Economic Update

Mutual Savings Association Advisory Committee

September 20, 2022

Economic & Policy Analysis

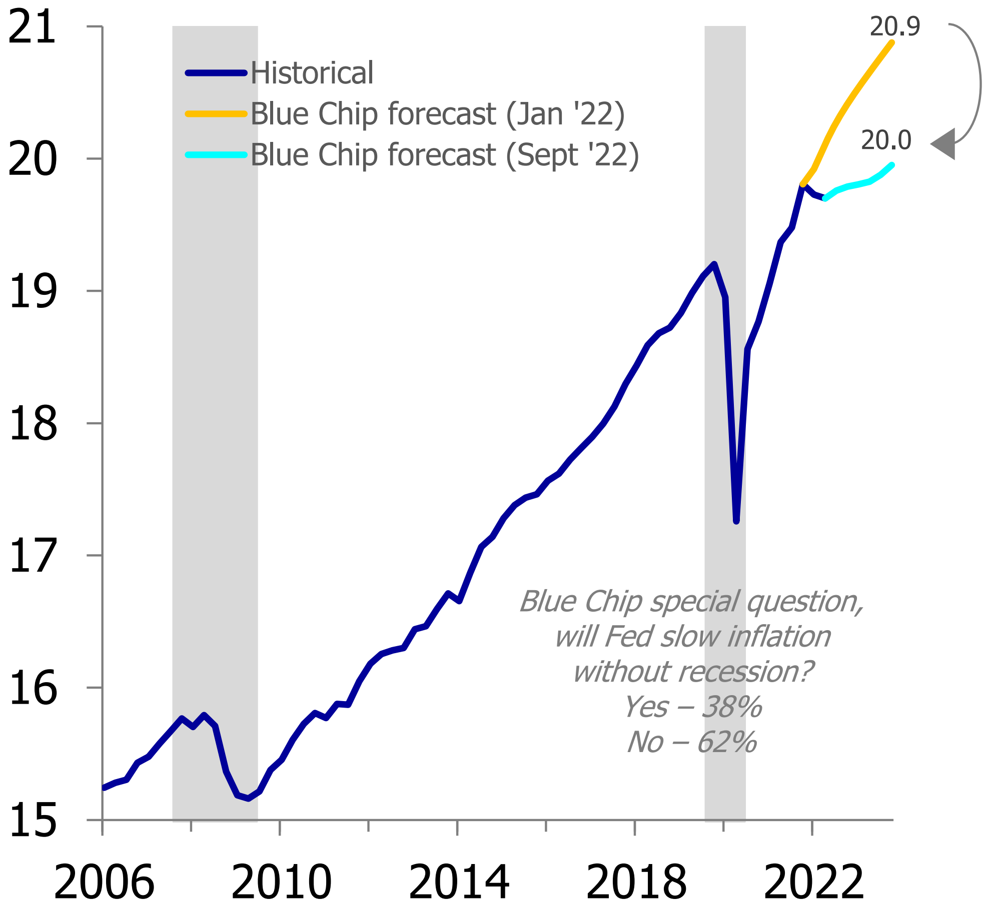
Key Takeaways

- Economic signals are mixed; under Consensus forecast, anemic GDP growth expected through 2023
  - Persistent inflation and a recommitted Fed increases recession odds

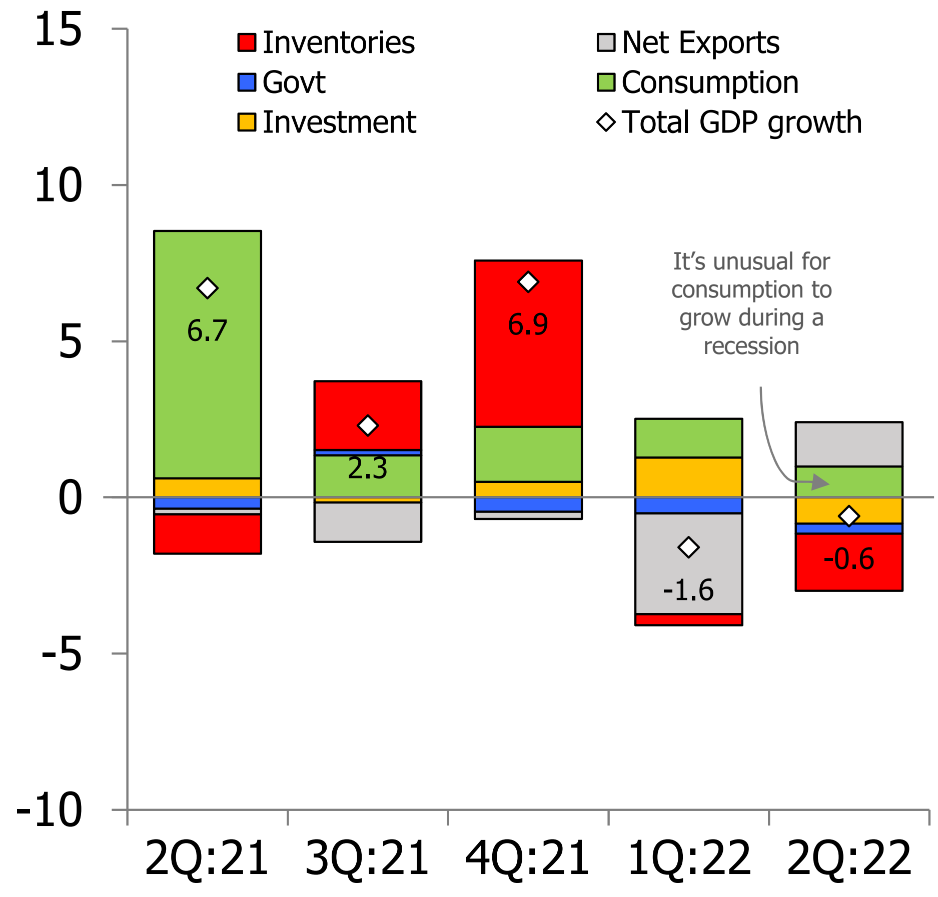
- Rising rates curb near-term housing demand and homebuilding, further exacerbating the supply/demand imbalance
  - Home prices expected to stagnate by 2023; large national declines unlikely

Consensus forecast calls for below trend growth; 2 consecutive qtrs of negative GDP recorded

Real GDP, SAAR, in $ trillions



Contribution to real GDP growth rate, by component, %

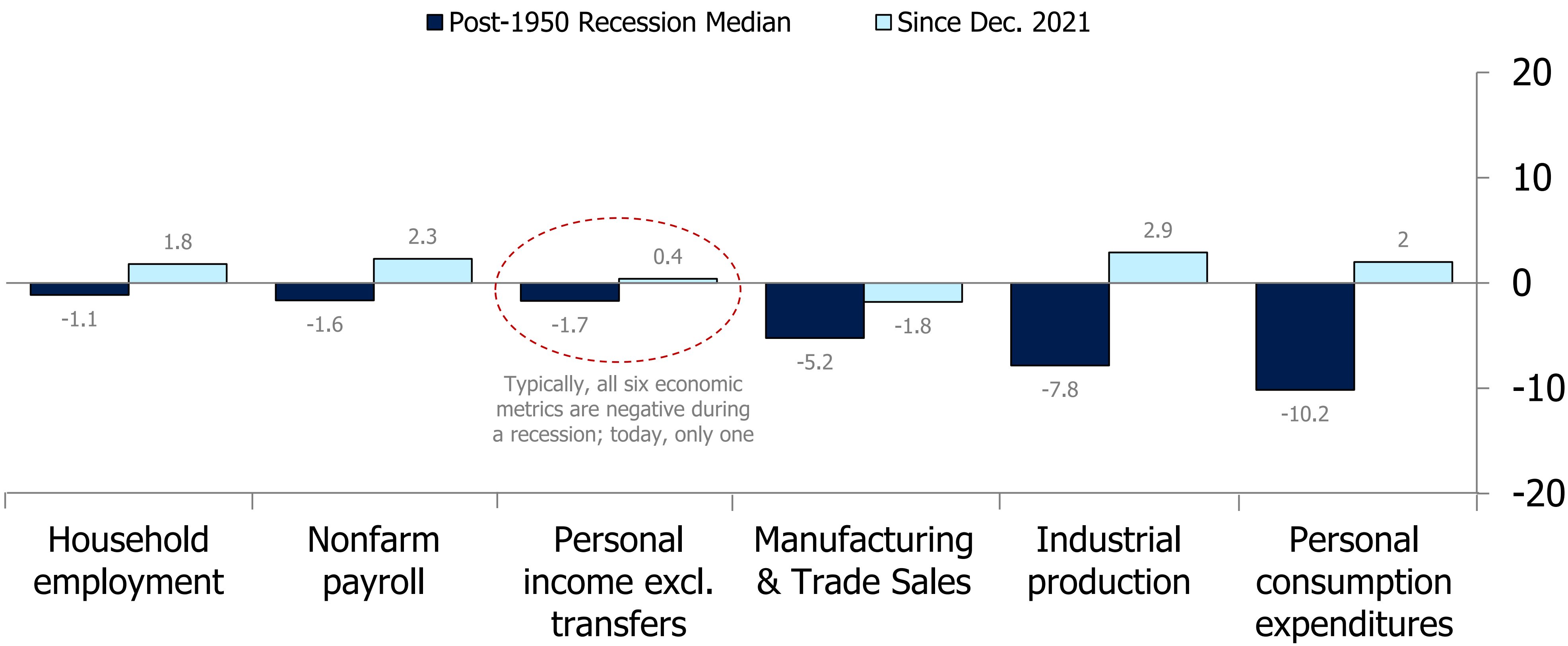


Sources: BEA (data through 2Q:2022); Blue Chip Economic Indicators (Sept 2022)

Note: Consumption contributed to GDP declining in 10 of 11 prior recessions (2001 is the exception). Since 1950, nine of 11 recessions designated by the NBER included at least two consecutive quarters of negative real GDP.

NBER is the official arbiter of US recessions; rely on 6 indicators to (ex-post) determine downturns

Median change of cyclical indicators during recessions since 1950 compared to change since December 2021

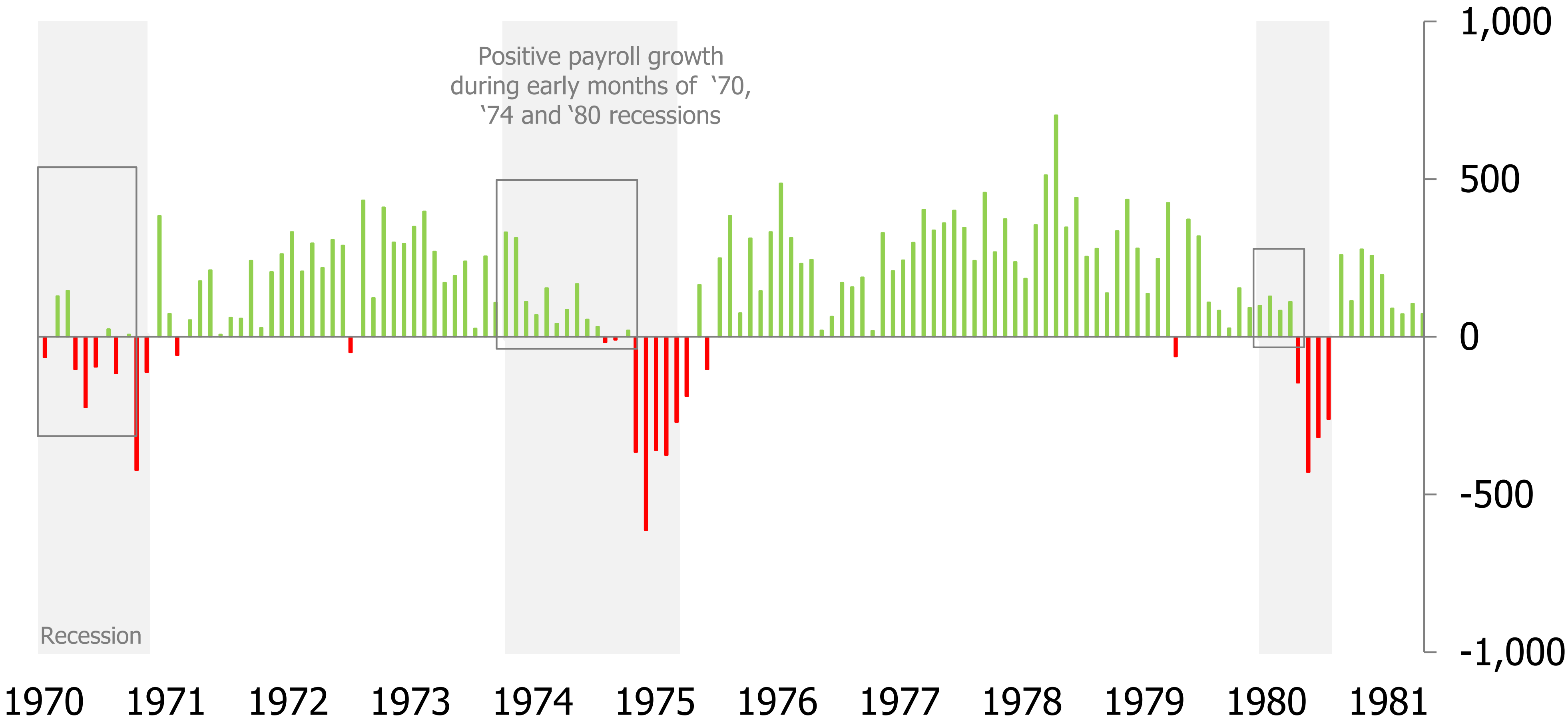


Sources: BEA; BLS; Federal Reserve; NBER.

Note: Recessions are designated by Business Cycle Dating Committee at the National Bureau of Economic Research, and generally based upon Measuring Business Cycles (1946) by Wesley Mitchell & Arthur Burns. Personal income becomes available in 1959, manufacturing and trade sales in 1967, and personal consumption expenditures in 2002. Personal income and expenditures data are through July 2022, nonfarm payrolls and household employment are through August 2022, manufacturing & trade sales is through June 2022, and industrial production is through July 2022.

