
A light gray world map with white outlines of continents and countries, centered on the Atlantic Ocean. The text "Back to the Future" is overlaid on the left side of the map.

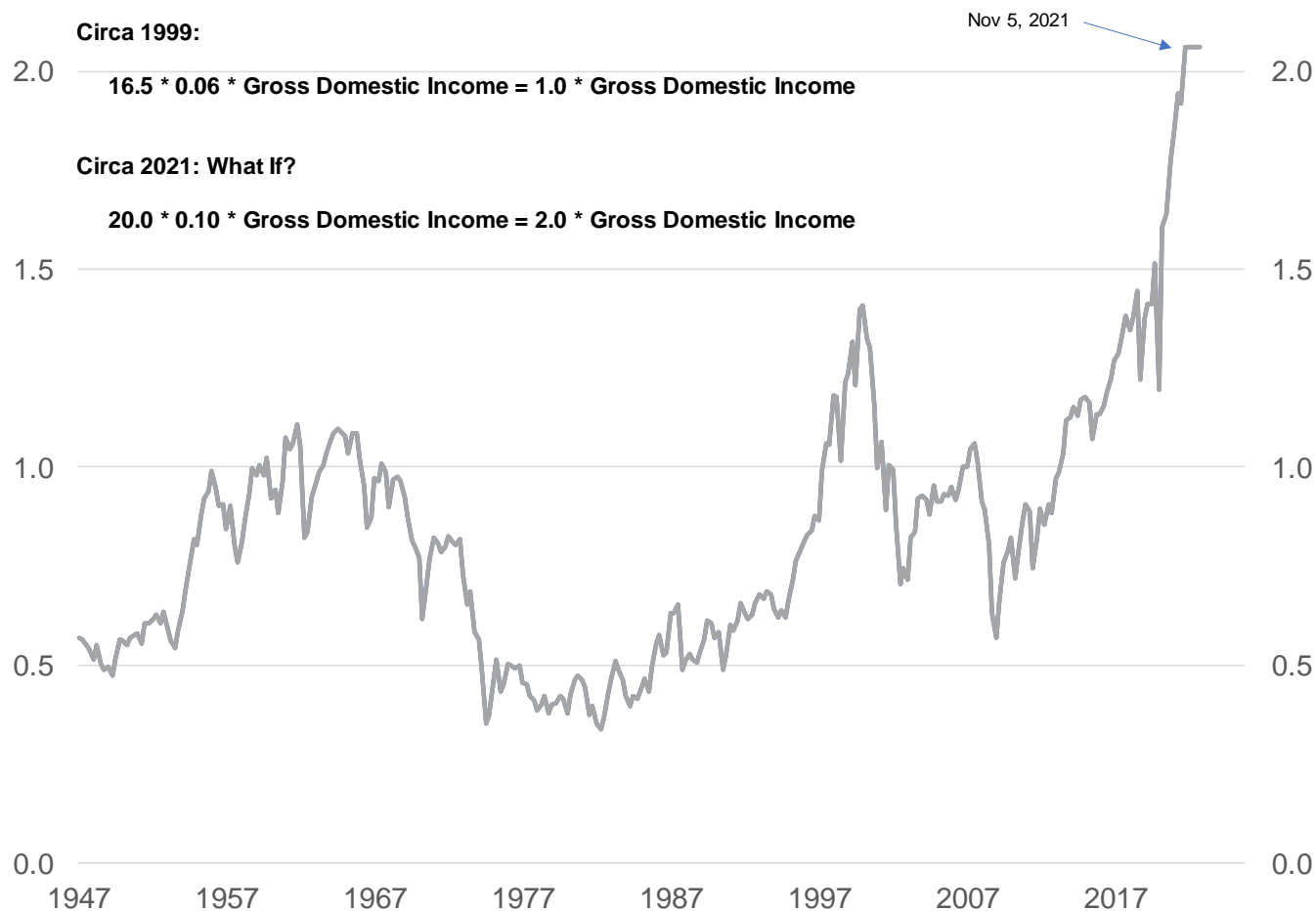
Back to the Future

November 10, 2021

An Opinion Worth Considering

Where what we think, not what we say, rules

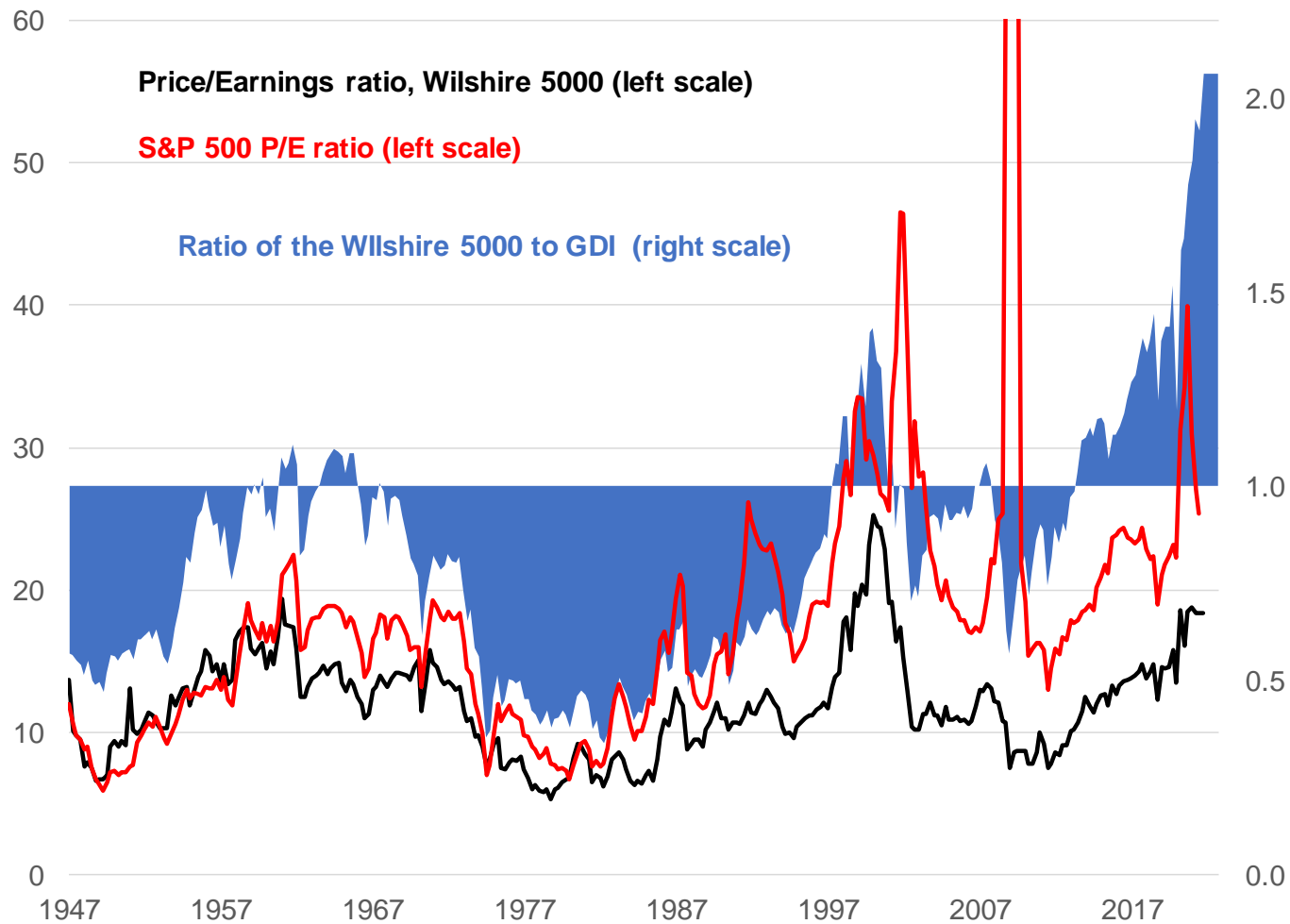
Ratio of the value of the U.S. stock market to Gross Domestic Income



Sources: Haver Analytics; Federal Reserve Board; U.S. Department of Commerce. Updated through 2021 Q2 (GDI) and November 8, 2021 (Wilshire 5000).

