the purchase of newer and larger houses.

The result of these excesses is rising vacancy rates. The bubble eventually bursts either on its own, as borrowers' financial stress becomes unsustainable, or due to an external shock, often some form of monetary tightening.

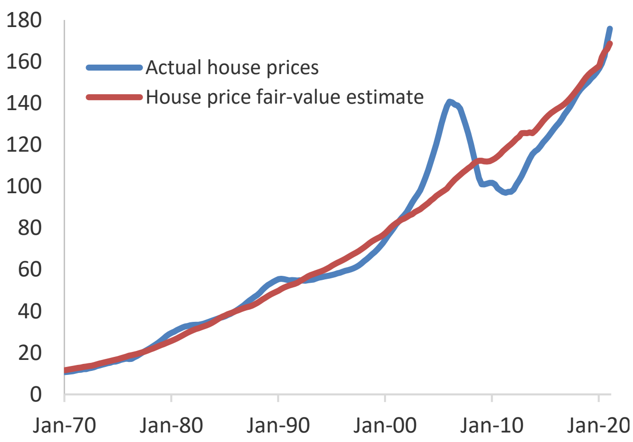
House prices not yet red hot

We have developed simple fair-value estimates for house prices, construction activity and mortgage lending based on personal disposable incomes to assess whether we are entering bubble territory.[10]

Based on our analysis, we find that national house prices only just crossed the level that we estimate as fair value, given the levels of personal disposable income (see Chart 4). Current house prices are about 4% above the fair-value estimate, which is less than half the historical standard deviation from fair value.

Chart 4: House prices & fair-value

2010 = 100



Source: BIS, U.S. Bureau of Economic Analysis and ZAIS estimates [11]

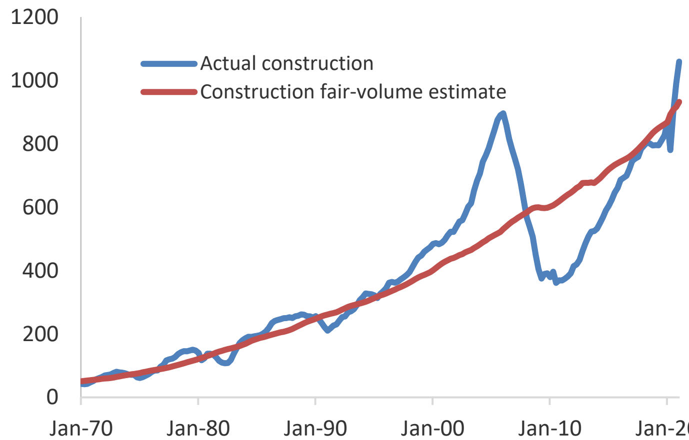
By comparison, we estimate that house prices were 34% overvalued at the peak of the previous bubble after rising nearly five years consistently over the fair-value level.

Construction boom partly payback

Using the same analysis, we estimate that housing construction moved above the fair-volume level at the start of this year (see Chart 5). The recent bounce in construction activity is, in our view, partly payback for the sharp downturn at the beginning of the Corona pandemic and probably not a lasting trend.

Chart 5: House construction & fair-volume

USD billion saar



Source: U.S. Bureau of Economic Analysis & ZAIS estimates [12]

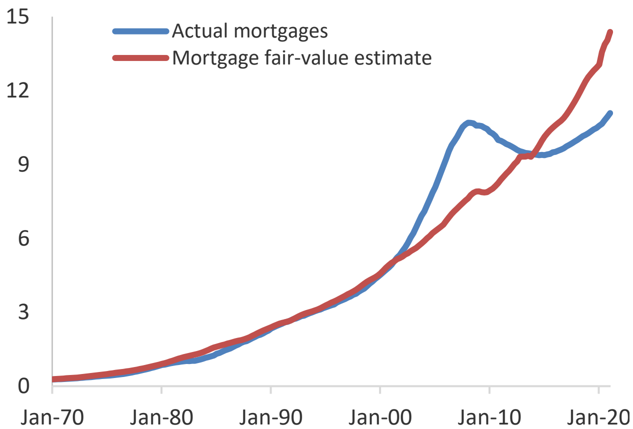
As with house prices, the increased construction is far from the levels seen ahead of the last housing bubble, when construction activity at the peak was more than 50% over our fair-volume estimate. Currently, the overshoot is just 12% based on our calculations, which is about half of the historic standard deviation from fair-volume.