Employment can grow during the early months of a recession, as occurred in the 1970s

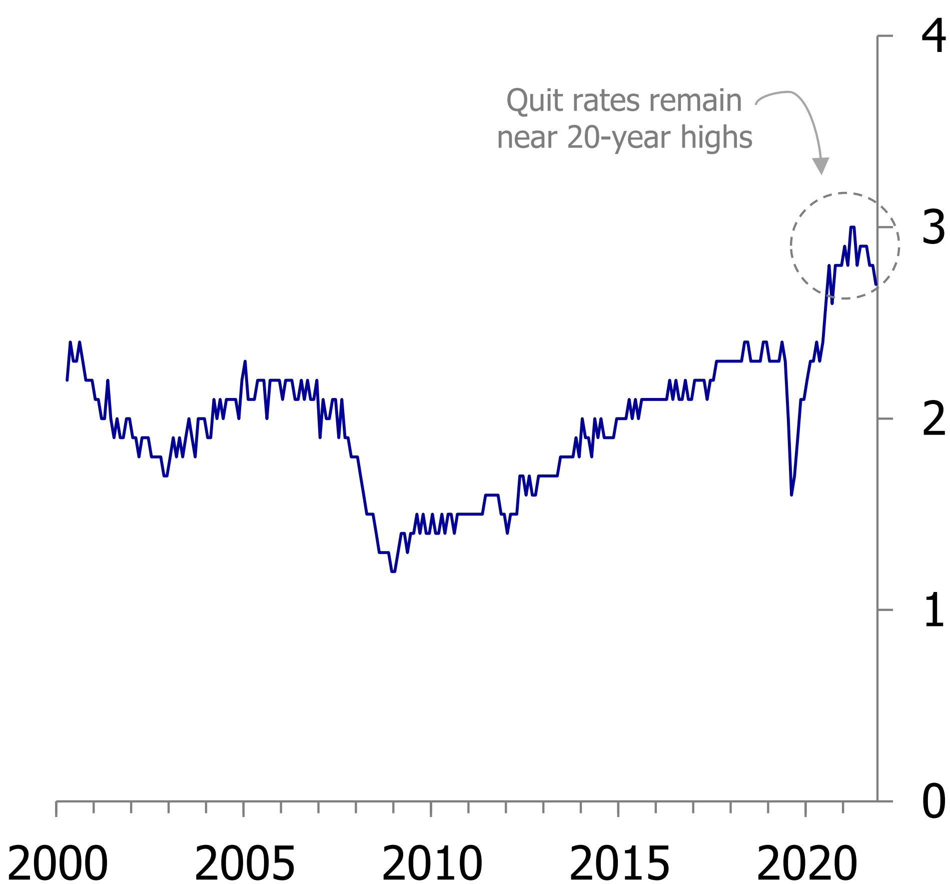
Monthly change in total nonfarm employees (payroll), in thousands



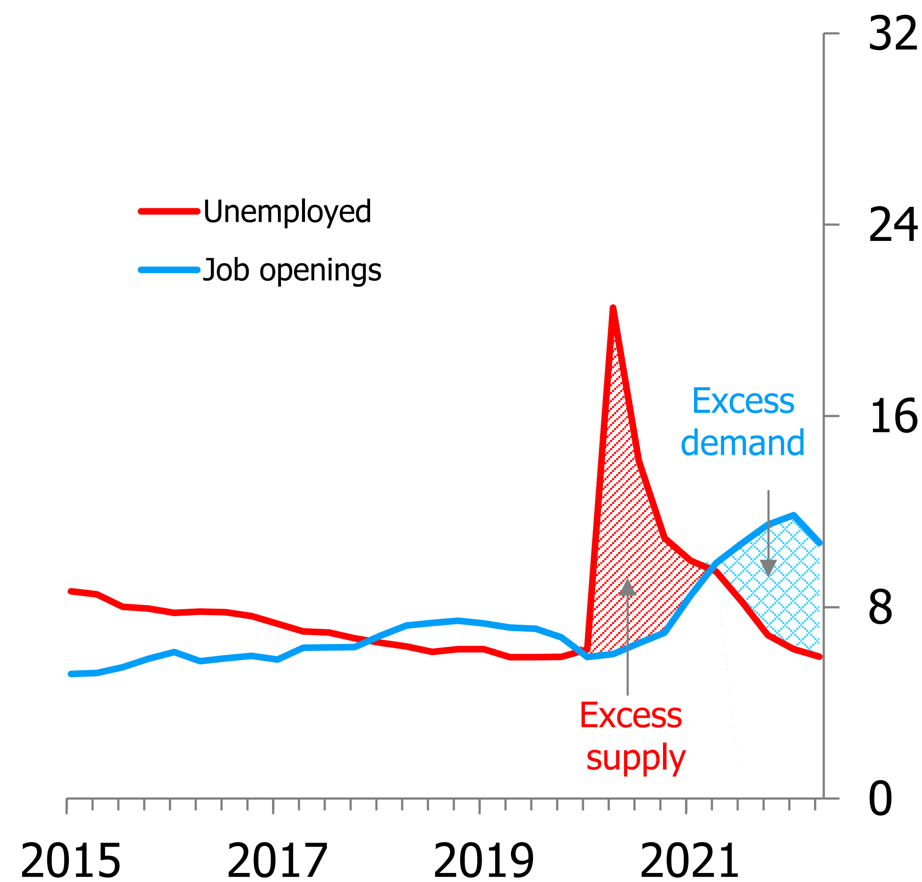
Sources: BLS, NBER.

High quit rates indicate worker confidence; demand for labor still well above supply

Percent of workers voluntarily quitting (quit rates), %



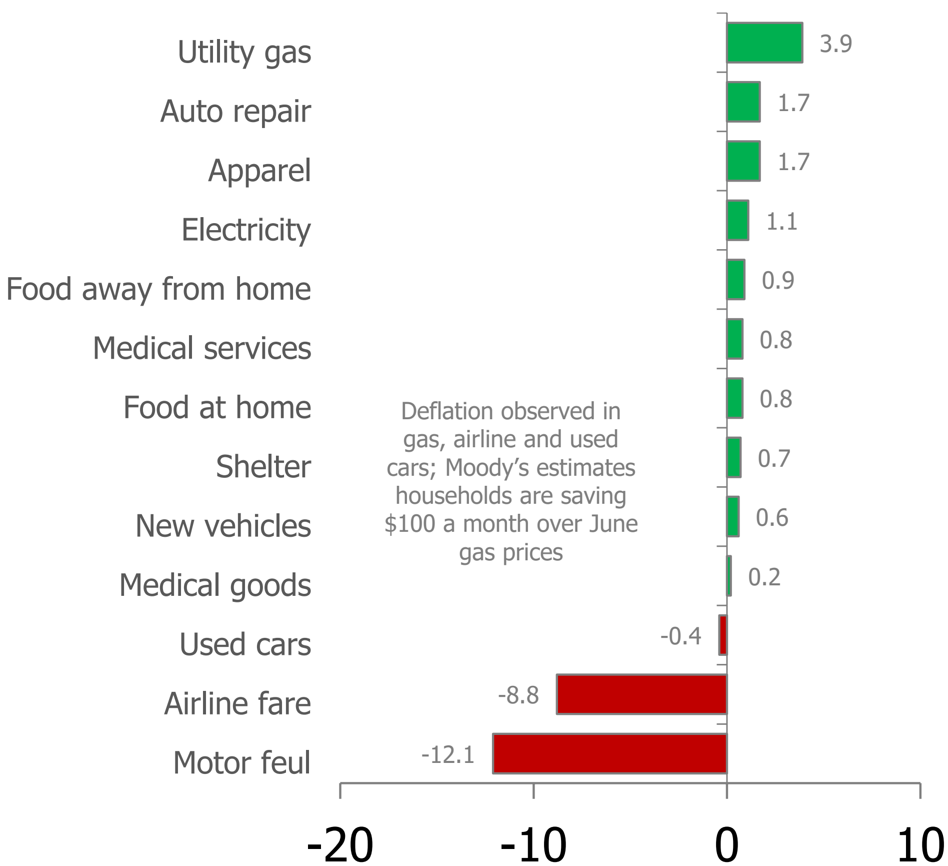
Supply (unemployed) and demand (job openings) of labor, millions



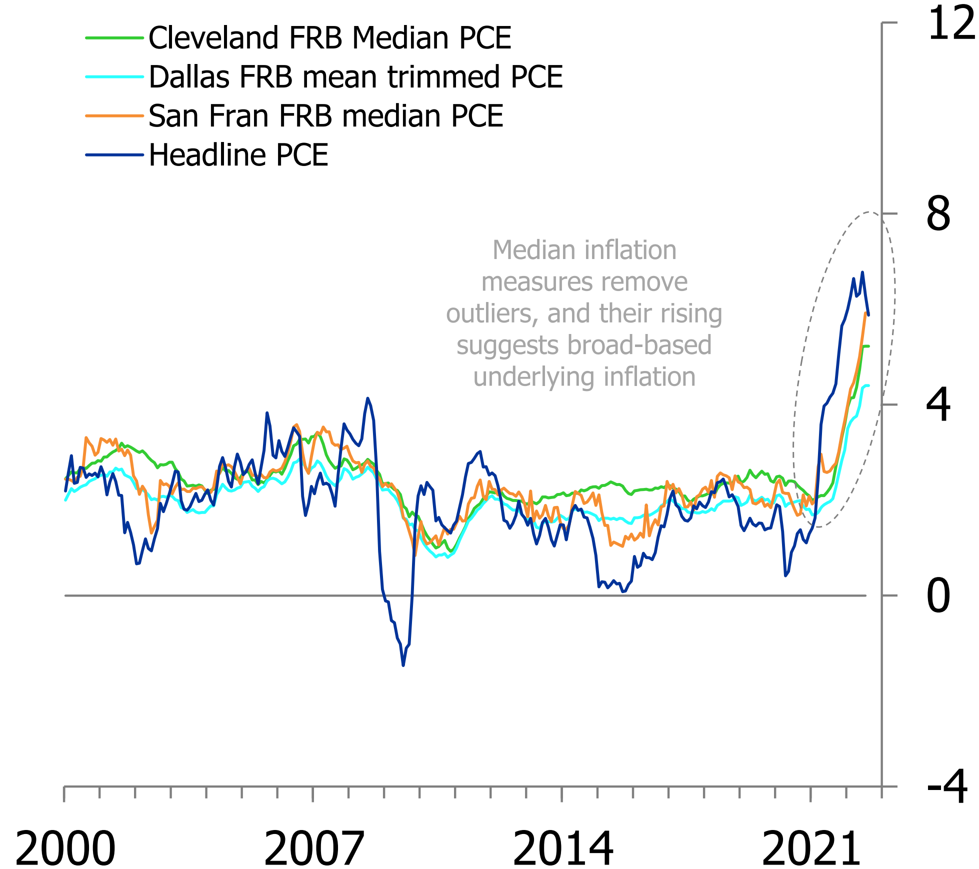
Sources: BLS, CPS, JOLTS, E&PA calculations

Some deflation among COVID-affected goods & services, but inflation is now broad-based

Percent chg in CPI item from July 2022 to August 2022, %



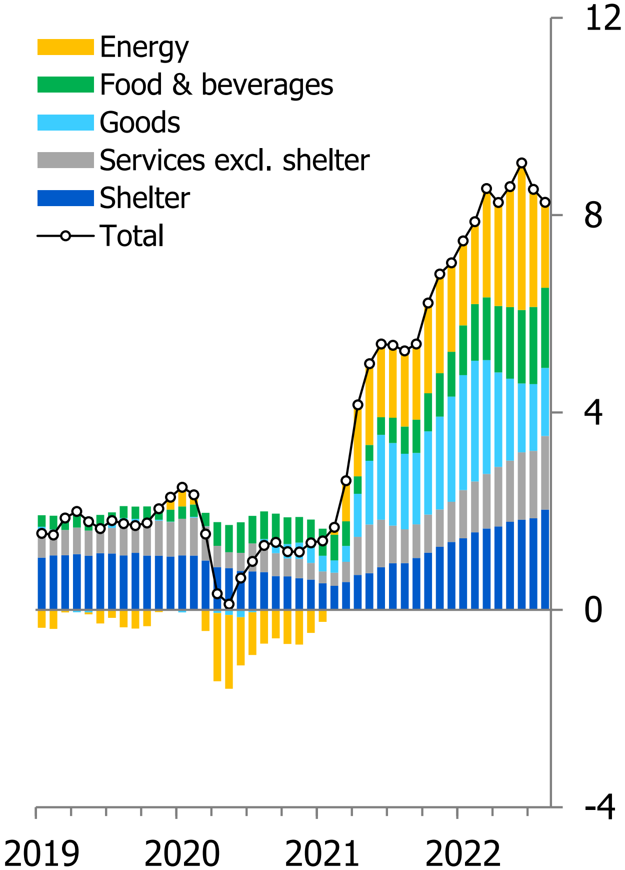
Monthly PCE index by source, YoY pct chg, %



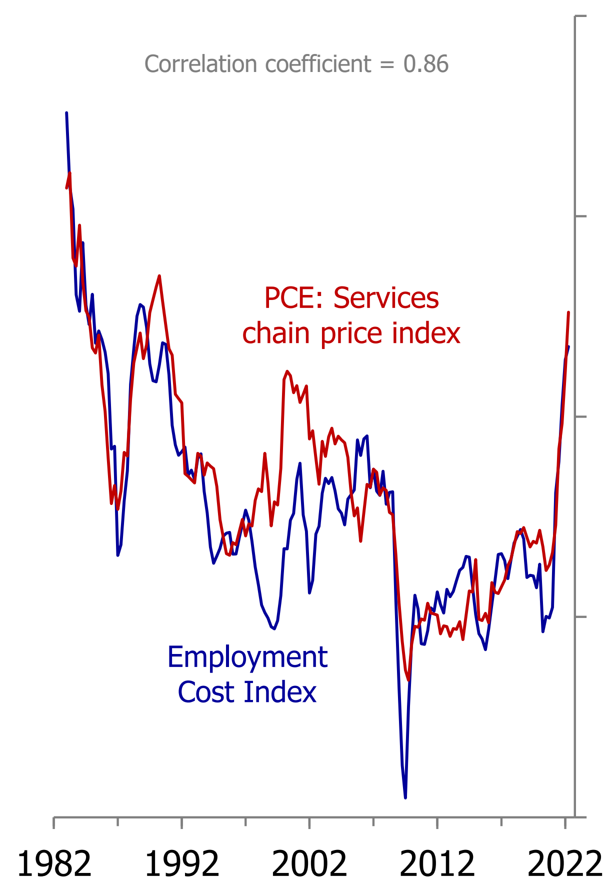
Sources: BEA (data through August 2022); FRB Cleveland, Dallas & San Francisco; BLS (Aug 2022)

Recent inflation coming from services and shelter costs; neither appear to abate soon

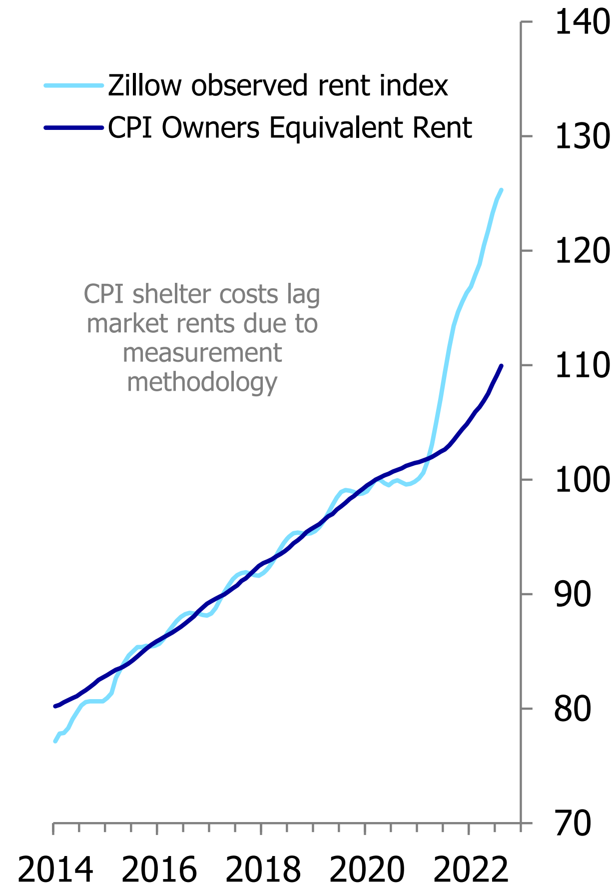
Contribution to YoY Consumer Price Index by item, %