“Valuation measures are high relative to historical norms”

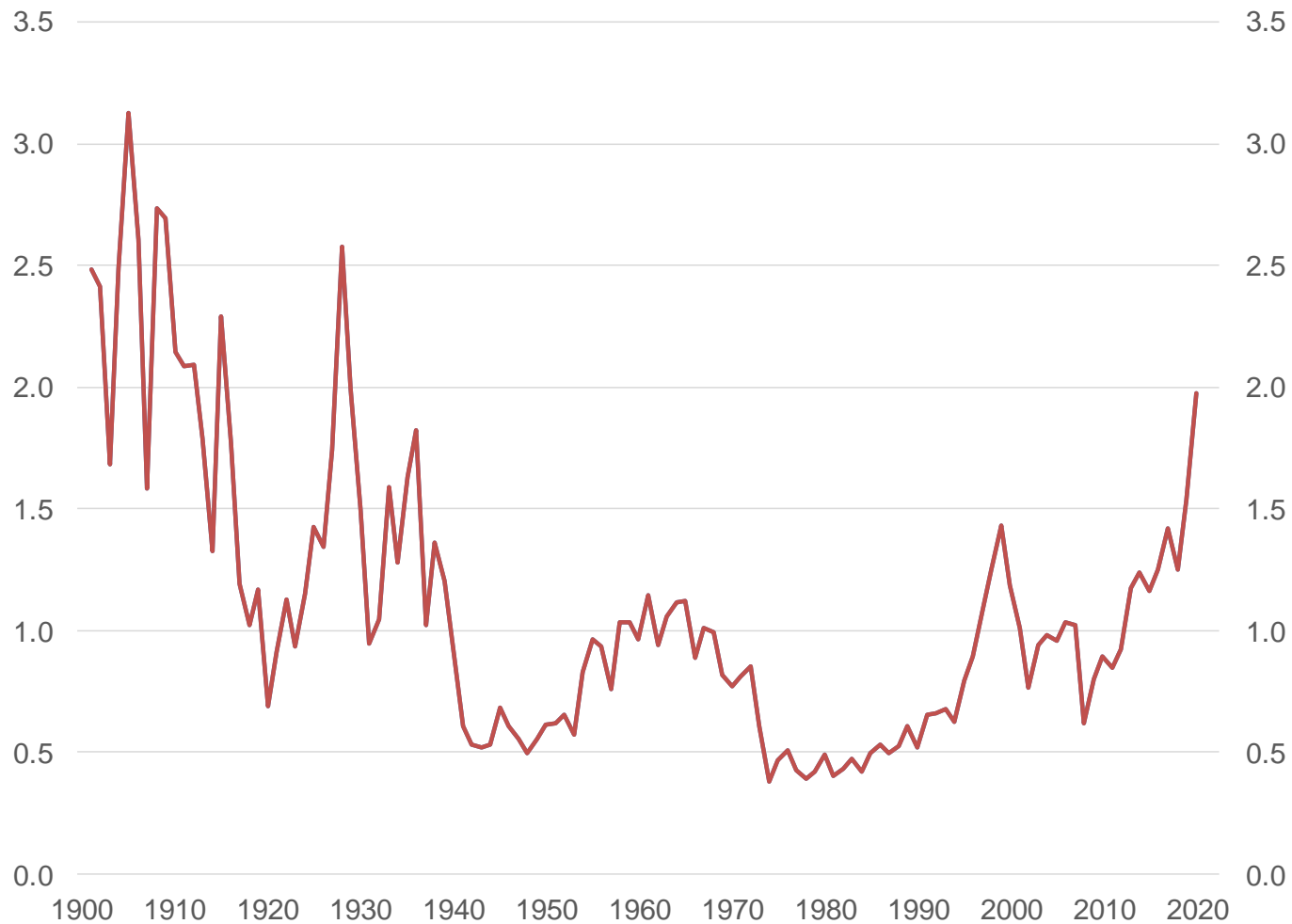
Selected measures of business profits (percent of Gross Domestic Income)



¹ GDP profits adjust for (translated to economic terms) different valuations of inventories and depreciation allowances.
Sources: Haver Analytics; U.S. Department of Commerce. Updated through 2021 Q2 and November 8, 2021 (stocks)

Reminiscent of the 'Roaring Twenties'

Ratio of the value of the U.S. stock market to Gross Domestic Product



Sources: Haver Analytics; Federal Reserve Board; U.S. Department of Commerce. Updated through 2020 Q3 (GDI) and May 11, 2021 (equities).

But Why Are Historical Norms Relevant

Equilibrium real risk-free rates are low by historical norms ...

Demographics (ageing workforces)

Global saving (lifted by international trade imbalances)

Risk premia are low by historical norms ...

Declining inflation risk, looking past pandemic dislocations

The Fed's 2% inflation target blunts political risk in monetary policy

The Fed's new reaction function lessens the chance of a monetary policy mistake

Geopolitical risks are low by historical norms, with the EU's survival through an economic crisis and living standards upping the cost of conflict (a future of elephants and tigers)