No excessive leverage

Finally, we see no signs of excessive leverage. Households cut back mortgage debt after the financial crisis and the build-up since then has just reached the level of the prior peak, while disposable incomes have been rising much faster (see Chart 6). As a result, we estimate that households have currently about 25% more debt-capacity. At the peak of the previous bubble, we calculate that excess leverage was about 35%.

Chart 6: Mortgage loans & fair-value

USD trillion saar



Source: Board of Governors of the Federal Reserve System, U.S. Bureau of Economic Analysis & ZAIS estimates [13]

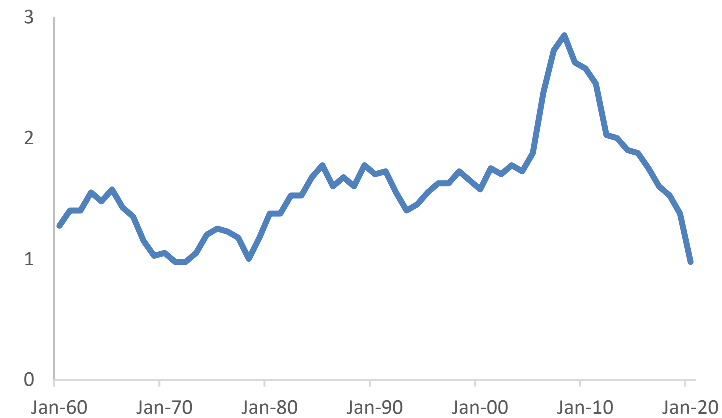
Different regulation and mindset

We are mindful that there are locations where excesses exceed the national average. We also believe the dynamic will not stop here. As pointed out before, there is enough fuel that could keep the current housing boom going for a while. Changing preferences and demands resulting from the Corona pandemic also play an important role, in our view, and we expect these will probably increase demand for suburban single-family housing.

As a result, we think house prices will continue to rise. However, we see this primarily as a sign of supply bottlenecks amid strong demand and not as an excessive dynamic. Indeed, unlike in the run-up to the financial crisis, homeowner vacancy rates have been falling to a 60-year low (see Chart 7).

Chart 7: Homeowner vacancy rate

%

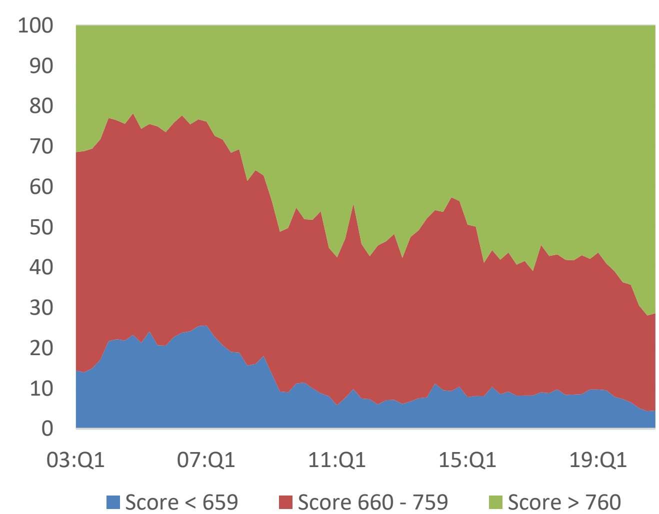


Source: U.S. Census Bureau [14]

There is the risk that the Fed keeps interest rates low for too long, as it did in the previous bubble. However, we believe that regulation has sufficiently toughened, authorities are more alert and banks more cautious to prevent another mortgage lending-fueled crisis. Indeed, the credit-quality of mortgages is currently much better than it had been in the previous housing boom (see Chart 8).

Chart 8: Mortgage origination by risk score

% of total



Source: New York Fed Consumer Credit Panel/Equifax [15]

Moreover, we think that people's mindset has changed as well. The rise of the savings rate since the financial crisis[16] and the cautious financial behavior through the pandemic suggests to us that households are less likely to fall for another speculative housing trap.

Thus, rising house prices will, in our view, create over time affordability constraints, which should naturally reduce demand and house price appreciation.

More information

As always, we are available to discuss our views with you. Please contact your Client Relations representative at +1 732 978 9722 or zais.clientrelations@zaisgroup.com

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[1] S&P Dow Jones Indices LLC, S&P/Case-Shiller U.S. National Home Price Index [CSUSHPISA], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/CSUSHPISA, April 8, 2021.

[2] S&P Dow Jones Indices LLC, S&P/Case-Shiller U.S. National Home Price Index [CSUSHPISA], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/CSUSHPISA, April 8, 2021.