Employment cost index and PCE: Services, YoY pct chg, %



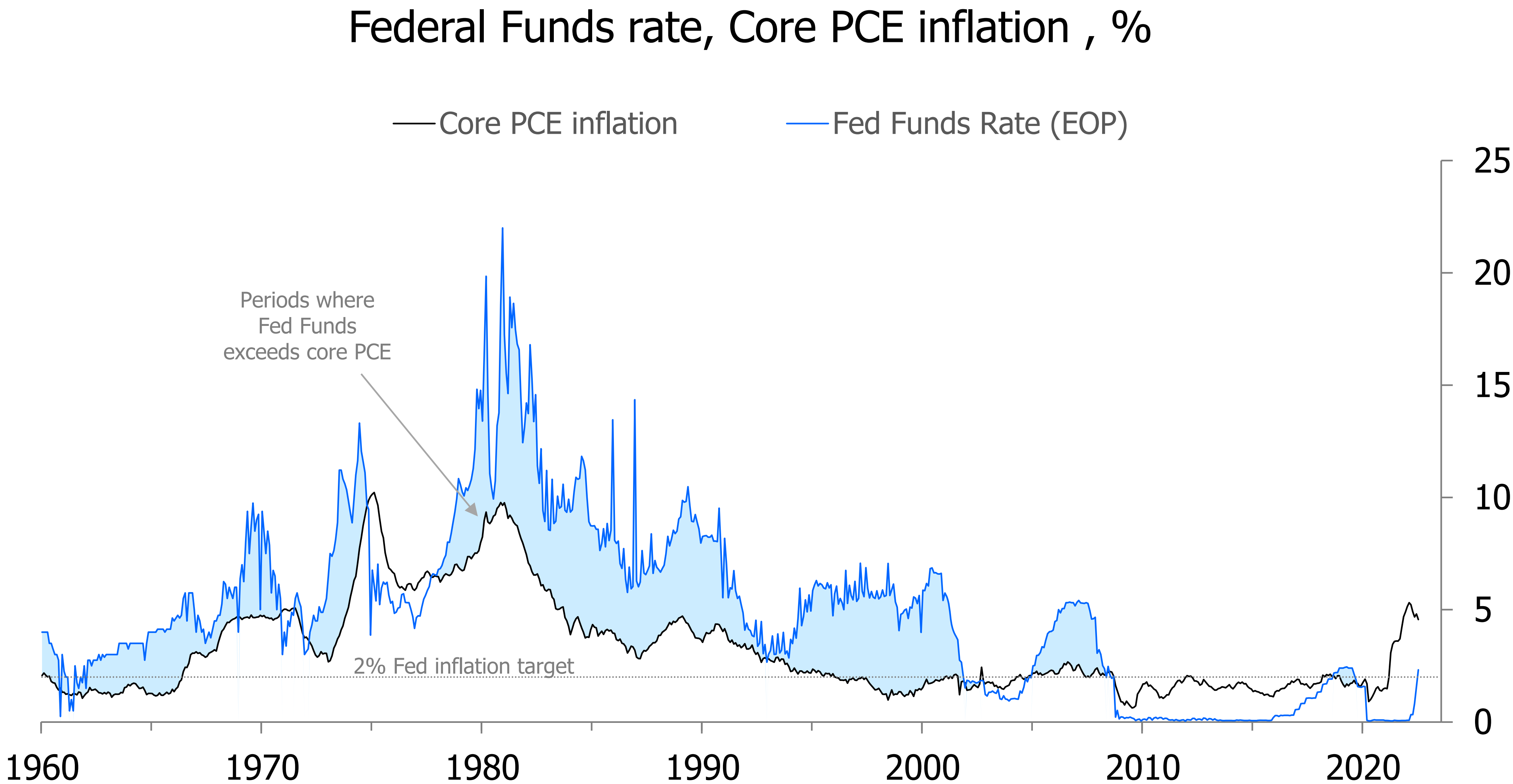
Residential market rents by source, March 2020=100



Sources: BLS (data August 2022); BEA (June 2022); Zillow (Aug. 2022)

*Employment Cost Index = measure of the change in the cost of labor, independent of the influence of employment shifts among occupations. smoothed measure of the typical observed market rate rent across a given region. ZORI is a repeat-rent index that is weighted to the rental housing stock to ensure representativeness across the entire market, not just those homes currently listed for-rent. The index is dollar-denominated by computing the mean of listed rents that fall into the 40th to 60th percentile range for all homes and apartments in a given region, which is once again weighted to reflect the rental housing stock.

Historically Fed does not pivot until Fed Funds exceeds rate of inflation



Sources: Federal Reserve Board (July 2022); BEA (July 2022); EBC calculations

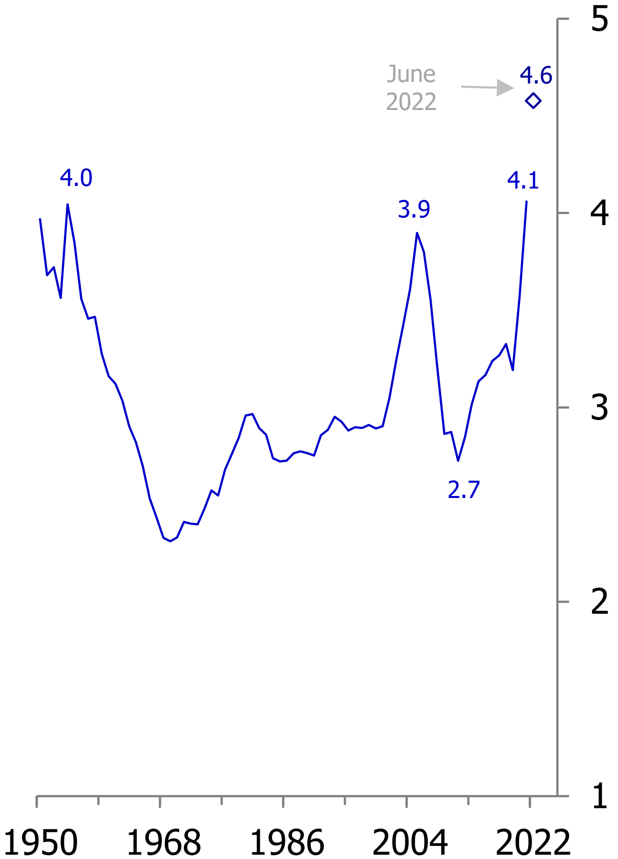
Agenda

- Economic signals are mixed; under Consensus forecast, anemic GDP growth expected through 2023
  - Persistent inflation and a recommitted Fed increases recession odds

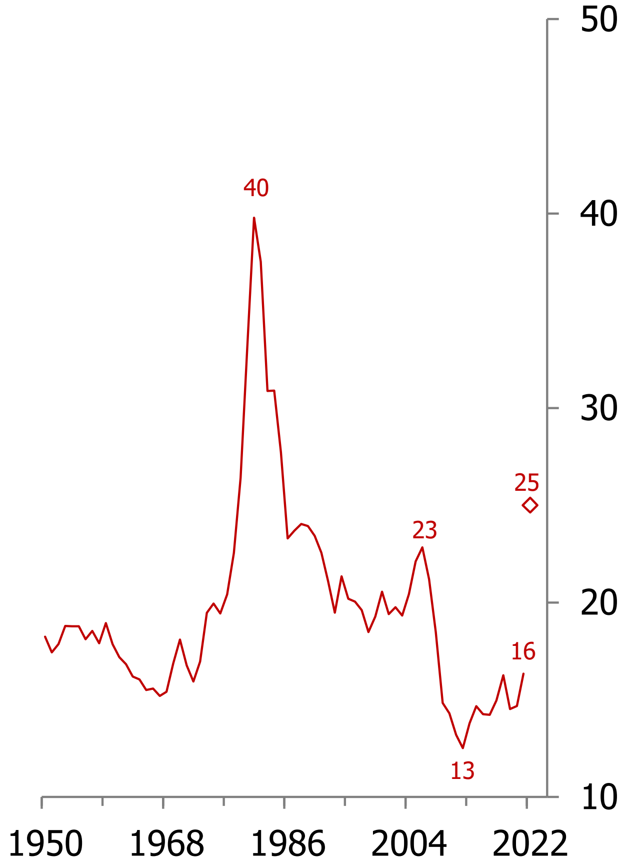
- Rising rates curb near-term housing demand and homebuilding, further exacerbating the supply/demand imbalance
  - Home prices expected to stagnate by 2023; large national declines unlikely

Intrinsic home price measures near or exceeding historical peaks

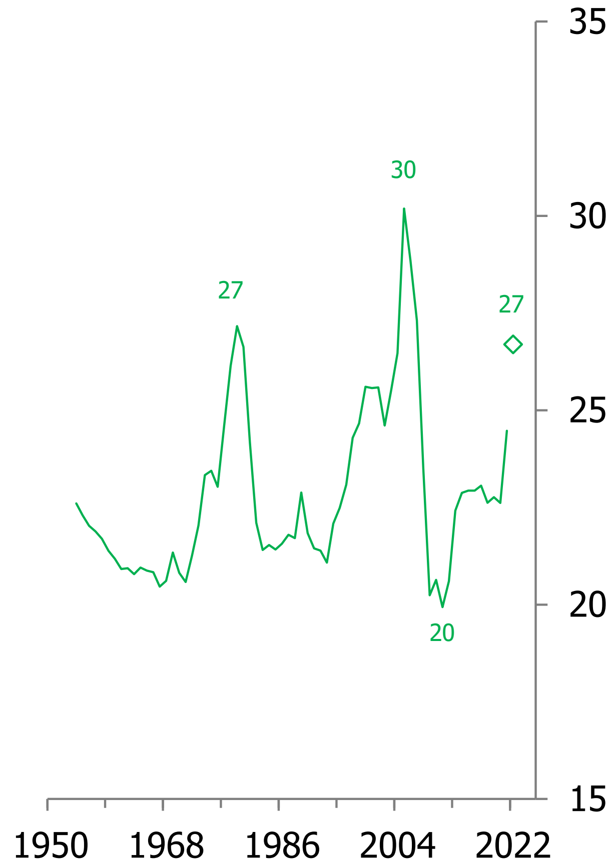
Est. annual median home price to median family income ratio , %



Est. annual mortgage payment to median family income ratio, %



Est. annual median home price to rent ratio, %



Sources: Census; NAR; Freddie Mac; Robert Shiller and S&P Case Shiller National index; FRB EBC calculations

Note: Estimated by assuming the median family purchased the median existing single family priced home with 20% down at that the prevailing 30yr fixed mortgage rate. Census median family income used. From 1968 onward used the NAR's median sales price of existing single-family homes, prior to 1968 prices were interpolated using the Robert Shiller national home price percent change from Irrational Exuberance. Mortgage rates prior to 1972 were interpolated by applying the 1972-2021 average spread of FHLMC 30yr fixed rates over the 10yr UST. From 1947 to 1953 used Robert Shiller's estimate of long rates from Irrational Exuberance since published UST 10yr yields began in 1954. Census 2021 median family income not available, used NAR's median family income in its' place, which is based on Census historical data.

HPI's that account for home composition & quality are beginning to report softening prices

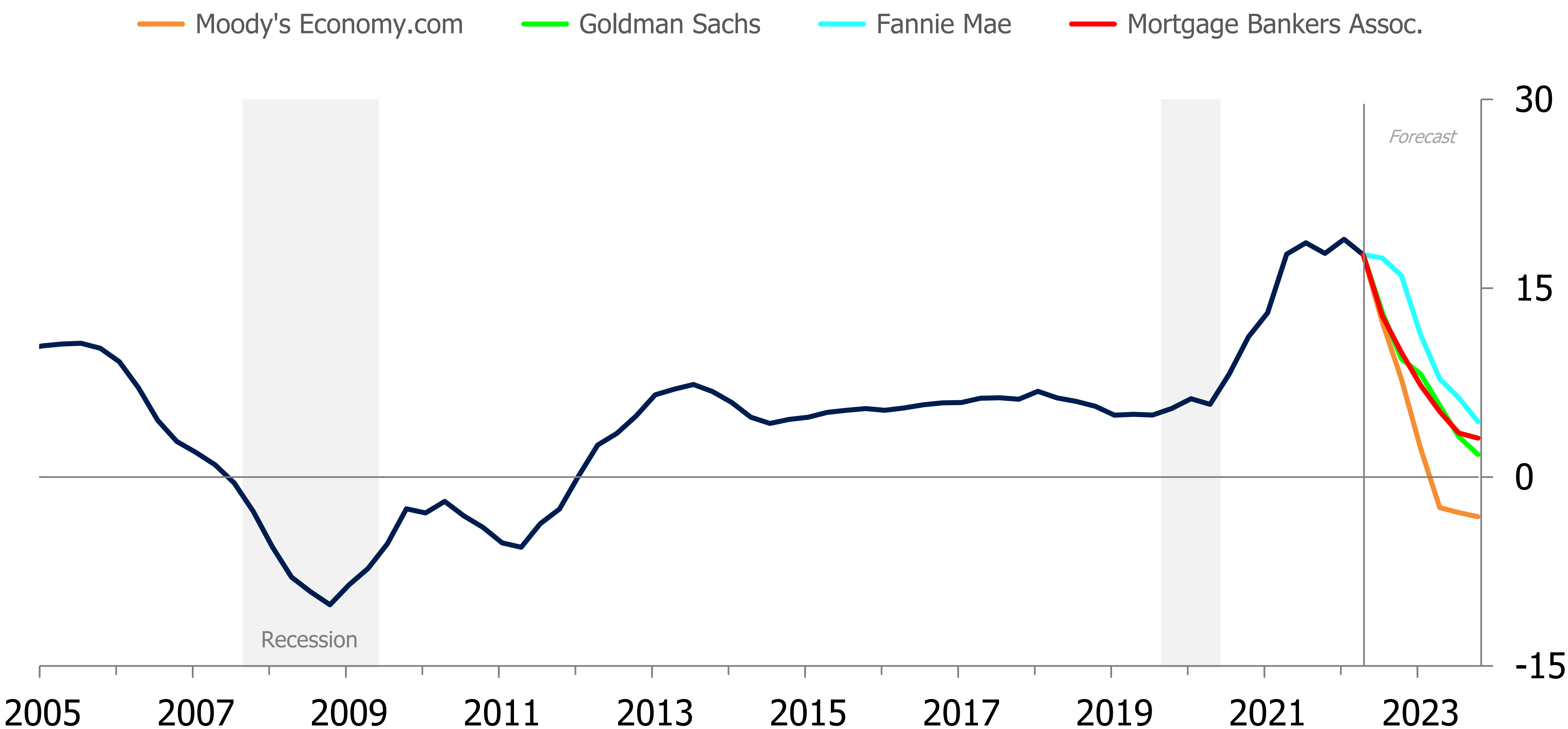
Comparing Home Price Indices by methodology & last reading

Measure	Home price index				Latest reading		
	Constant quality	Existing/ New	Smoothed?	Frequency	Period	MoM	YoY
NAR	No	Existing	No	Mo.	July	-2.5	10.6
Black Knight	Yes	Existing		Mo.	July	-0.8	14.5
CoreLogic	Yes	Existing	No	Mo.	July	-0.3	15.8
Redfin	No	Existing	No	Mo.	July	-0.2	6.0
FHFA	Yes	Existing	No	Mo.	June	0.1	16.3
Case-Shiller	Yes	Existing	Yes (3m)	Mo.	June	0.3	18.0
Zillow	Yes	Existing		Mo.	July	0.7	18.3
Freddie Mac	Yes	Existing	No	Mo.	June	1.3	17.0
Census	No	New	No	Mo.	July	19.6	18.3