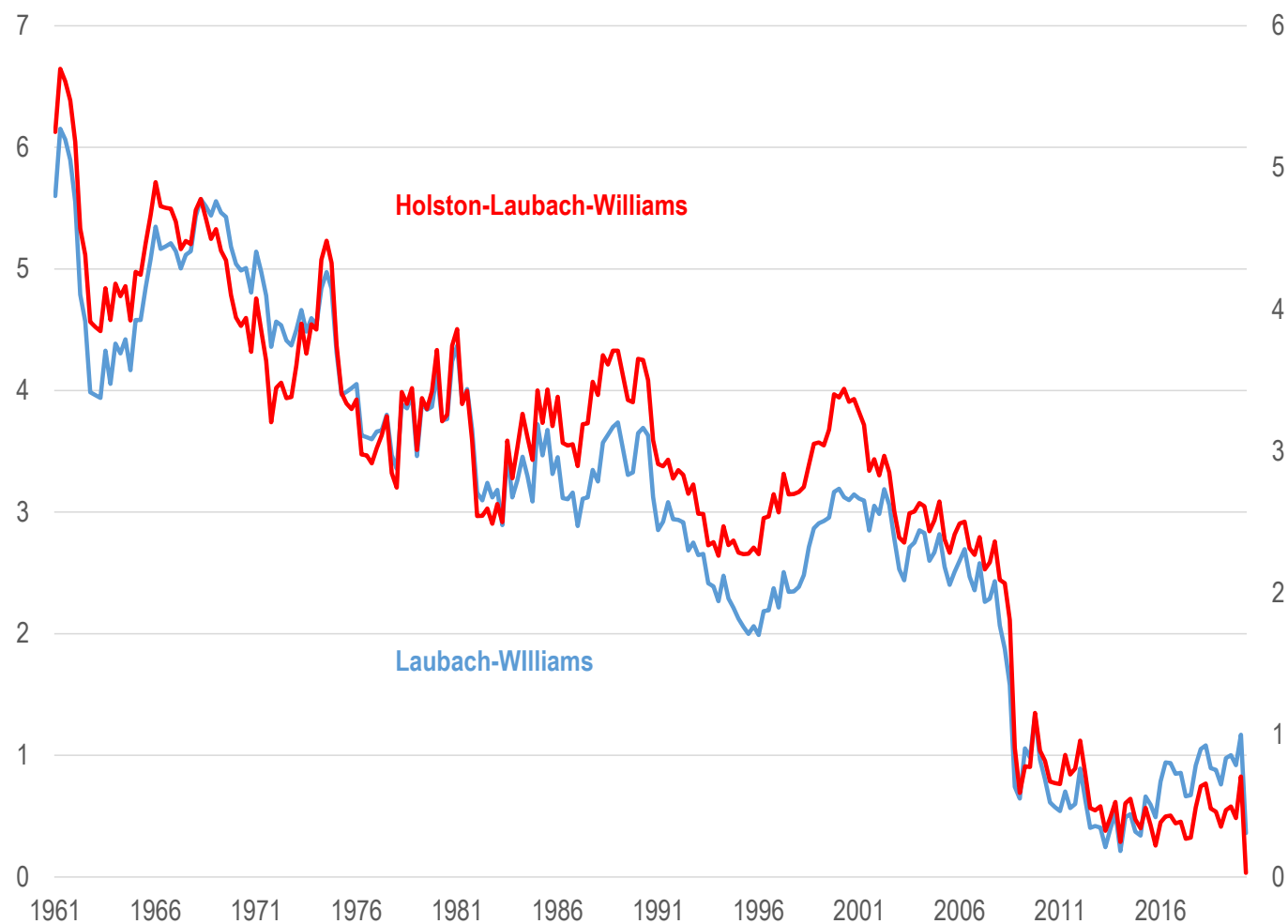
Business performance is elevated by historical norms ...

The unlocking of technological innovation forced by the pandemic

Global awakening increased the amount of GDP beyond the US borders

Equilibrium Risk Free Real Rates

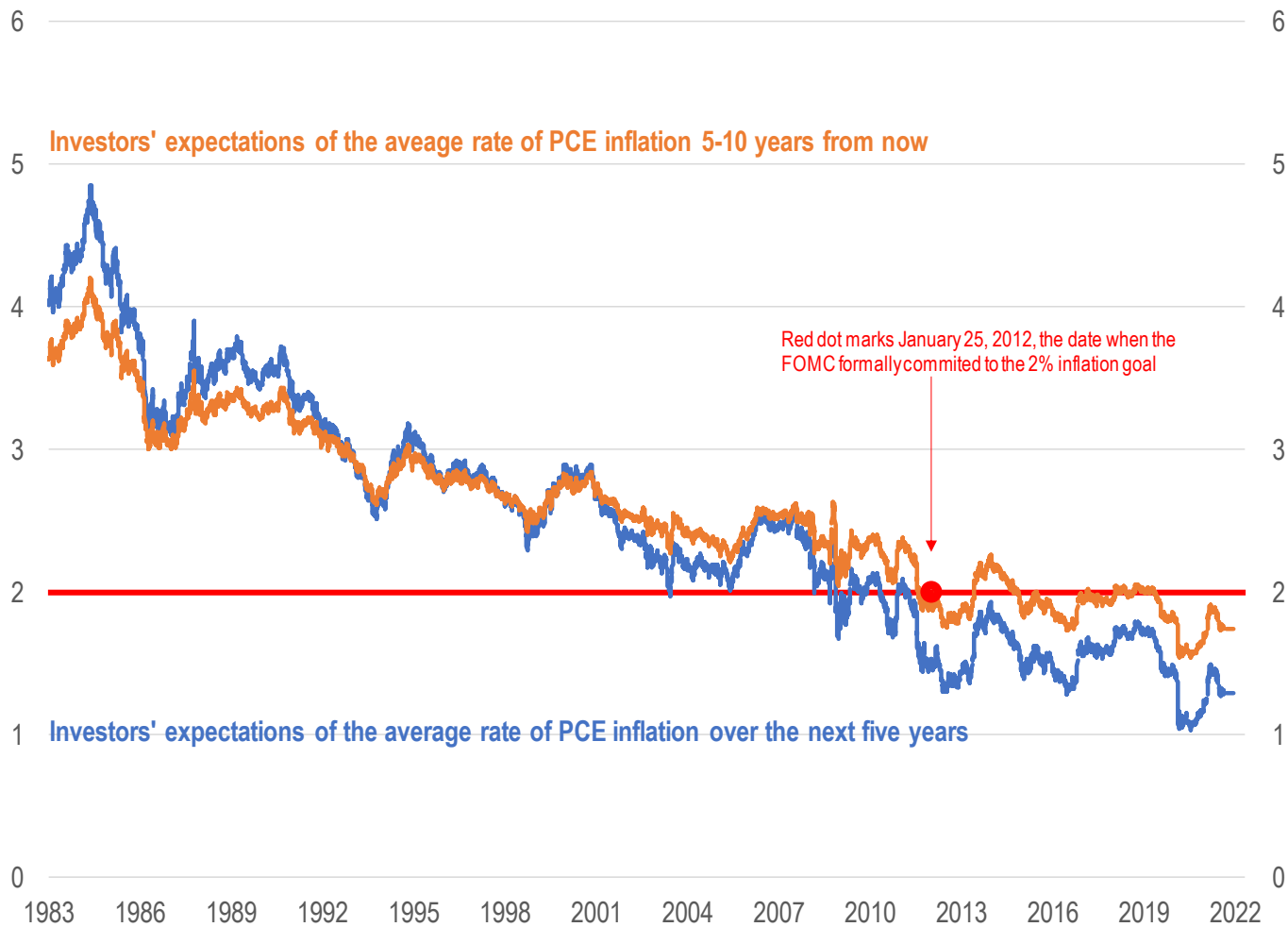
Equilibrium real risk-free rates, R-star (percent)



Source: "Measuring the Natural Rate of Interest," Holston, Laubach, and Williams. November 30, 2020.