Monthly FHFA House Price Index® for Census Divisions and U.S.; Purchase-Only Index; https://www.fhfa.gov/DataTools/Downloads/Pages/House-Price-Index-Datasets.aspx#mpo

[3] Monthly FHFA House Price Index® for Census Divisions and U.S.; Purchase-Only Index; https://www.fhfa.gov/DataTools/Downloads/Pages/House-Price-Index-Datasets.aspx#mpo

[4] S&P Dow Jones Indices LLC, S&P/Case-Shiller AZ-Phoenix Home Price Index [PHXRSA], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/PHXRSA,

April 8, 2021.

S&P Dow Jones Indices LLC, S&P/Case-Shiller NV-Las Vegas Home Price Index [LVXRSA], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/LVXRSA, April 8, 2021.

[5] Same sources as notes 1 and 2.

[6] Same source as note 2.

[7] S&P Dow Jones Indices LLC, S&P/Case-Shiller NV-Las Vegas Home Price Index [LVXRSA], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/LVXRSA, April 8, 2021.

S&P Dow Jones Indices LLC, S&P/Case-Shiller IL-Chicago Home Price Index [CHXRSA], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/CHXRSA,

April 8, 2021.

S&P Dow Jones Indices LLC, S&P/Case-Shiller FL-Miami Home Price Index [MIXRSA], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/MIXRSA,

April 8, 2021.

S&P Dow Jones Indices LLC, S&P/Case-Shiller CO-Denver Home Price Index [DNXRSA], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/DNXRSA,

April 8, 2021.

S&P Dow Jones Indices LLC, S&P/Case-Shiller TX-Dallas Home Price Index [DAXRSA], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/DAXRSA,

April 8, 2021.

S&P Dow Jones Indices LLC, S&P/Case-Shiller WA-Seattle Home Price Index [SEXRSA], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/SEXRSA,

April 8, 2021.

[8] S&P Dow Jones Indices LLC, S&P/Case-Shiller U.S. National Home Price Index [CSUSHPISA], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/CSUSHPISA, April 8, 2021.

S&P Dow Jones Indices LLC, S&P/Case-Shiller CO-Denver Home Price Index [DNXRSA], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/DNXRSA,

April 8, 2021.

S&P Dow Jones Indices LLC, S&P/Case-Shiller NV-Las Vegas Home Price Index [LVXRSA], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/LVXRSA, April 8, 2021.

[9] Board of Governors of the Federal Reserve System (US), Households and Nonprofit Organizations; Net Worth as a Percentage of Disposable Personal Income, Level [HNONWPDPI], retrieved from FRED, Federal

Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/HNONWPDPI,

April 7, 2021.

Freddie Mac, 30-Year Fixed Rate Mortgage Average in the United States [MORTGAGE30US], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/MORTGAGE30US, April 8, 2021.

[10] The fair-value estimates provide benchmarks whether house prices, housing construction and mortgage lending are consistent with economic fundamentals. We believe the most important economic fundamental for housing is the trend of personal disposable income. We use personal disposable income data to derive the fair-value estimates for house prices, housing construction and mortgage lending in Charts 4 to 6.

[11] Bank for International Settlement; Nominal and real residential property prices including historical data previously published in the long series data set; https://www.bis.org/statistics/pp_selected.htm?m=6%7C288%7C596

U.S. Bureau of Economic Analysis, Disposable Personal Income [DSPI], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/DSPI,

April 8, 2021.

[12] U.S. Bureau of Economic Analysis, Private Residential Fixed Investment [PRFI], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/PRFI,

April 8, 2021.

U.S. Bureau of Economic Analysis, Disposable Personal Income [DSPI], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/DSPI,

April 8, 2021.

[13] Board of Governors of the Federal Reserve System (US), Households and Nonprofit Organizations; One-to-Four-Family Residential Mortgages; Liability, Level [HHMSDODNS], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/HHMSDODNS,

April 7, 2021.

U.S. Bureau of Economic Analysis, Disposable Personal Income [DSPI], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/DSPI,

April 8, 2021.

[14] U.S. Census Bureau, Homeowner Vacancy Rate for the United States [RHVRUSQ156N], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/RHVRUSQ156N,

April 7, 2021.

[15] New York Fed Consumer Credit Panel/Equifax; Household debt and credit report (Q4 2020); Chart 6; Mortgage origination by credit score; https://www.newyorkfed.org/medialibrary/interactives/householdcredit/data/pdf/HHDC_2020Q4.pdf

[16] U.S. Bureau of Economic Analysis, Personal Saving Rate [PSAVERT], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/PSAVERT,

April 8, 2021.

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