Sources: Black Knight; NAR; Redfin; FHFA; Case-Shiller; Zillow; Freddie Mac; Census

National home price forecasts coalescing around near-zero home price growth by 2023

Single-family year-over-year home prices, percent change, %

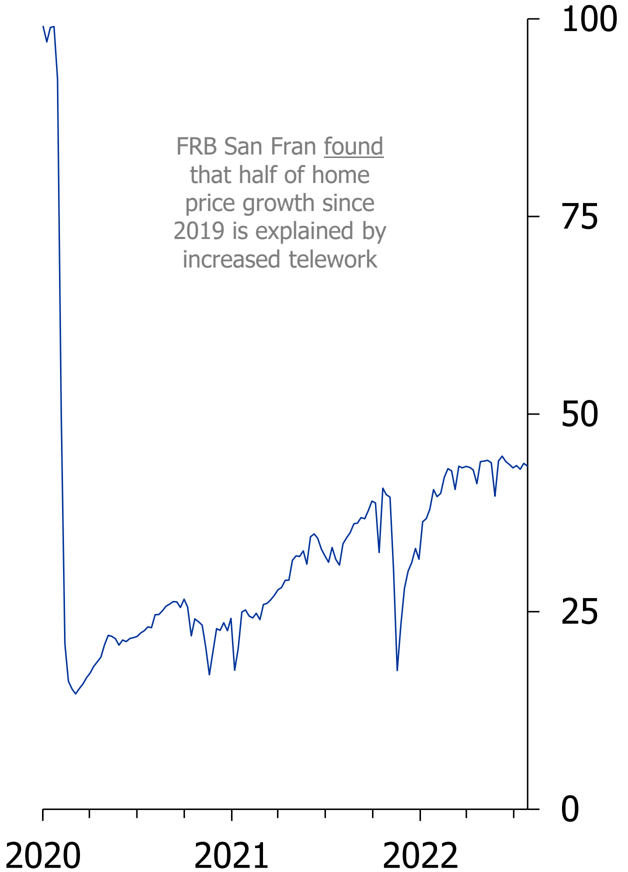


Sources: FHFA (data through 2Q:22); Moody's Economy.com (Sept 2022 baseline); Goldman Sachs (Aug 2022 forecast); Fannie Mae (Aug 2022 forecast); MBA (Aug 2022 forecast)

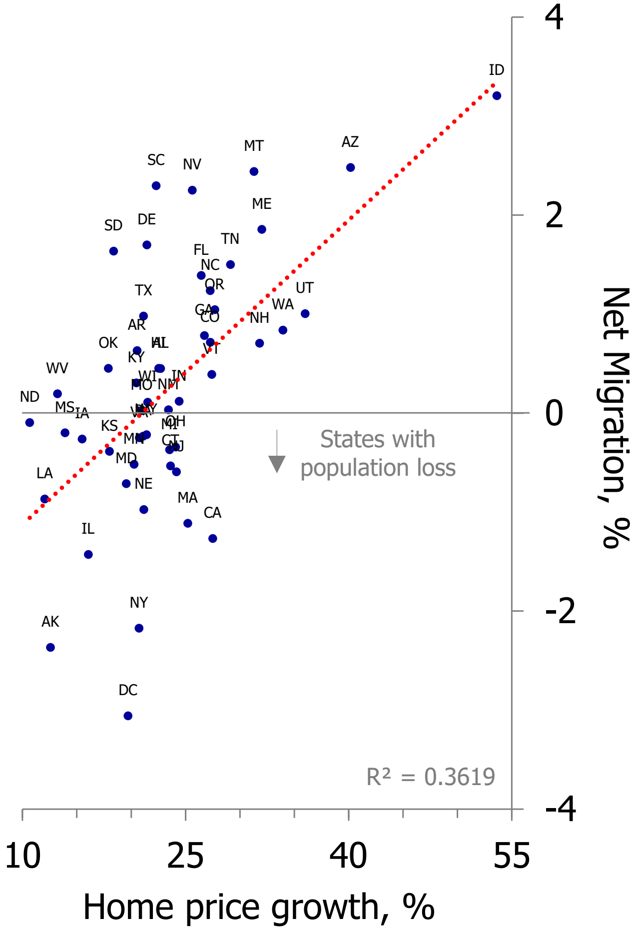
Note: Historical HPI is based on FHFA single-family purchase-only index.

Increased telework, migration, and fewer homes for sale correlated with post-2019 price growth

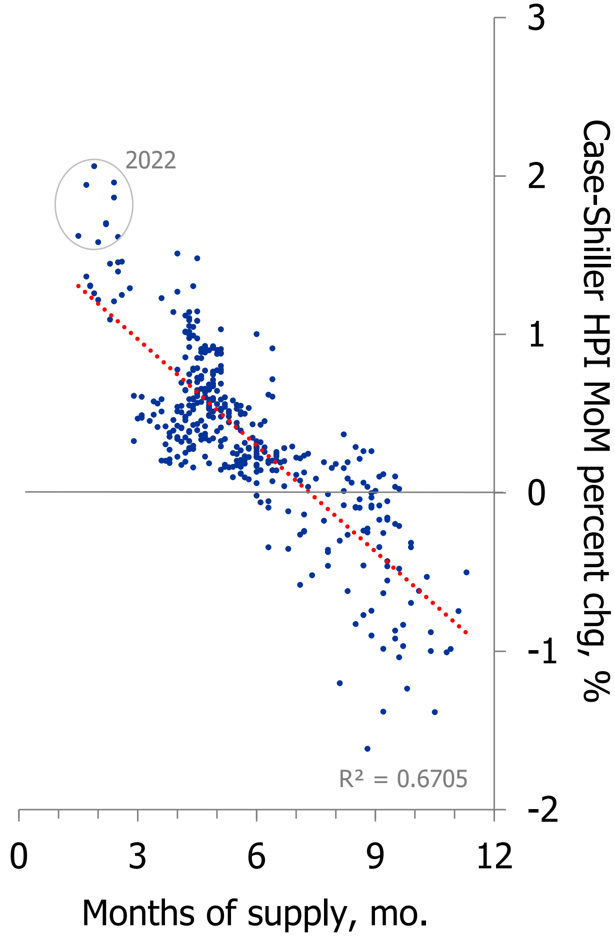
Weekly office occupancy, by metro, %



Home price chg & net migration from Jun. '19 to Jun. '21



Housing supply and Case-Shiller HPI by month

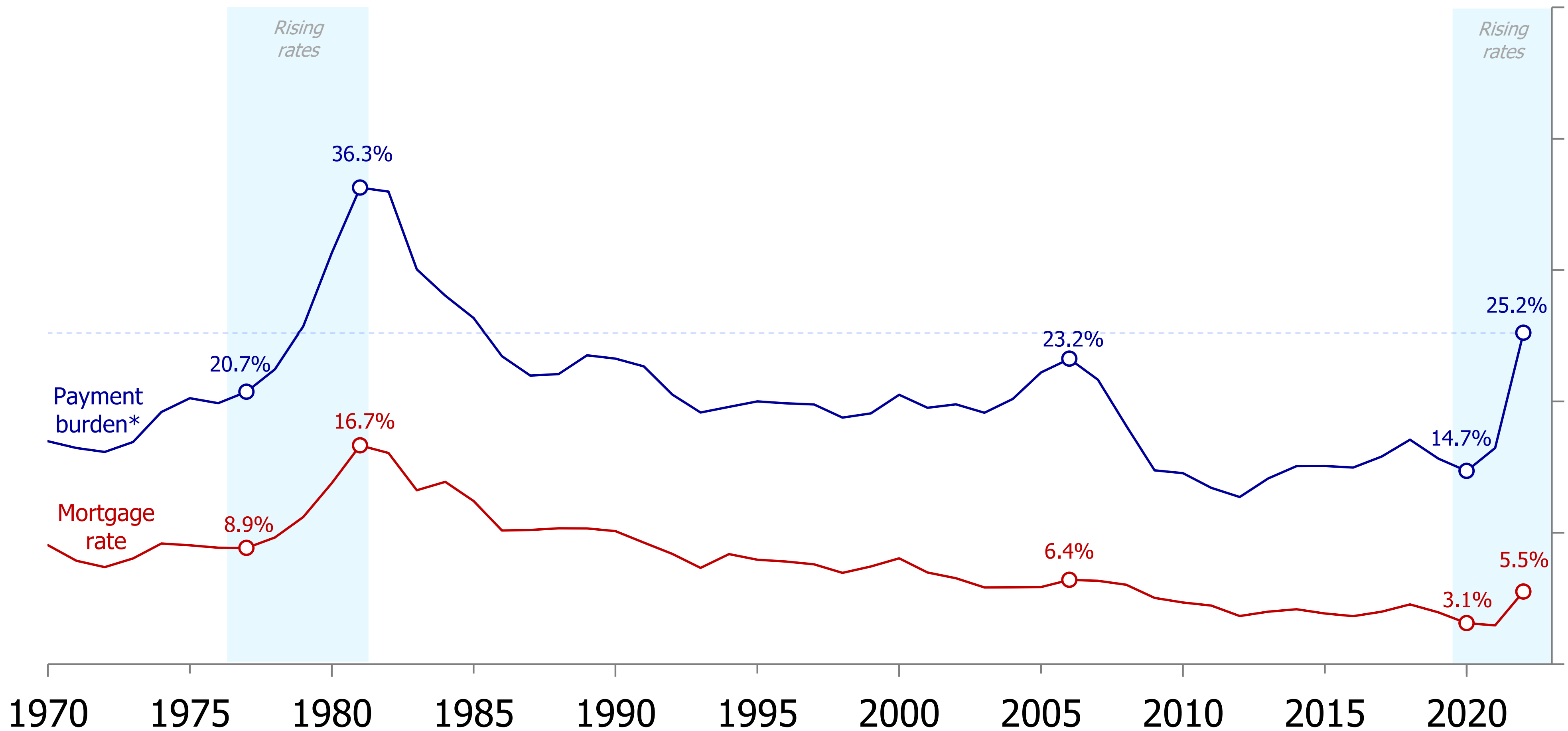


Sources: Kastle (data as of Sept 7, 2022); OCC Consumer Credit Panel; Black Knight; Case-Shiller

Note: Migration was measured using the OCC's Equifax consumer credit panel data. With our consistent panel of consumers, we could observe a change in the state mailing address across time periods.

Largest erosions of housing affordability occurred when mortgage rates rose sharpy

Estimated *new* mortgage payment burden & mortgage interest rates, %

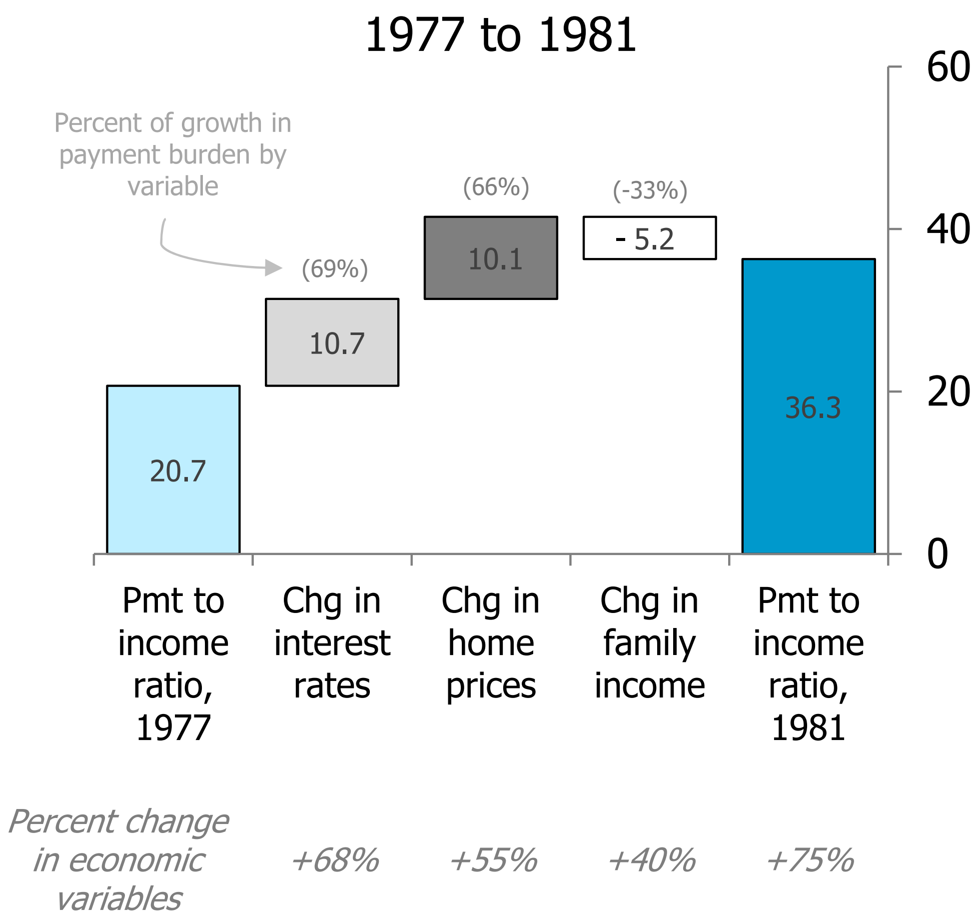


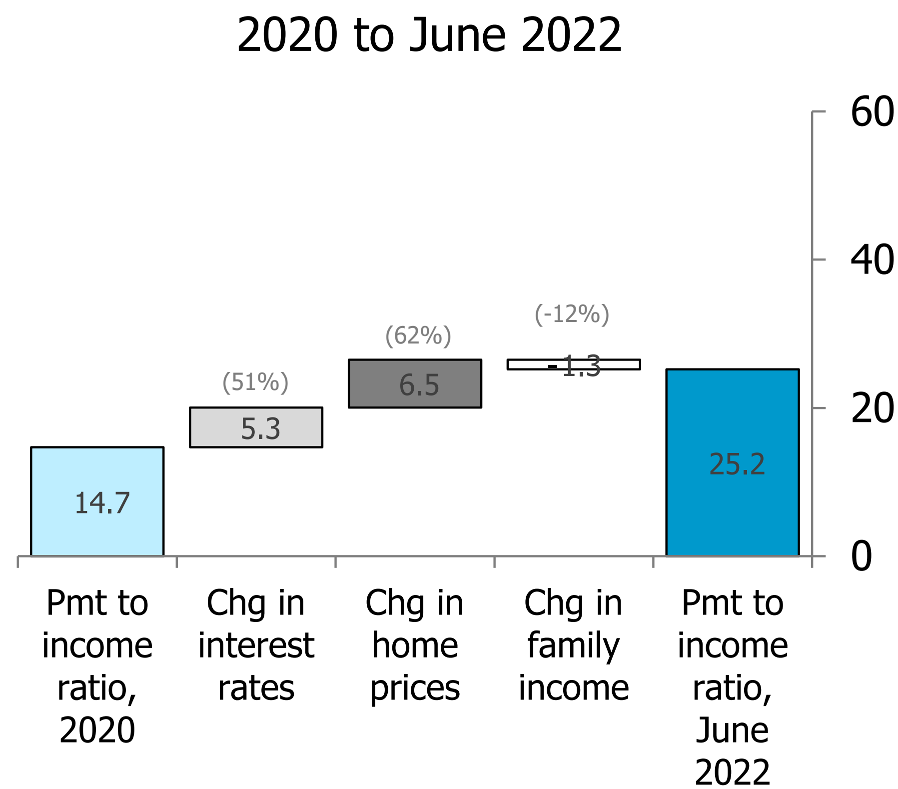
Sources: National Association of Realtors; Freddie Mac; Census; EBC calculations

*Estimated new mortgage payment on the median existing single-family home as a percent of median family income.