Fed Policy Credibility Matters

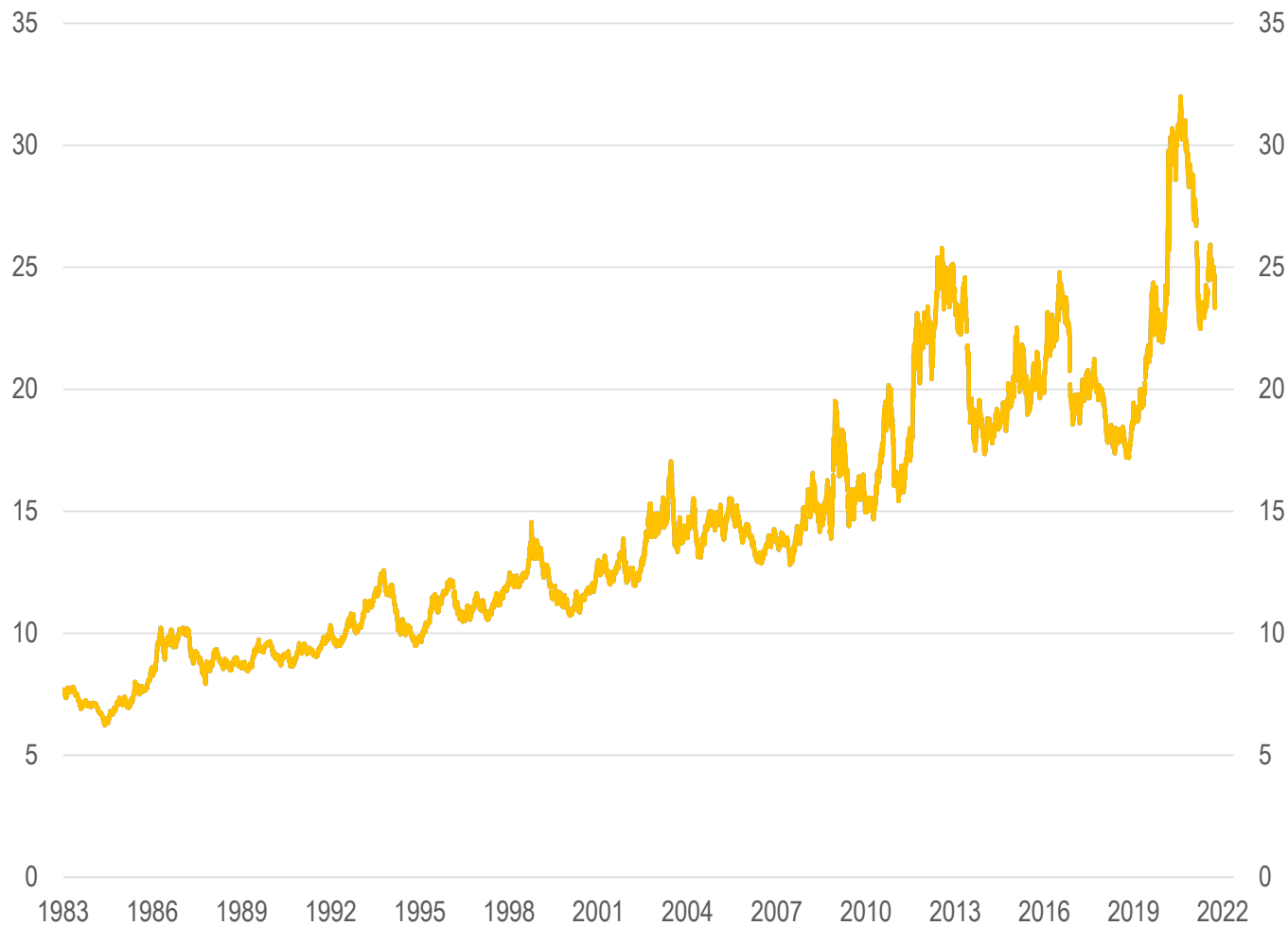
Market based inflation expectations over selected horizons (annual rate)



Note: Assumes that the PCE inflation rate will be 0.31 percentage point, the historical differential, below the CPI inflation expectations reflected in the Treasury nominal and TIPS securities yields.
Source: Haver Analytics; Federal Reserve Board. Updated through October 31, 2021.

P-Es Should be Higher than Historical NOrms

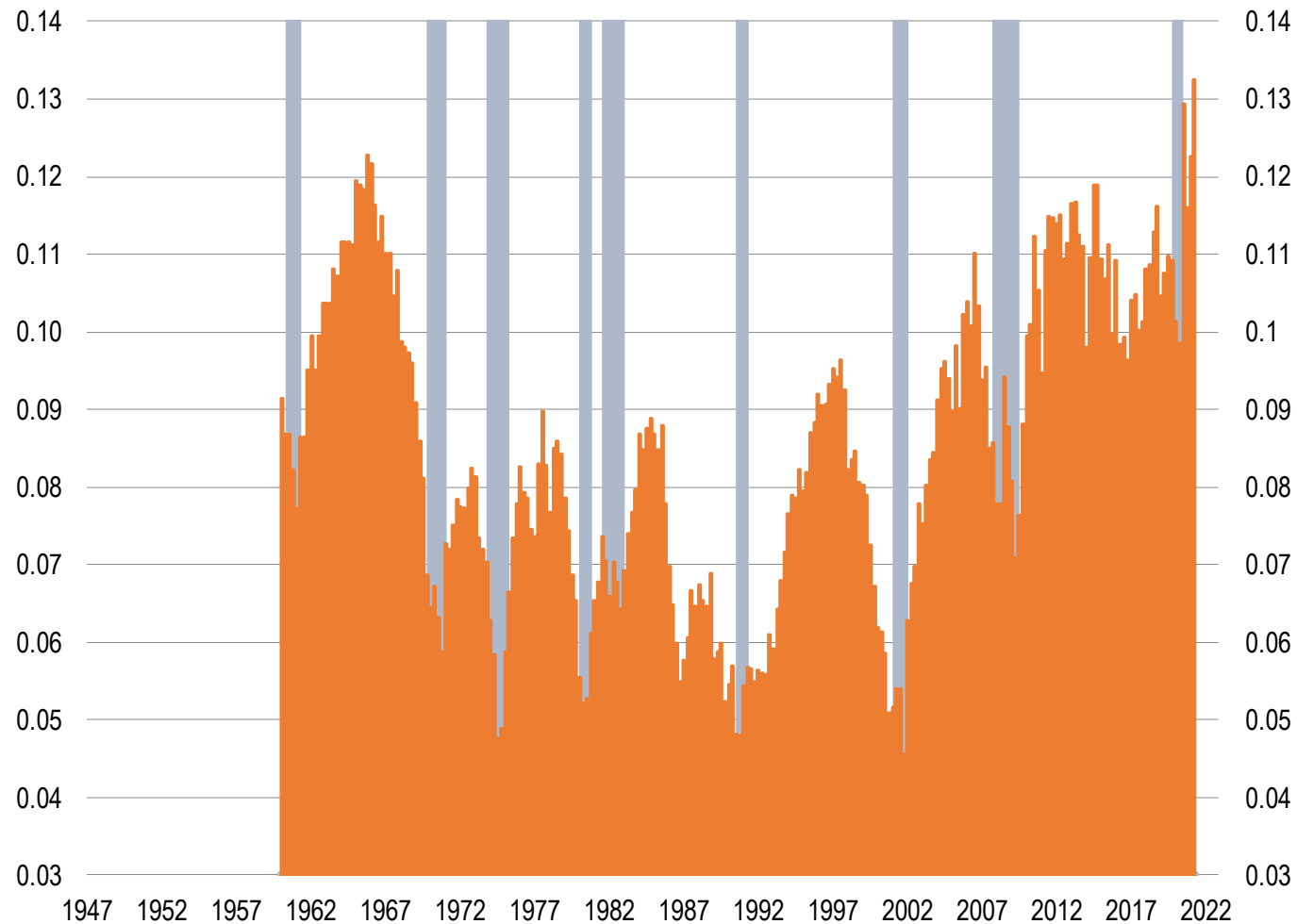
Implied P-E multiple (1/ (10-year Treasury yield plus 2 percentage points for the equity risk premium))



Source: Haver Analytics; Federal Reserve Board. Updated through September 30, 2021.

Profits Don't Behave Like Historical Norms ...

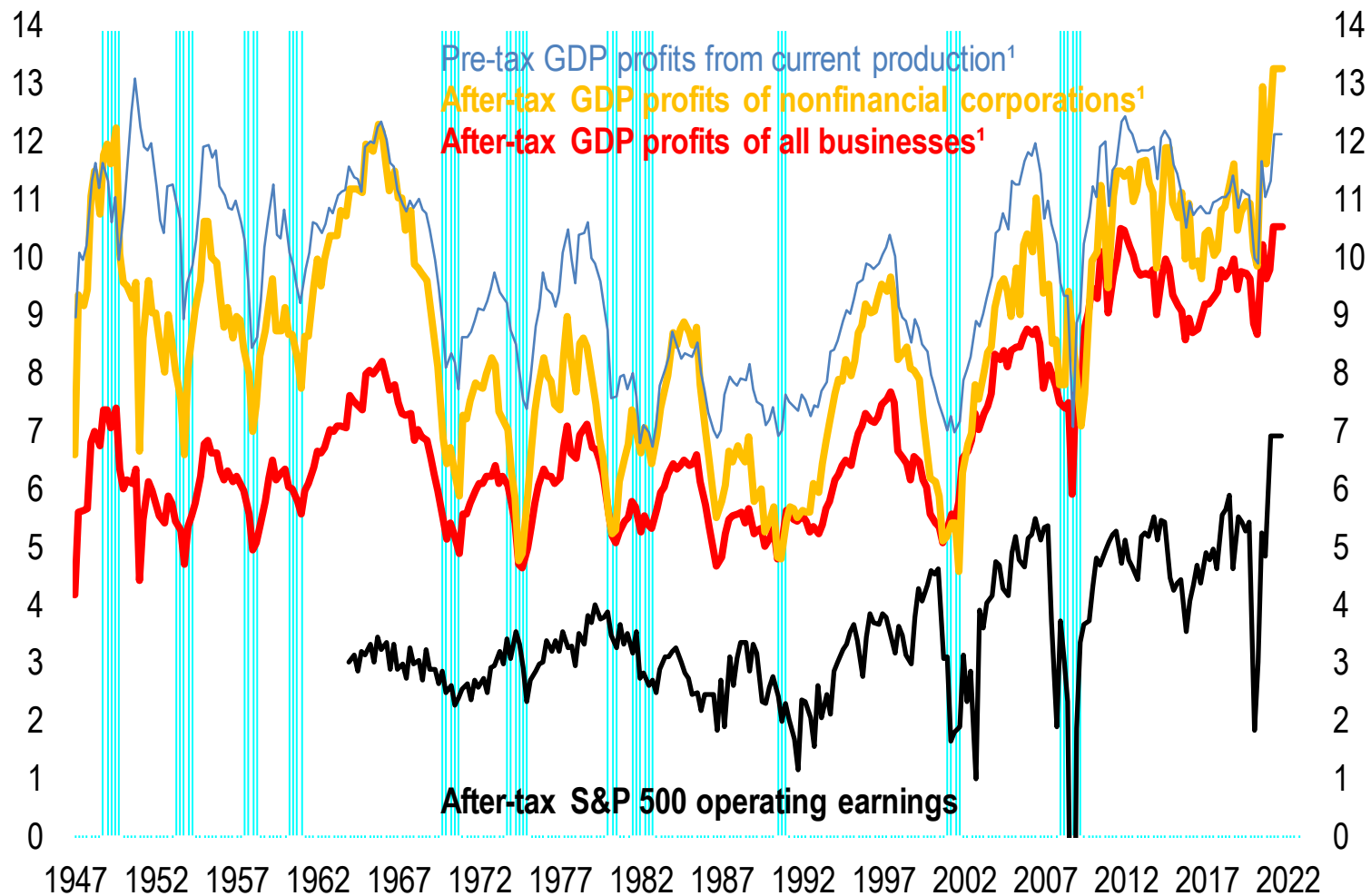
After-tax profits of nonfinancial corporations (percent of the sector's value added)



Sources: Haver Analytics; U.S. Department of Commerce. Updated through 2020 Q3.

... Defying the 'Reversion' Idea

Selected measures of business profits (percent of Gross Domestic Income)