Housing affordability is not only rate dependent, home prices and income are key variables

Decomposing effect of interest rates, home prices, and incomes on new mortgage payment burdens, %



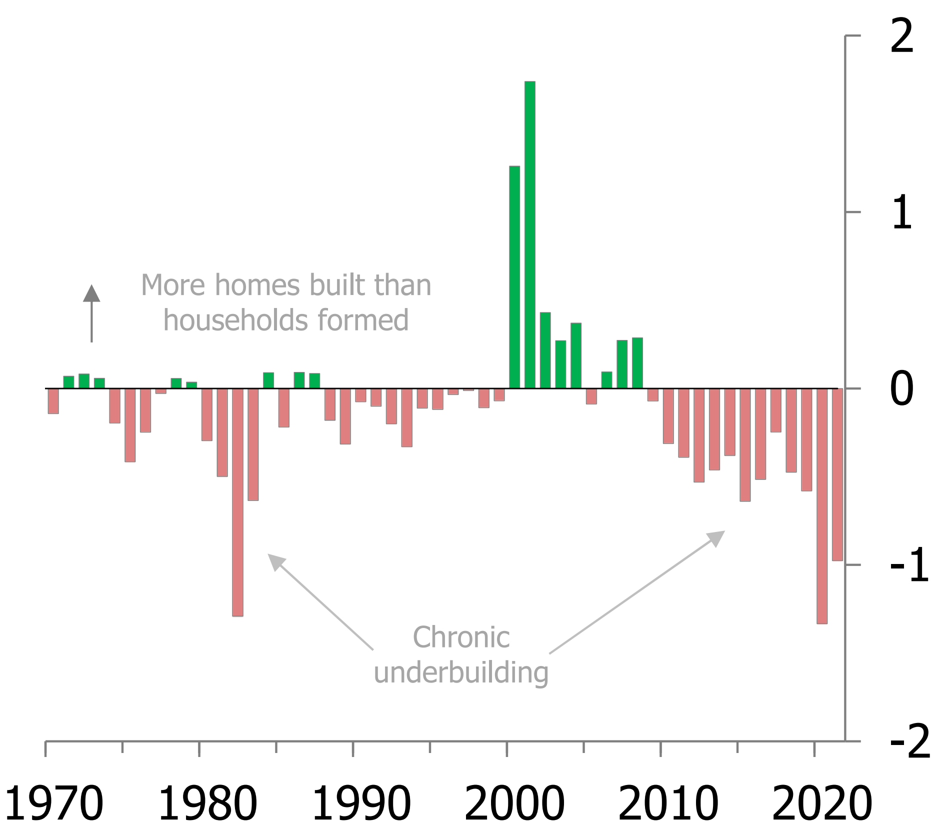


Sources: National Association of Realtors; Freddie Mac; Census; EBC calculations

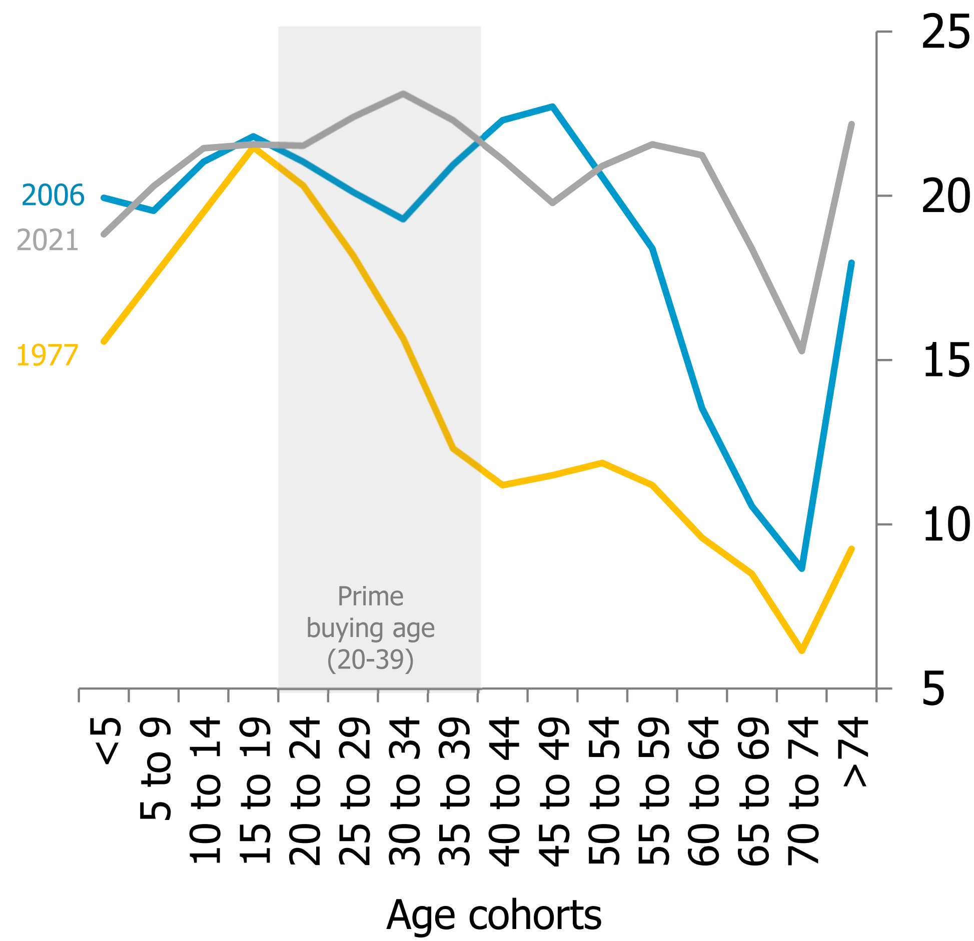
Note: From 1977 to 1981 the 30yr fixed mortgage interest rate rose from 9% to 15.1%, home prices rose from $42,900 to $66,400, and incomes rose from $16,000 to $22,300. From 2020 to June 2022, interest rates rose from 3.2% to 5.6%, home prices rose from $300,000 to $420,000, and incomes rose from $84,400 to $92,000. To estimate decomposition effects two of the variables were held constant to calculate the changes.

Persistent underbuilding and more first-time buyers were also present in late 1970s

Difference between housing unit growth and household formation, millions



U.S. population by age cohort and year, in millions

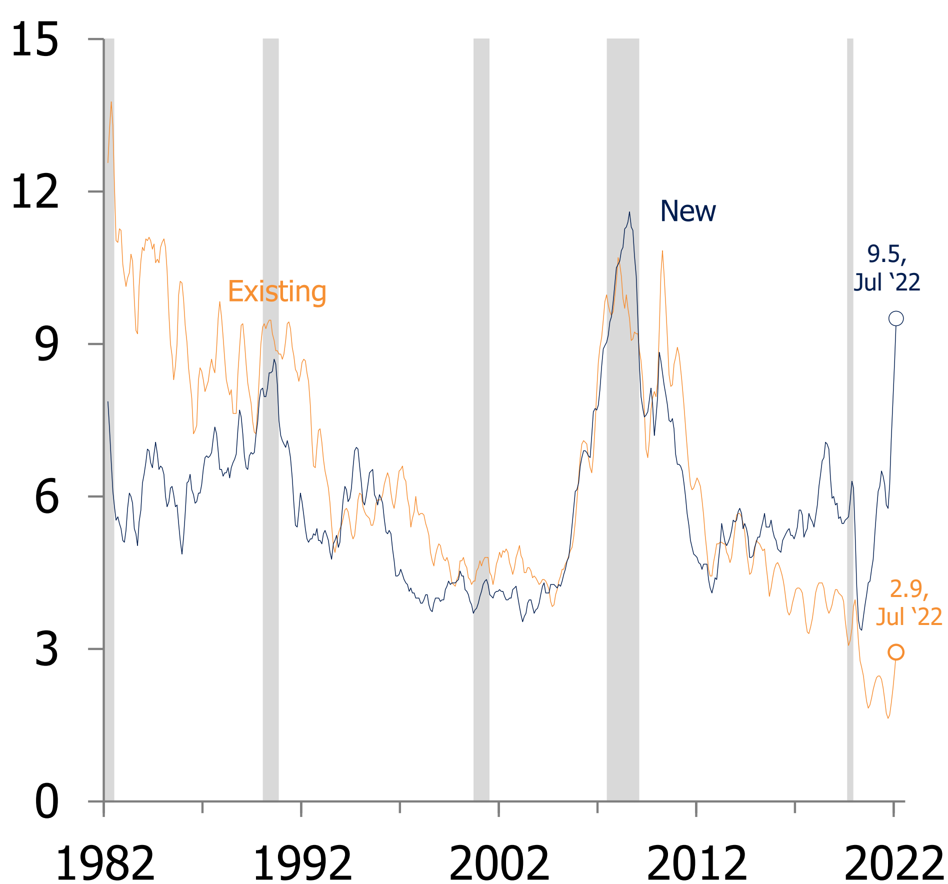


Sources: Census; EBC calculations (data through 2021)

Note: Household formations are estimated as the change in total U.S. households with a 2yr moving average. Household unit growth is the difference between annual completed homes built and 0.31% obsolescence rate of the prior year's existing stock.

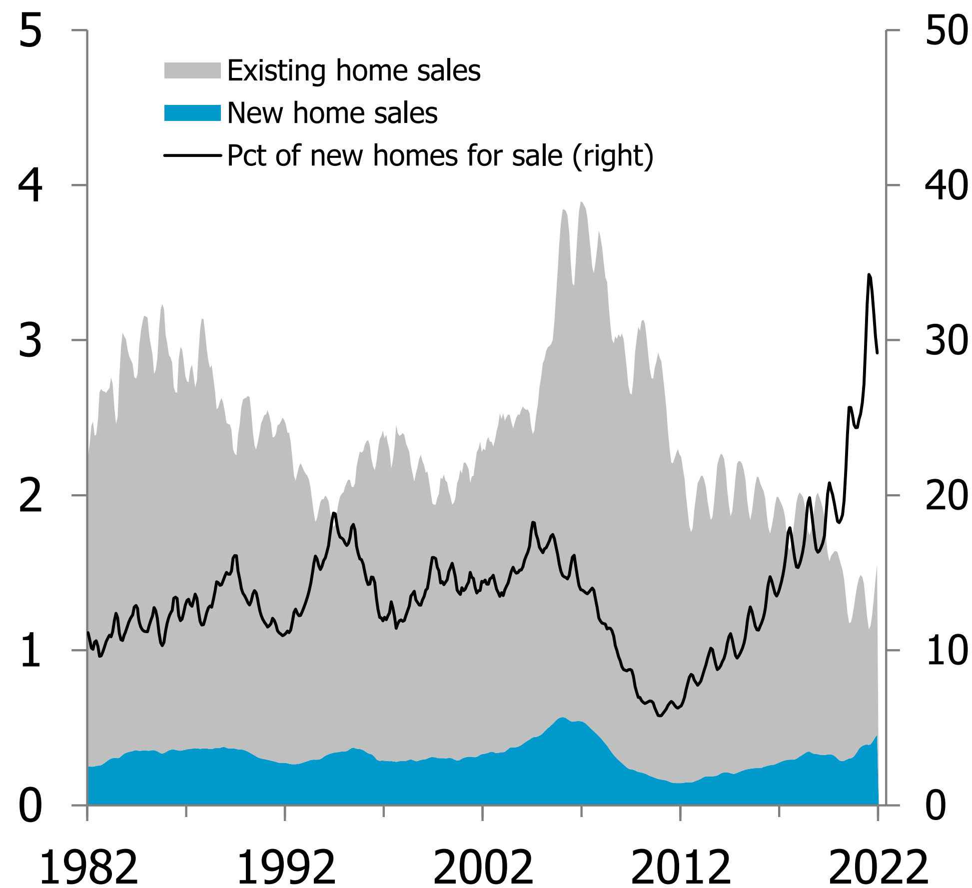
New & existing home sales slow; but inventories remain tight for the larger existing home market

Months' supply of single-family homes for sale, 3mo MA, in months



Months' supply = ratio of houses for sale to houses sold

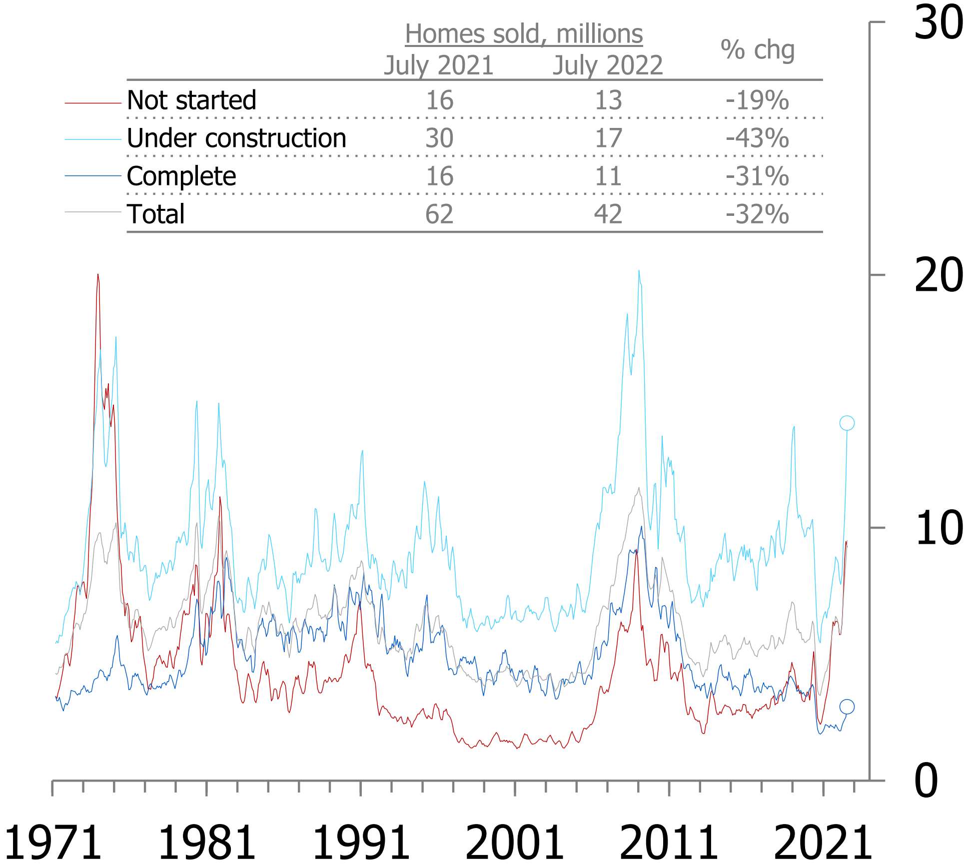
Single-family homes for sale, by type, in millions



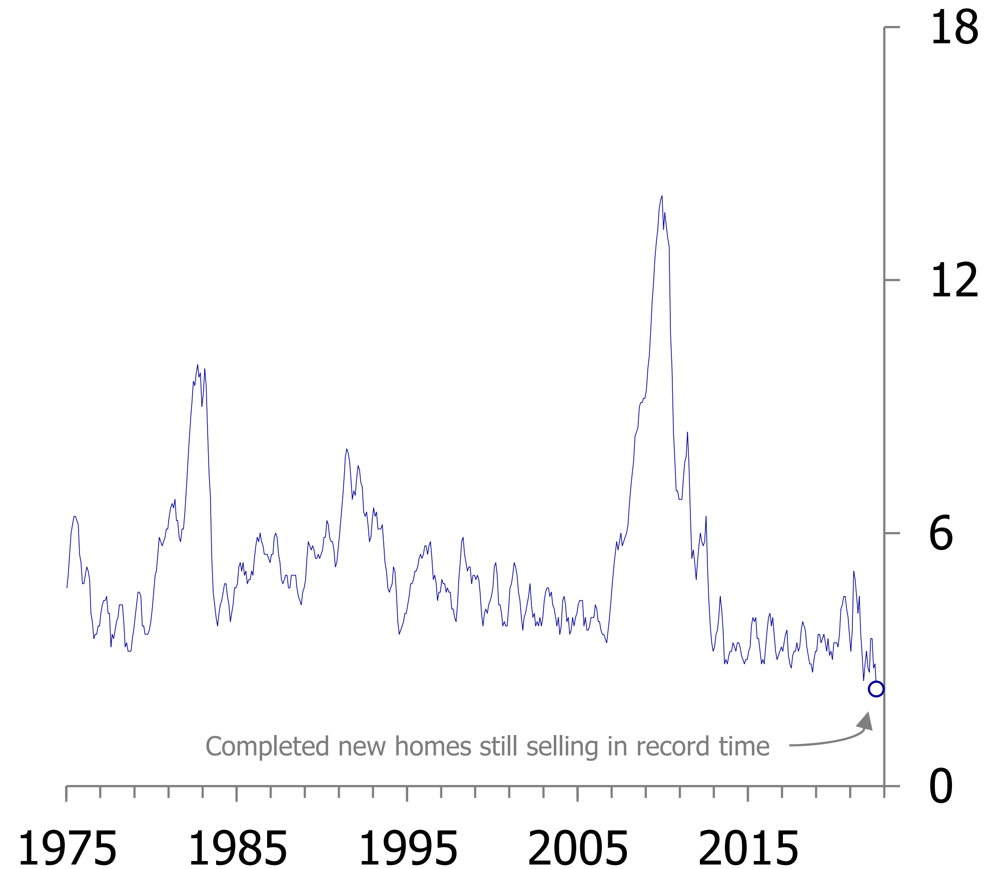
Sources: Census (data through July 2022); EBC calculations

Supply of new homes for sale increases; buyers reject unbuilt, and unfinished, homes

Months supply of new single-family homes by stage, 3mo MA, in months



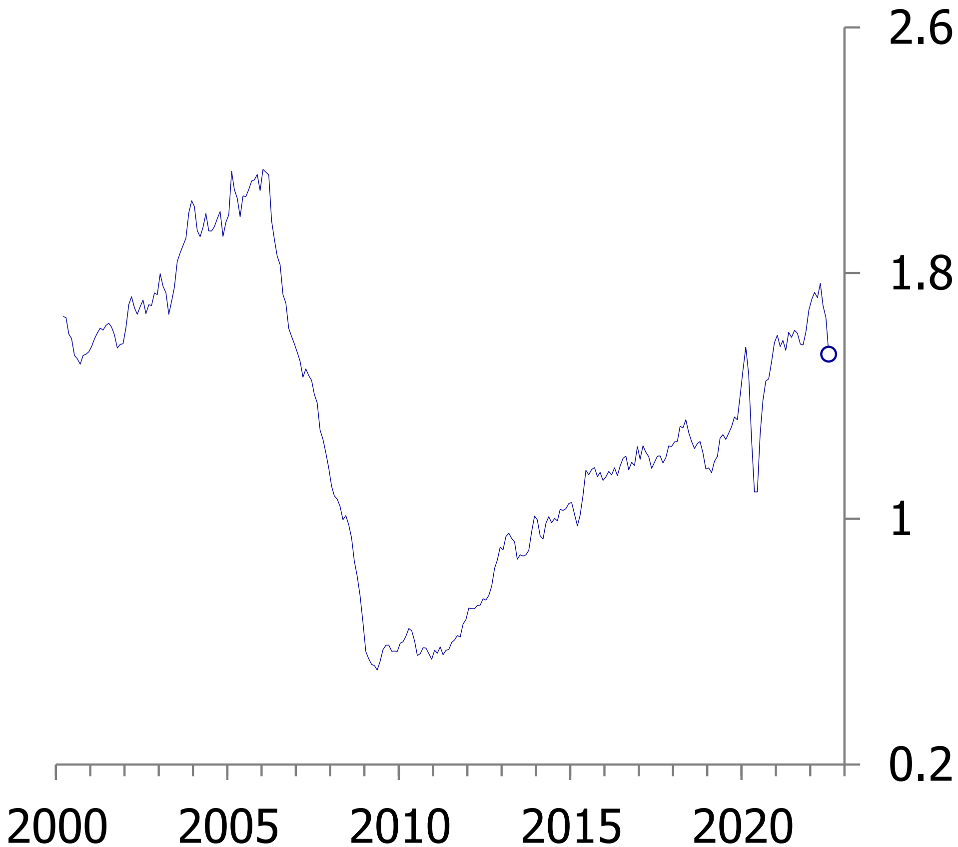
Median months to sell a completed single-family home, in months



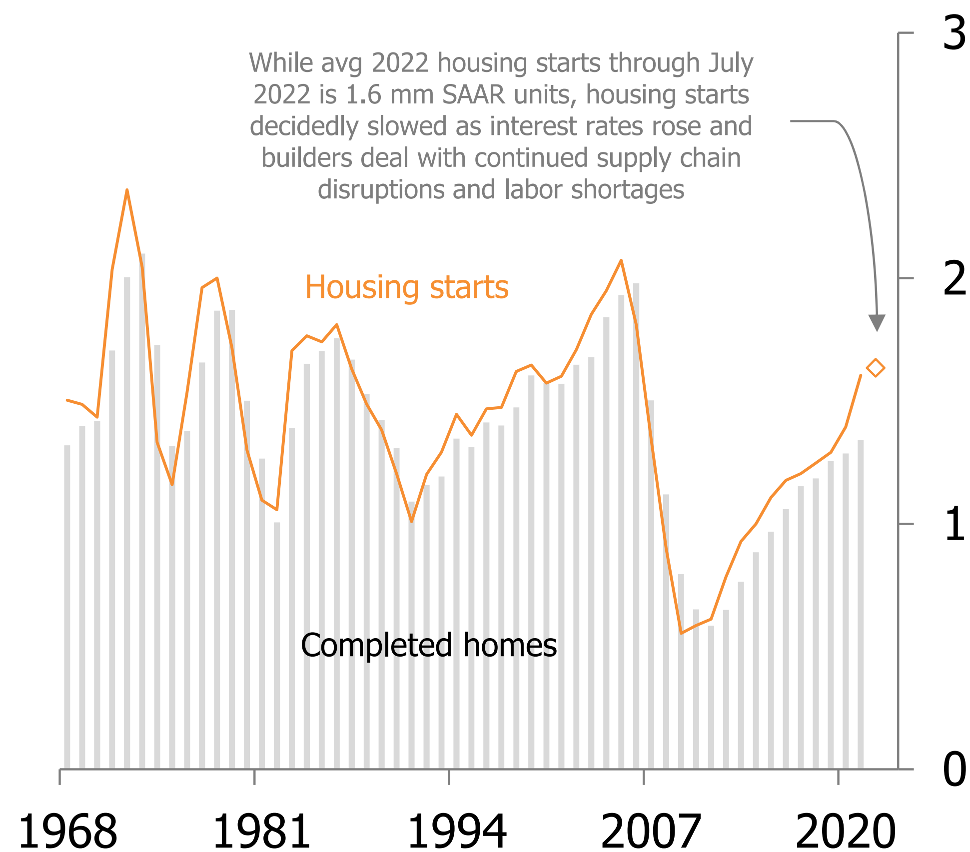
Sources: Census (July 2022); EBC calculations

Pace of homebuilding begins to slow, but 2022 still on pace to exceed prior year

New housing units started, SAAR, in millions



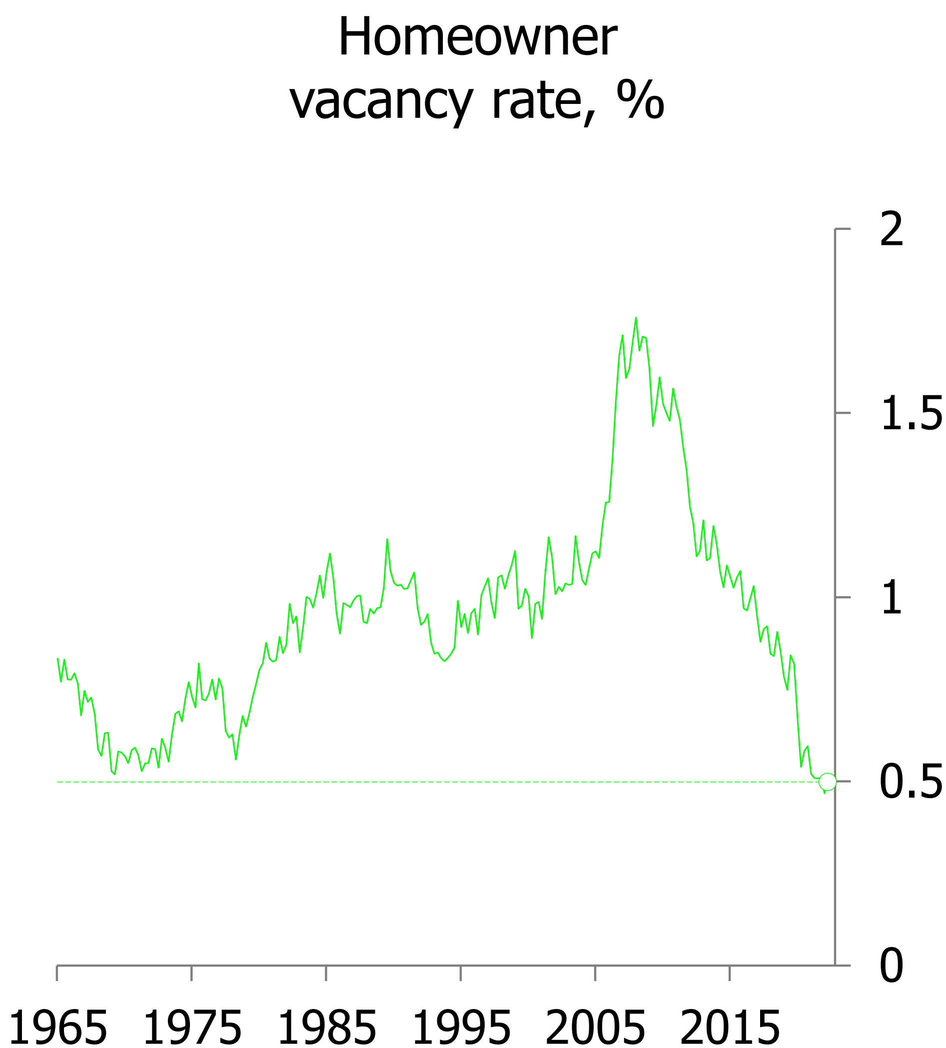
Annual housing starts and completions, in millions

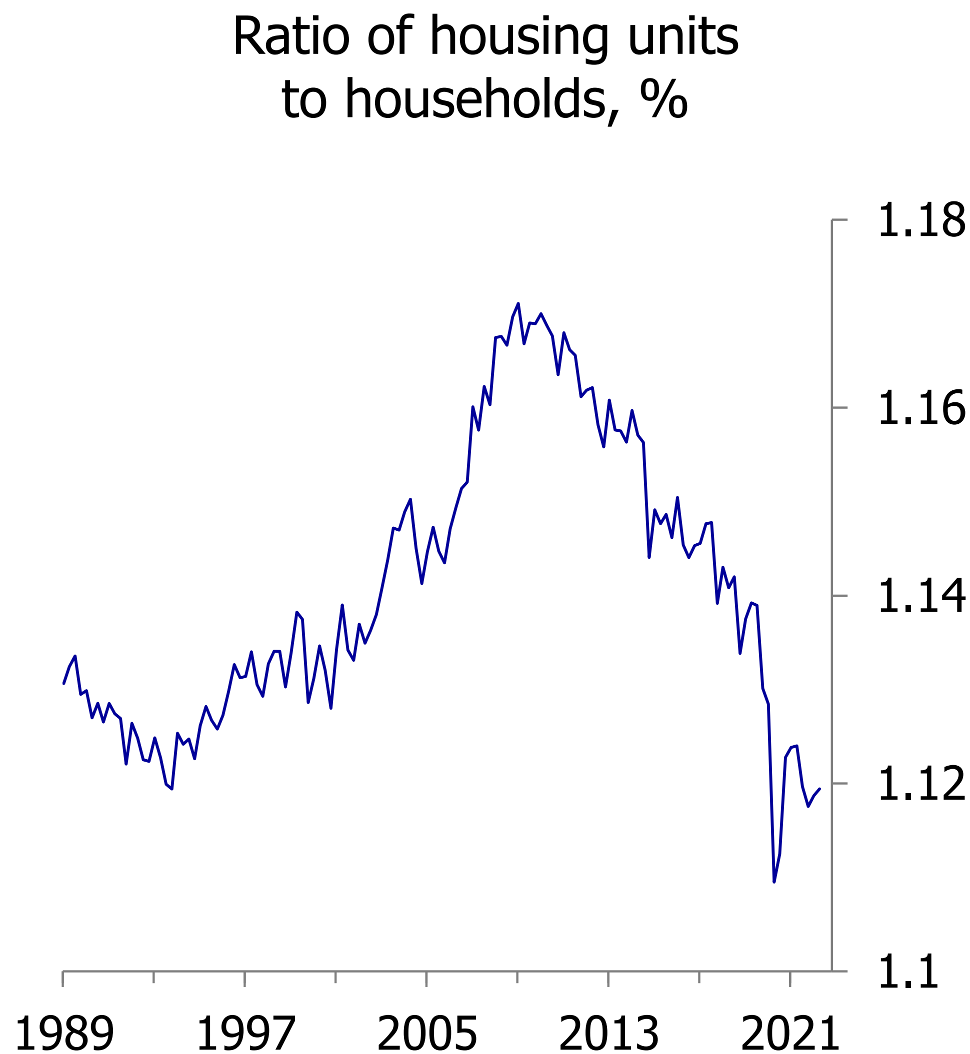


Source: Census (data through July 2022)

Note: Housing start occurs when excavation begins for the footings or foundation of a building