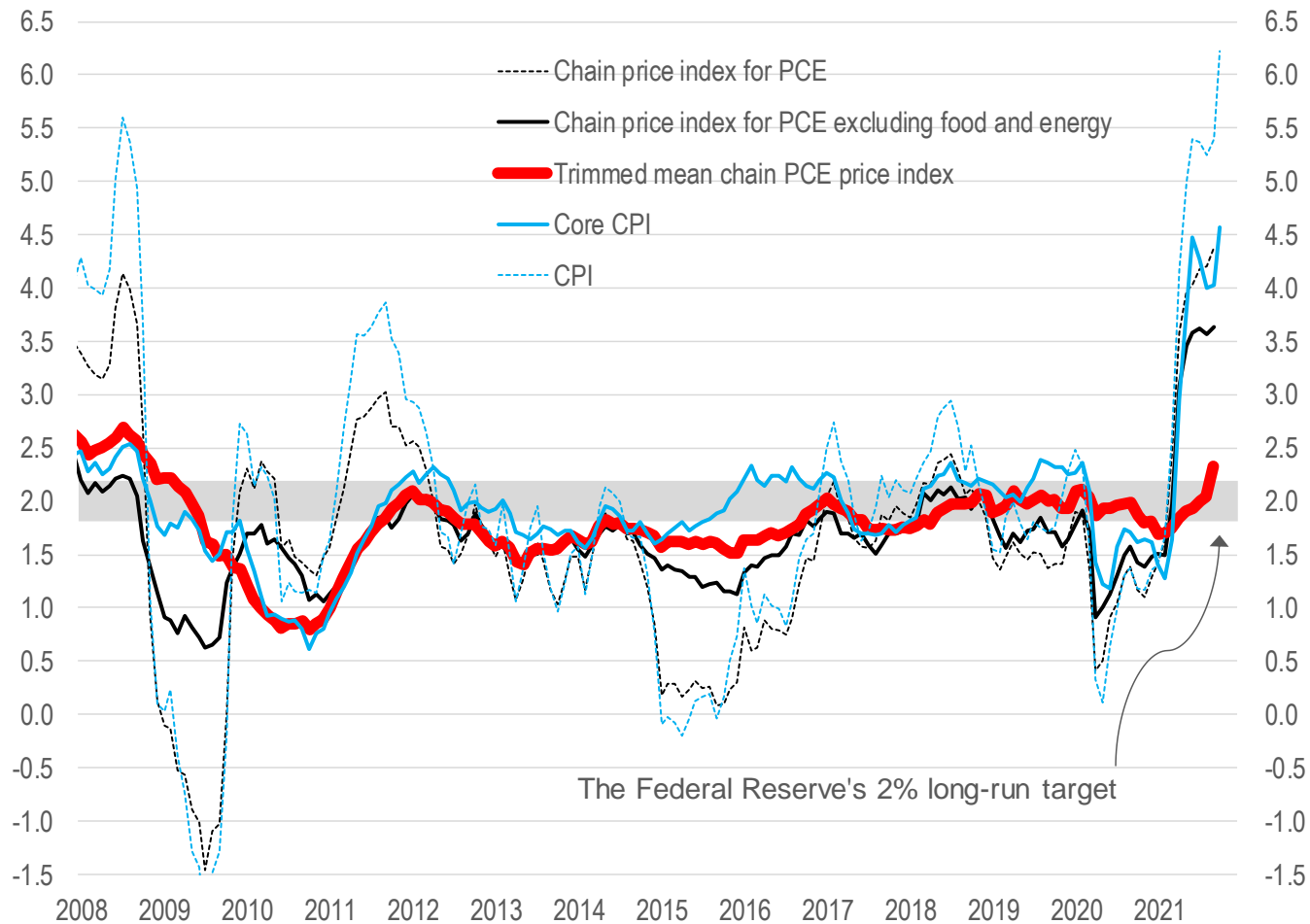


¹ GDP profits adjust for (translated to economic terms) different valuations of inventories and depreciation allowances.
Sources: Haver Analytics; U.S. Department of Commerce. Updated through 2021 Q1.

Global Bottlenecks

This Has 'Pandemic' Written All Over It

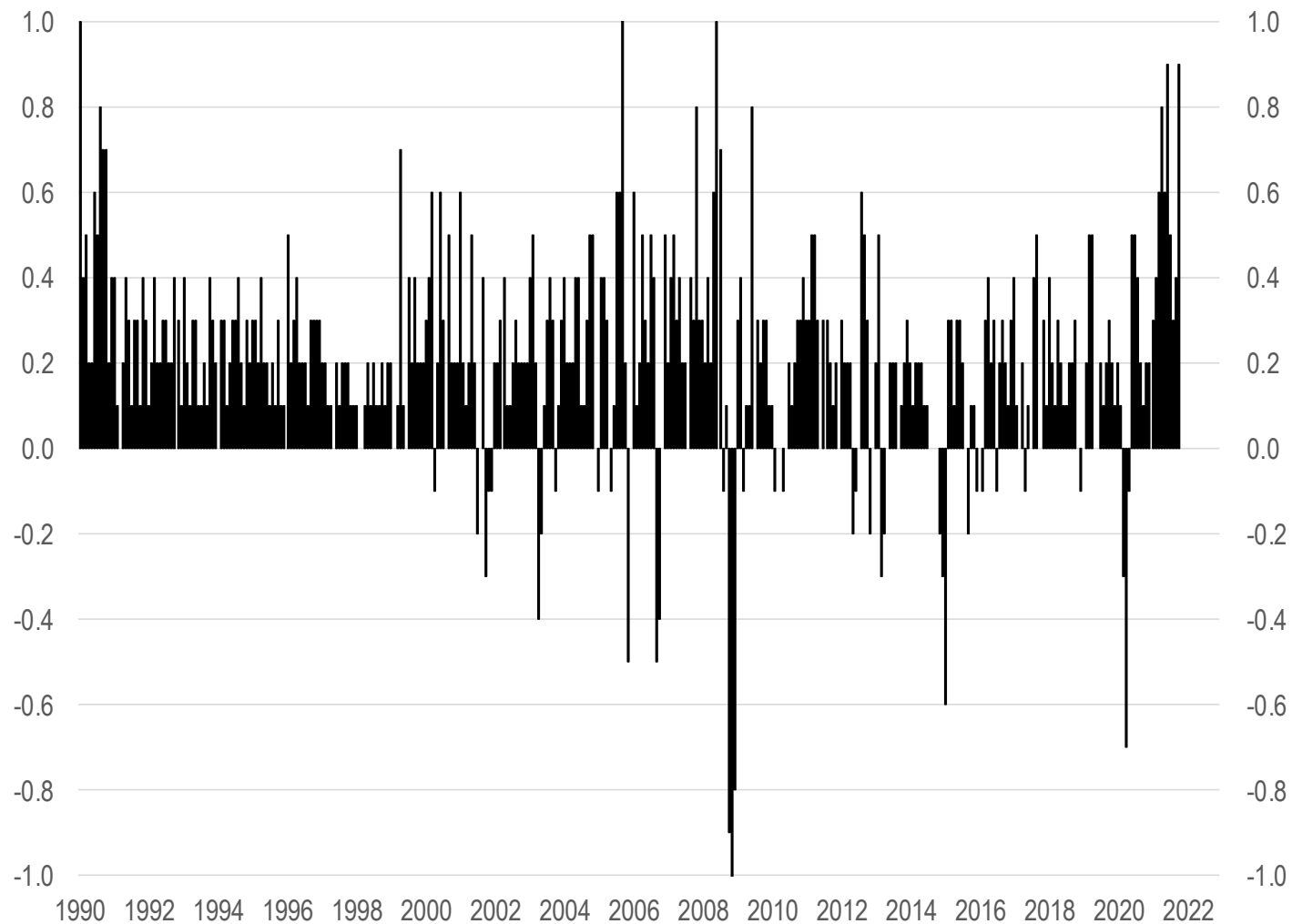
Selected inflation measures (percent change from 12 months earlier)



Sources: Haver Analytics; U.S. Department of Commerce; U.S. Department of Labor; Federal Reserve Bank of Dallas. Updated through September 2021 (PCE readings) and October 2021 (CPI)

Monthly Changes Will Be More Informative

CPI (percent change from the previous month)

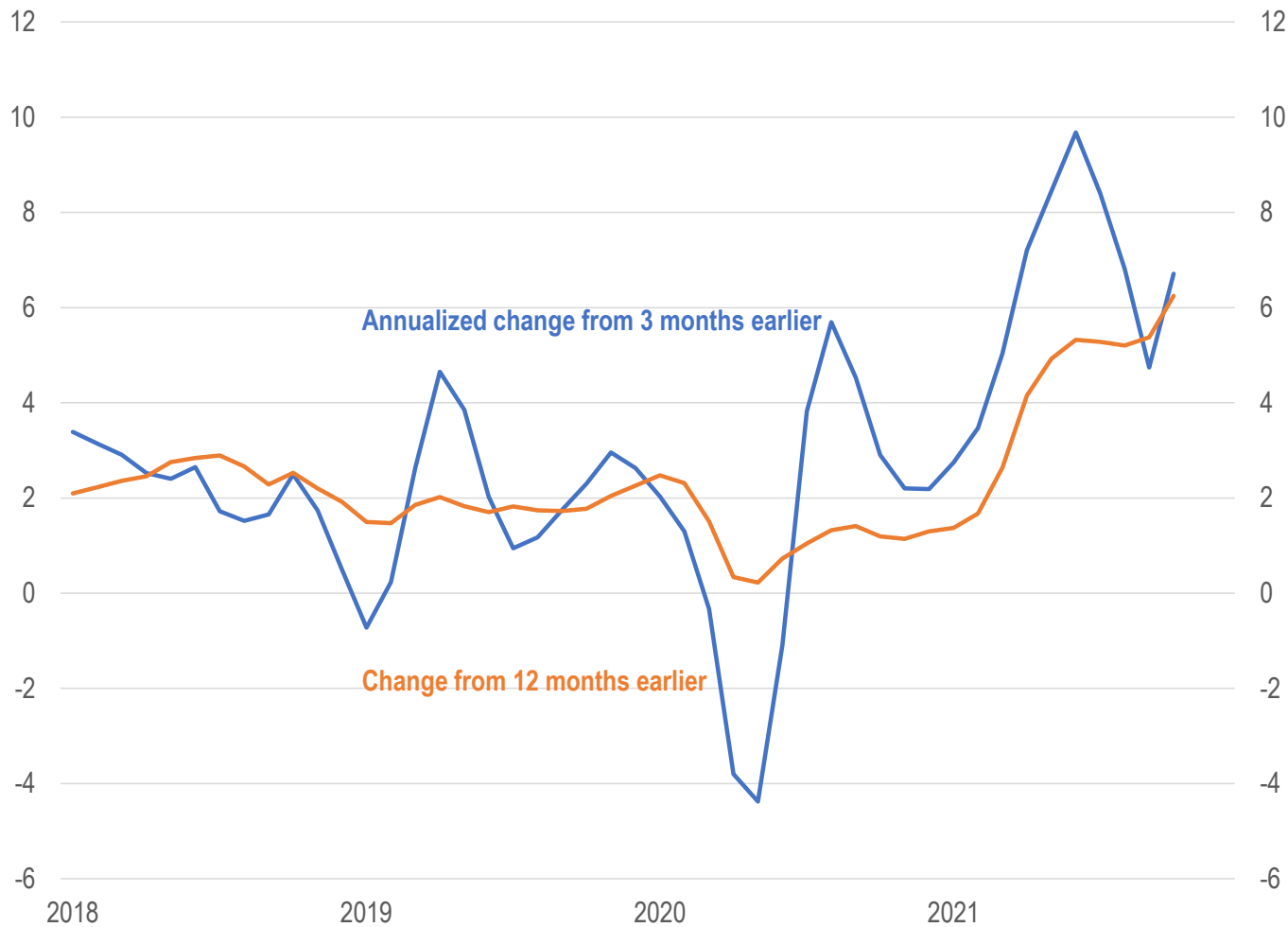


Note: Last three columns ((representing October, November, and December are the September change to make clear that September change)..

Sources: Haver Analytics; U.S. Department of Labor. Updated through October 2021.

The CPI YOY Prism Is Rear View Mirror

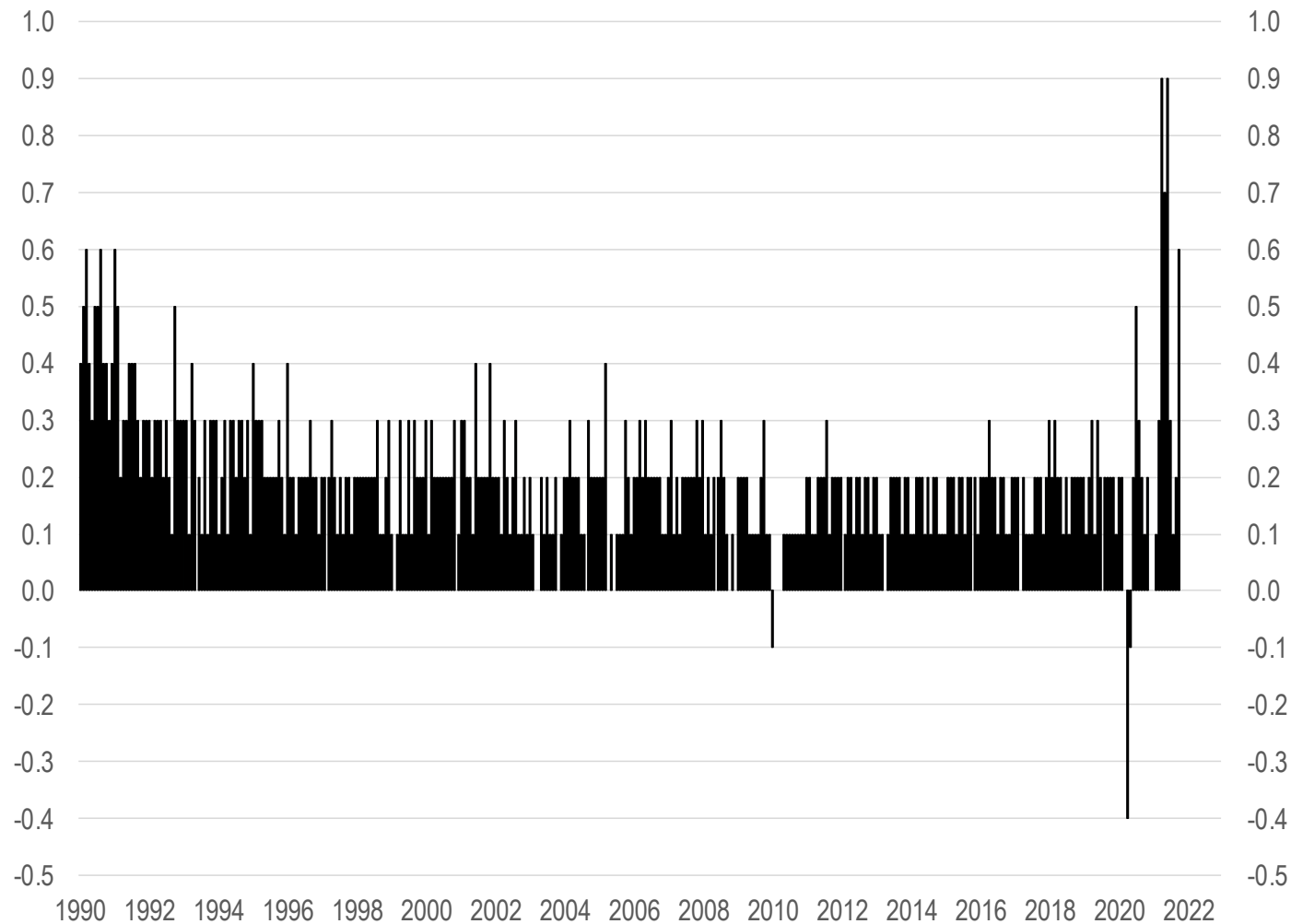
CPI (annualized percent change)



Sources: Haver Analytics; U.S. Department of Labor. Updated through September 2021.