U.S. needs to build more homes to overcome historical shortage of housing stock



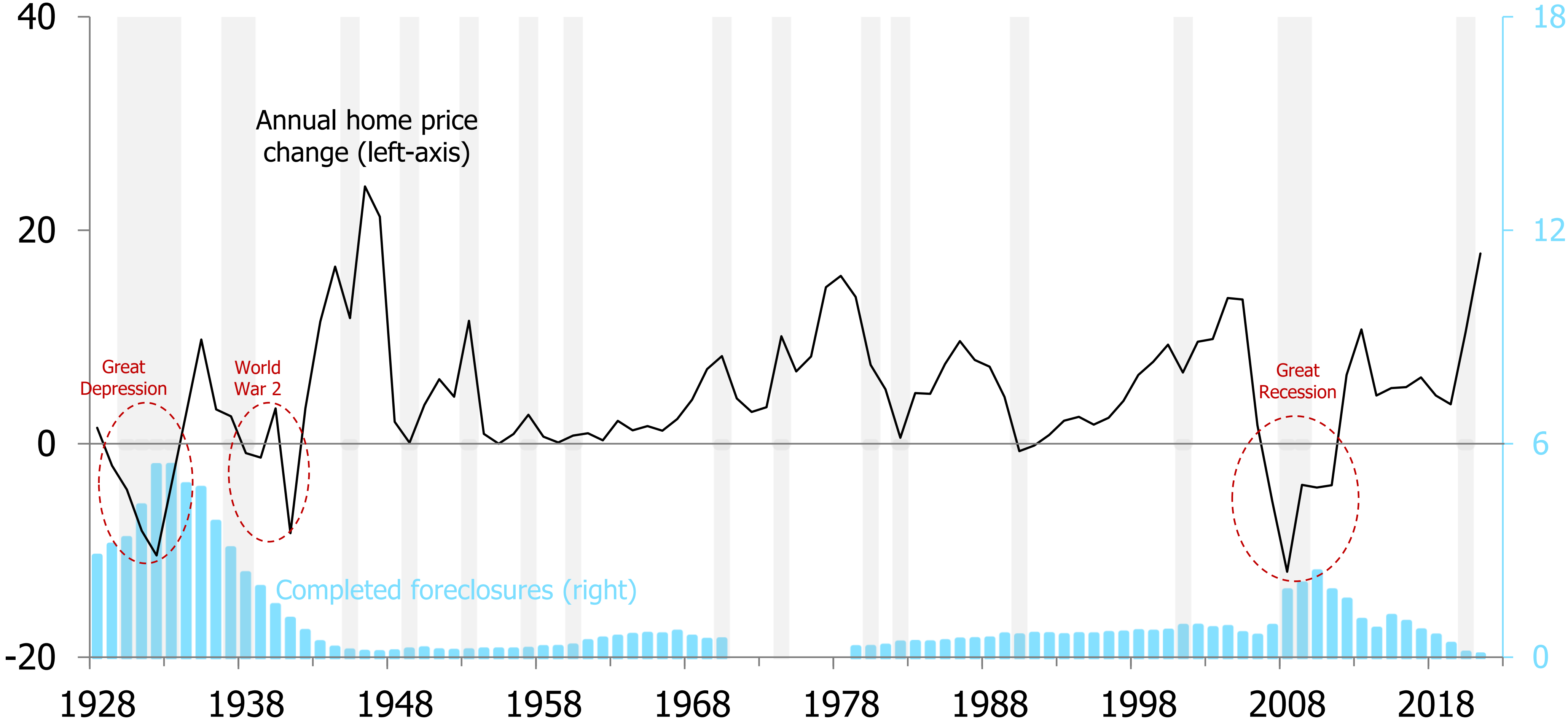


Sources: Census (data through June 2022); EBC calculations

Homeowner vacancy rate = vacant housing units for sale divided by the total U.S. housing units

National price declines linked to foreclosures; non-distressed owners reluctant to sell at a loss

Annual home price change and percent of mortgagees with completed foreclosure, %



Sources: Haver; NBER; Robert Shiller and S&P Case Shiller National index (data through 2021); Census; MBA; Attom/RealtyTrac; & EBC calculations

Note: Prior to 1971 foreclosure figures captured total nonfarm completed real estate foreclosures from NBER Macro History, and were divided by the number of mortgagees of owner-occupied nonfarm housing from Bicentennial Edition: Historical Statistics of the United States, Colonial Times to 1970. From 1979 through 2004, the MBA's foreclosure starts was multiplied by the 2005-2021 average annual completed foreclosure rate, and then divided by the MBA's number of outstanding mortgages serviced. From 2005 onward completed foreclosures are from RealtyTrac and Attom Processing divided by the number of mortgages serviced reported by the MBA survey.

Takeaways

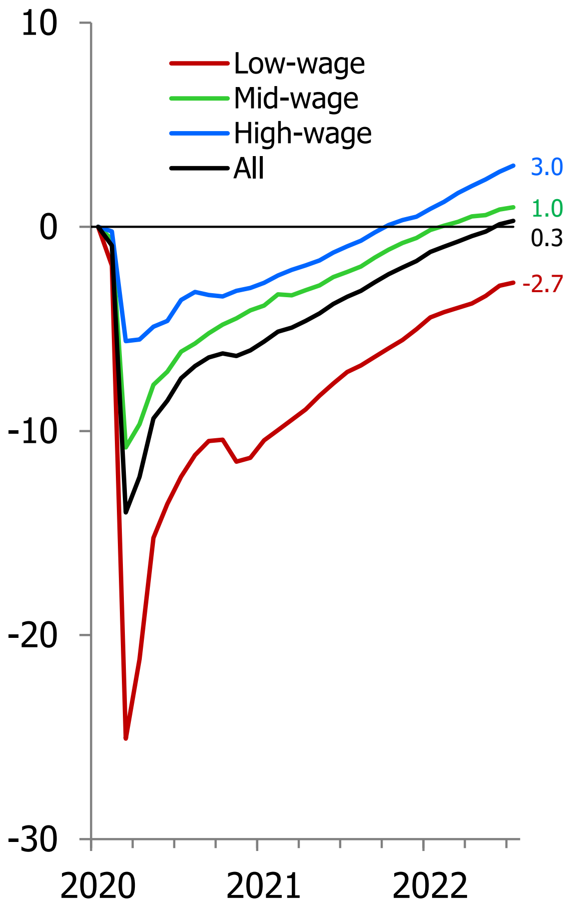
- Avoiding recession is dependent upon the Fed slowing labor demand by reducing job openings rather than increasing unemployment

- Large national home price declines are unlikely given:
  - Major mismatch between housing supply and demand
  - Higher-quality underwriting this credit cycle
  - Majority of outstanding mortgages are fixed-rate and amortizing
  - Younger generations aging into homebuying, and
  - Material household cash reserves across income bands

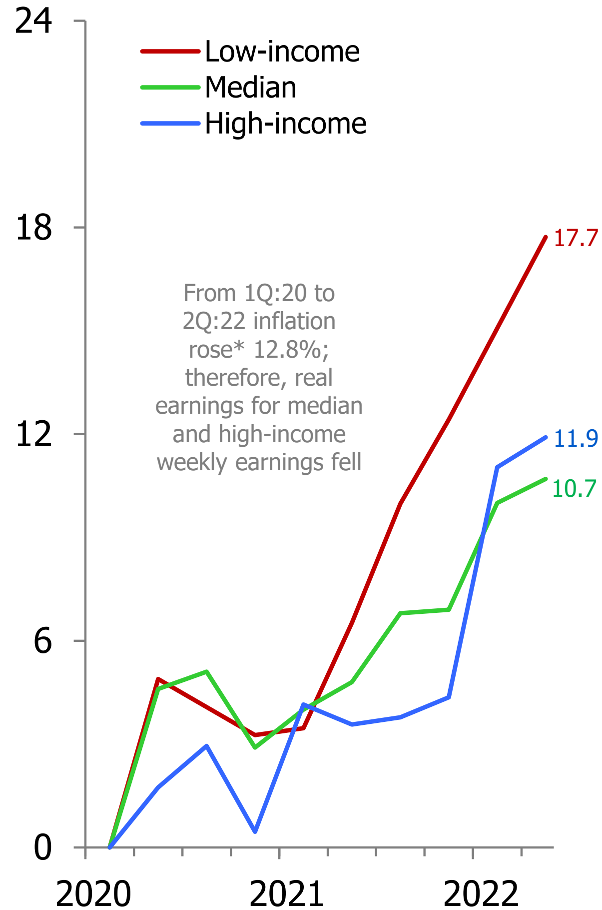
Appendix

Low-wage employment yet to rebound despite largest wage gains and abundant job openings

Percent change in employment by wage tier, since Feb 2020, %

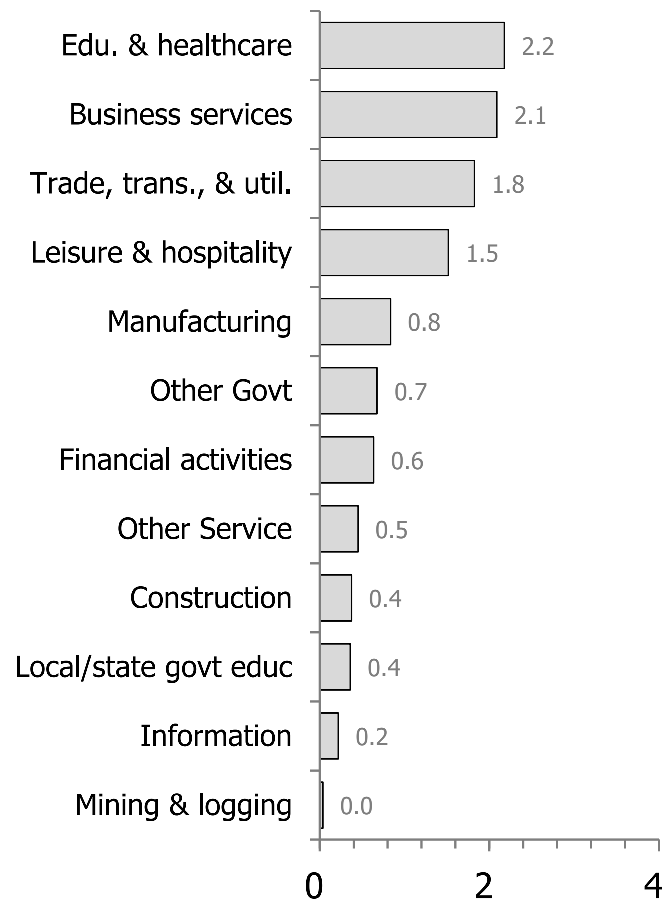


Percent change in usual median weekly earnings, by income, %



*Based on the R-CPI-U-RS for all items, including food & energy

Job openings at July 2022, by industry, in millions

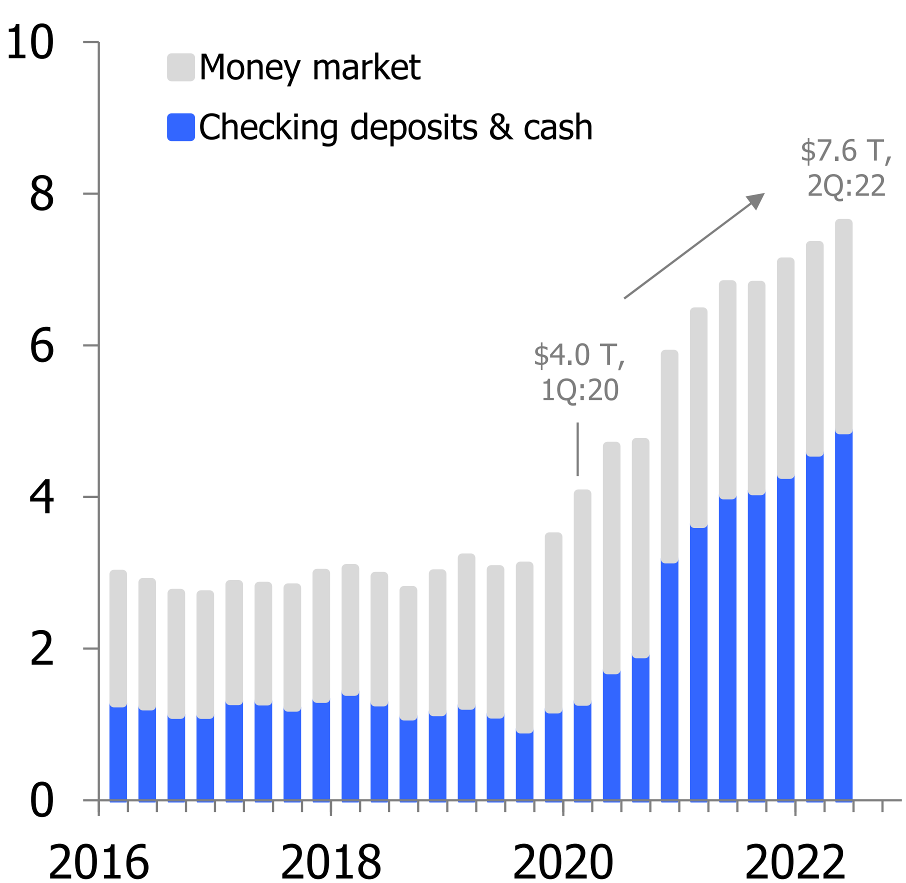


Sources: Moody's Analytics (data through Aug 2022); Bureau of Labor Statistics; JOLTS (July 2022)

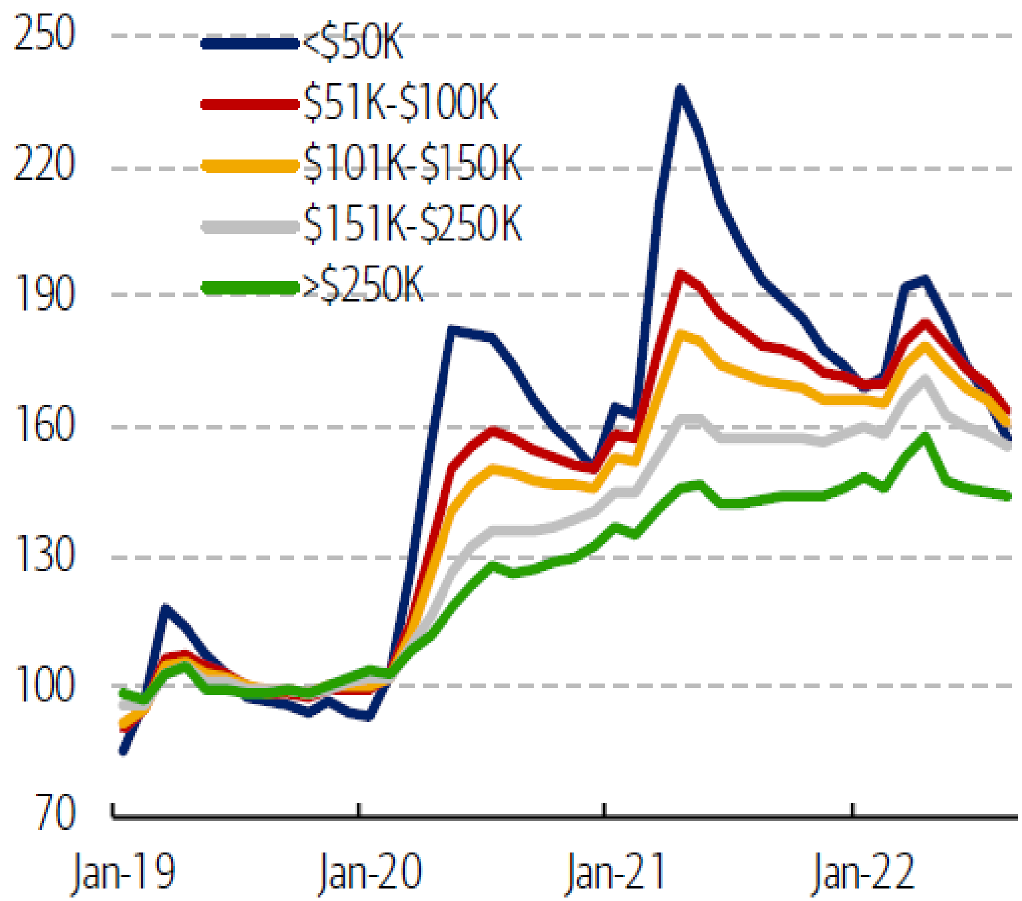
Note: Within each geo, industries are separated into high-, middle- and low-wage tiers. In the January 2021 high-wage was greater than $77,803, mid was $41,372 to and $41,372, and low wage less than $41,372. Median usual weekly earnings come from the Household Survey, low income is from the bottom decile, mid income is the median and high income is the top decile.

Household cash reaches $7.6T; balances are >40% higher than 2019 across all incomes

Household cash & money market holdings, $ trillions



Median household savings & checking balances by income, 2019=100

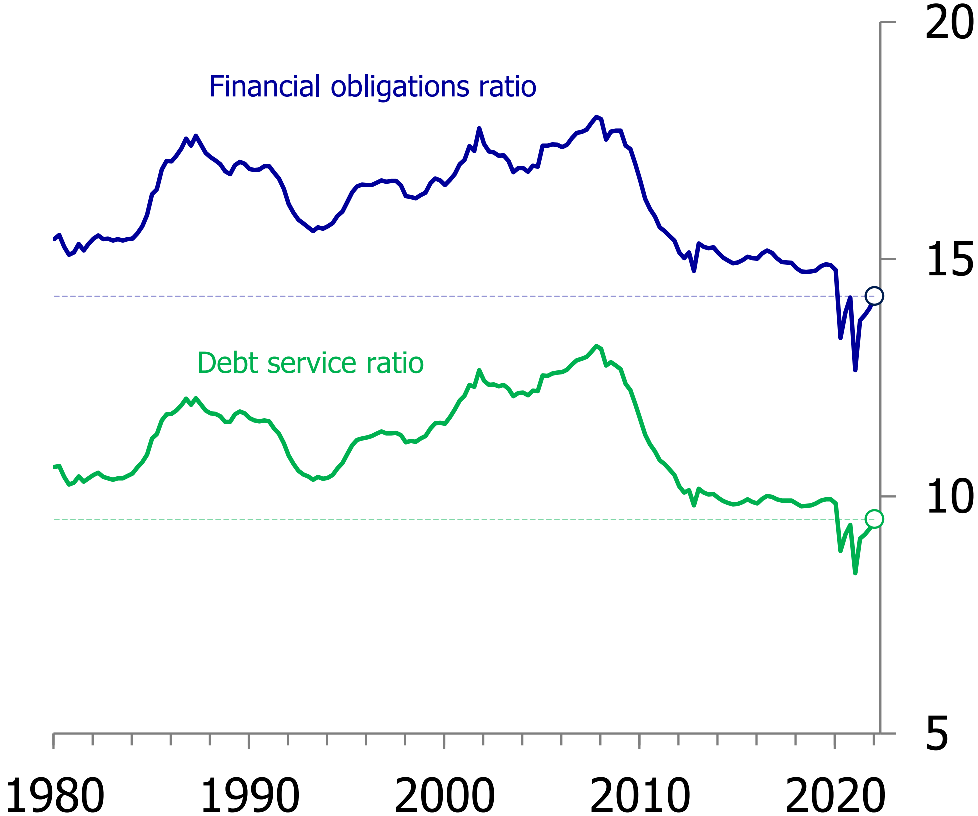


Sources: Federal Reserve Board (data through June 2022); Bank of America Institute

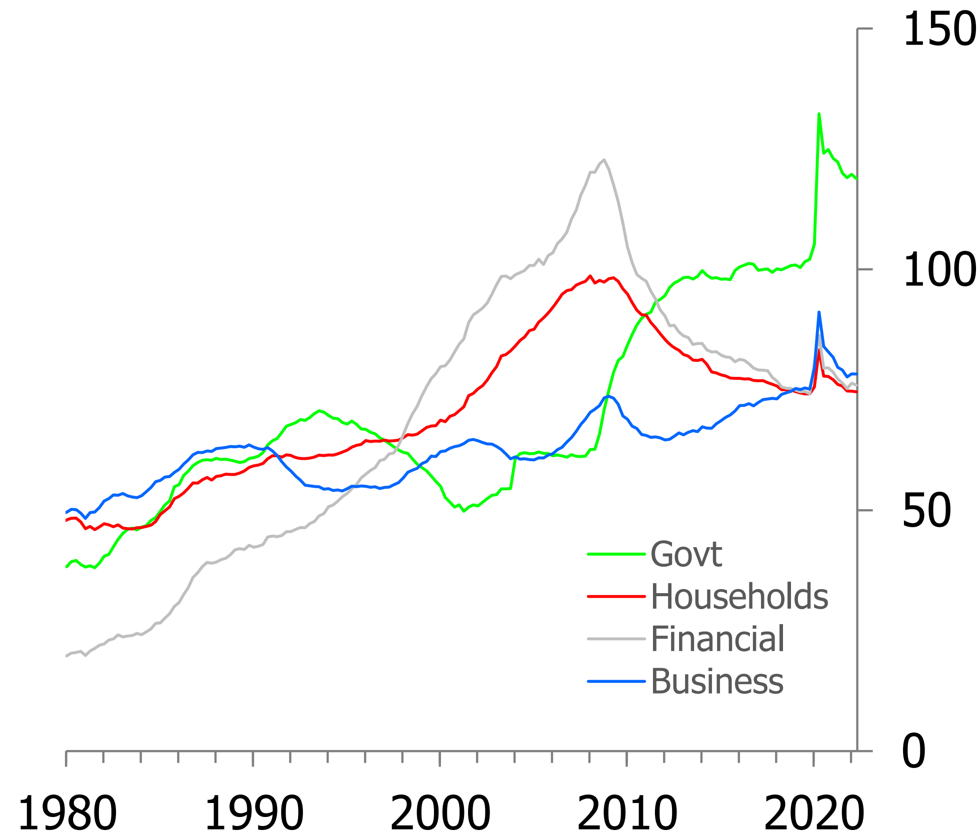
Note: Based on Bank of America internal data. Monthly data includes those households that had a consumer deposit account (checking and/or savings account) for all 44 months from January 2019 through August 2022.

Household debt service burdens remain near 40-year lows with moderate overall leverage

Household debt service & financial obligations ratio, %



Debt to GDP ratios by sector, %

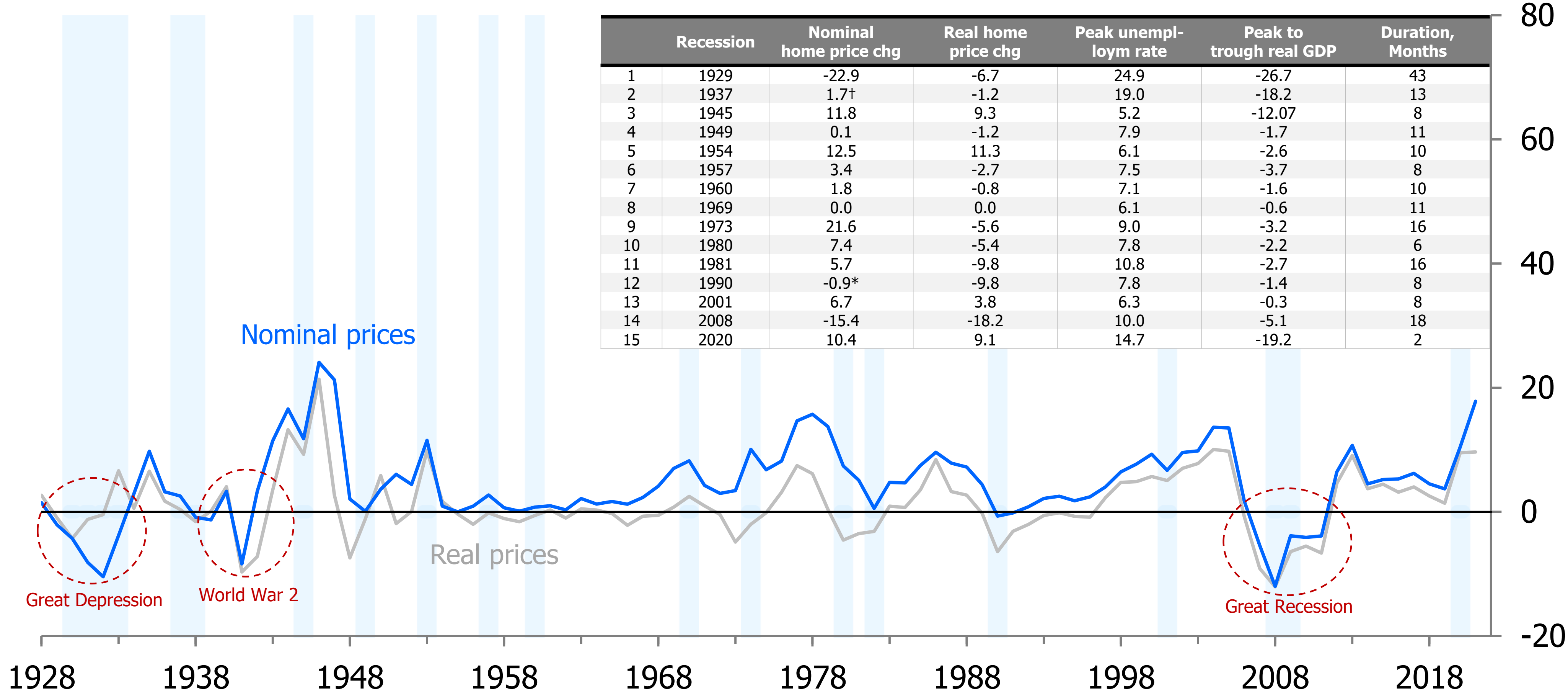


Sources: Federal Reserve Board (obligations data through 1Q:22 while debt to GDP ratios through 2Q:22)

Note: Household debt service is ratio of required household debt payments to total disposable income. The household debt service coverage is is a broader that includes: rent payments on tenant-occupied property, auto lease payments, homeowners' insurance, and property tax payments.

Recession depth, diffusion & duration is not correlated to national home price declines

Annual nominal & real home price change, year-over-year, %



	Recession	Nominal home price chg	Real home price chg	Peak unempl-loym rate	Peak to trough real GDP	Duration, Months
1	1929	-22.9	-6.7	24.9	-26.7	43
2	1937	1.7†	-1.2	19.0	-18.2	13
3	1945	11.8	9.3	5.2	-12.07	8
4	1949	0.1	-1.2	7.9	-1.7	11
5	1954	12.5	11.3	6.1	-2.6	10
6	1957	3.4	-2.7	7.5	-3.7	8
7	1960	1.8	-0.8	7.1	-1.6	10
8	1969	0.0	0.0	6.1	-0.6	11
9	1973	21.6	-5.6	9.0	-3.2	16
10	1980	7.4	-5.4	7.8	-2.2	6
11	1981	5.7	-9.8	10.8	-2.7	16
12	1990	-0.9*	-9.8	7.8	-1.4	8
13	2001	6.7	3.8	6.3	-0.3	8
14	2008	-15.4	-18.2	10.0	-5.1	18
15	2020	10.4	9.1	14.7	-19.2	2

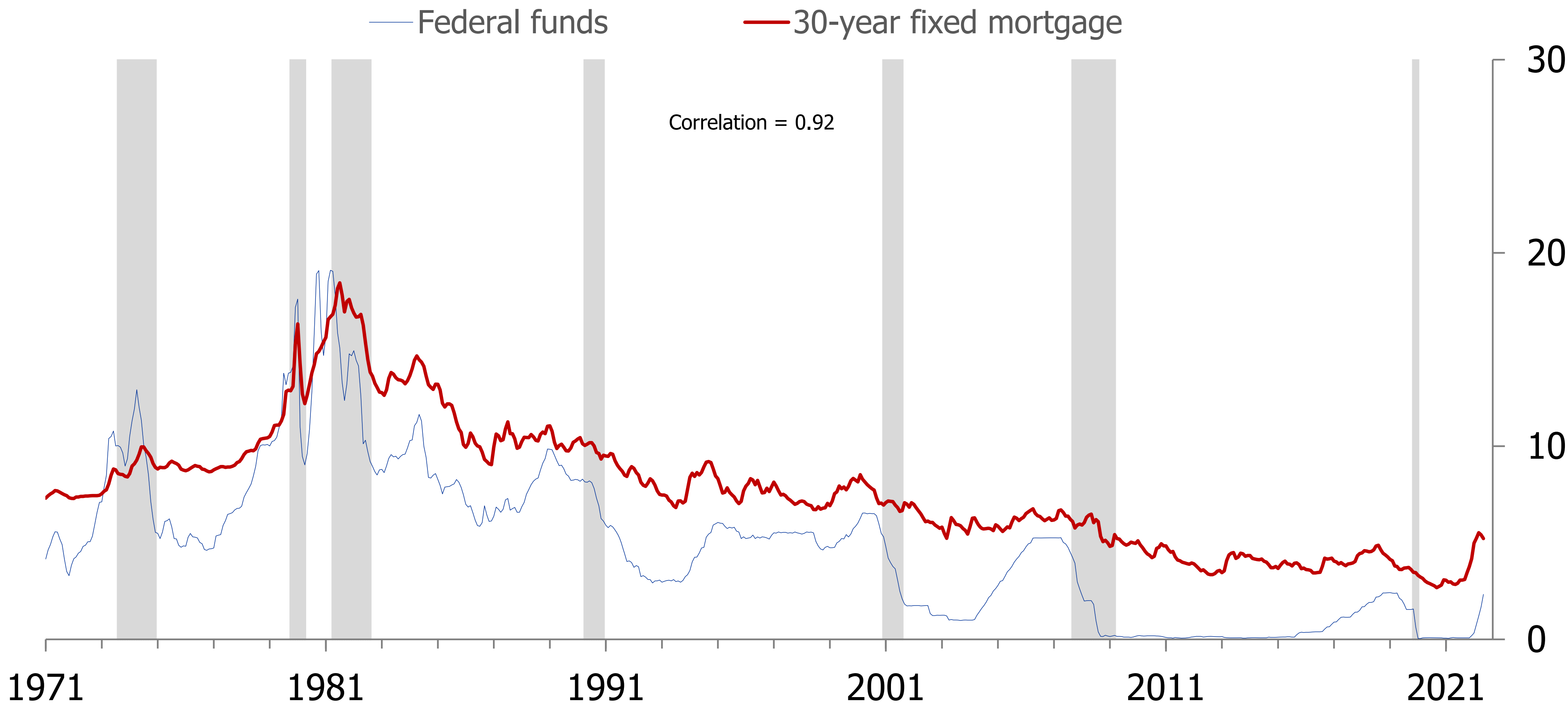
†Nominal home prices fell after the 1937 officially recession ended

*Other indices do not report nominal home price decline in 1990, and even Case-Shiller is a less than one percent decline

Source: Haver; NBER; Robert Shiller and S&P Case Shiller National index (data through 2021)

Note: Annual U.S. home price data from Robert J. Shiller's Irrational Exuberance from 1890 through 2021. Shiller adjusted for inflation by using the headline Consumer Price Index for all Urban consumers. Prior to 1940s most mortgages were 3-5yr bullet loans.

Federal funds and 30-year fixed rate mortgage average monthly rate, %



Source: Federal Reserve Board
(data through August 2022);
Freddie Mac (Aug. 2022)