Monthly Core Changes Are More Informative

Core CPI (percent change from the previous month)

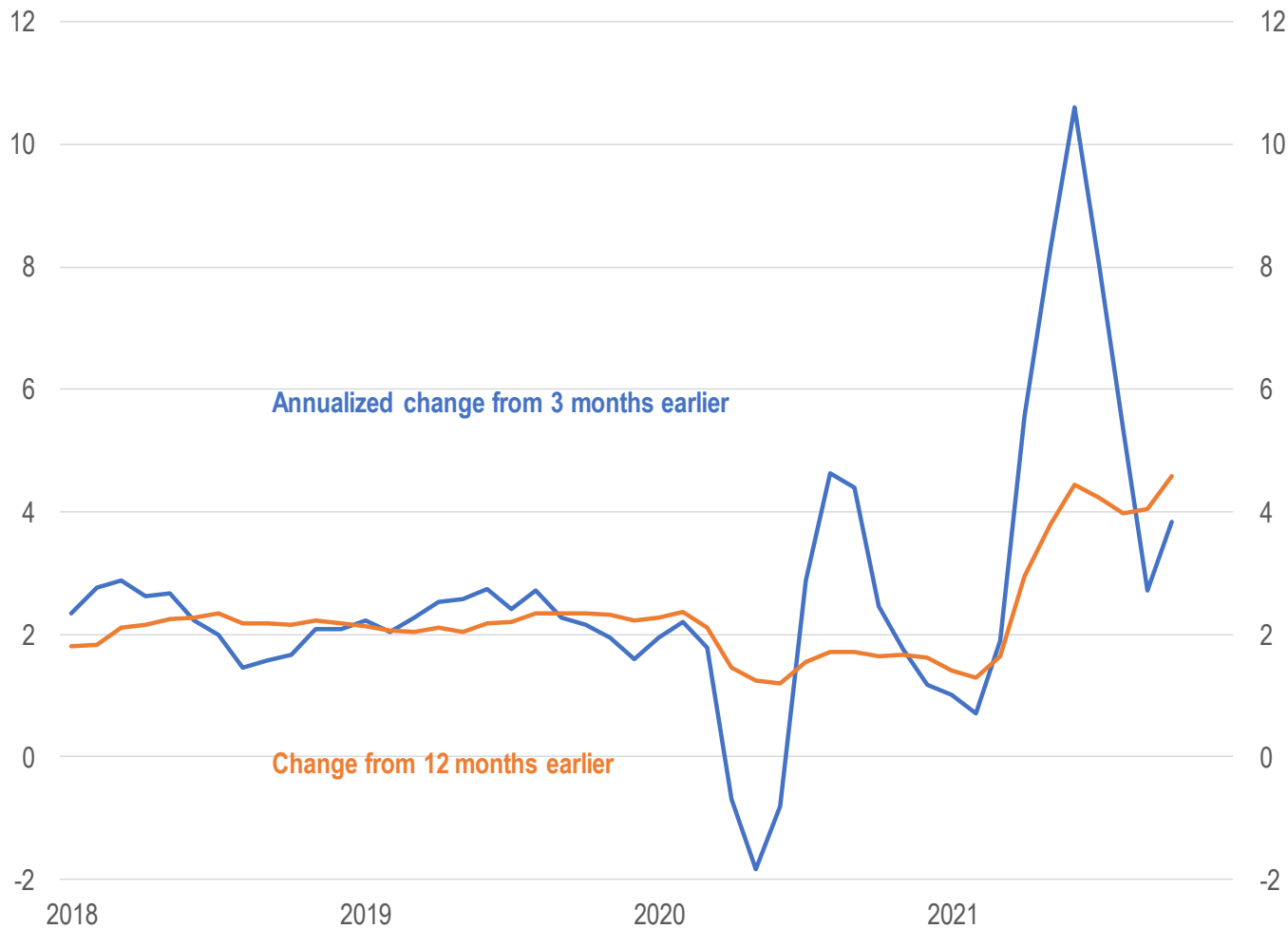


Note: Last three columns ((representing October, November, and December are the September change to make clear that September change)..

Sources: Haver Analytics; U.S. Department of Labor. Updated through October 2021.

The Core YOY Prism Is Rear View Mirror

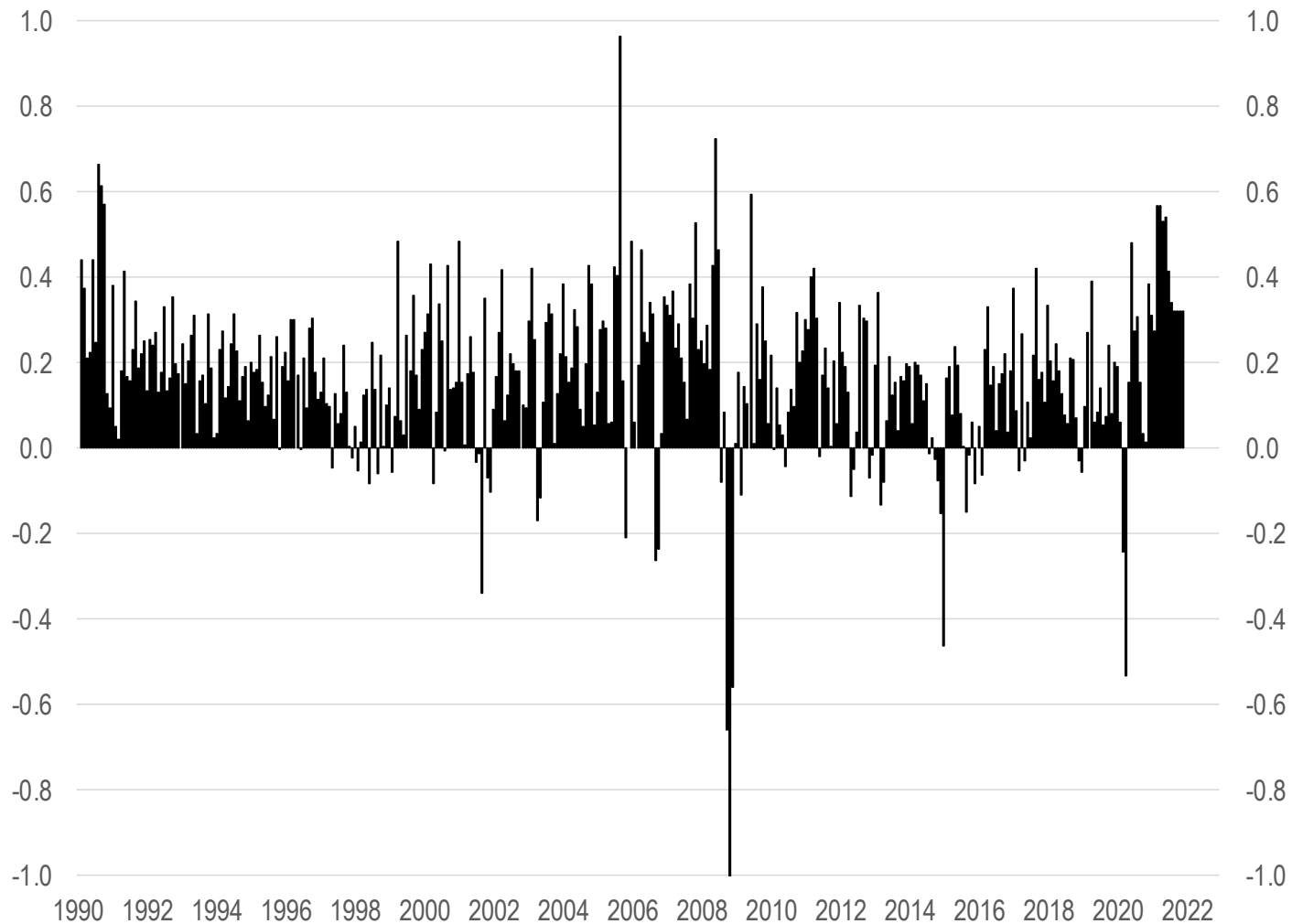
Core CPI (annualized percent change)



Sources: Haver Analytics; U.S. Department of Labor. Updated through October 2021.

Monthly Chain PCE Price Readings

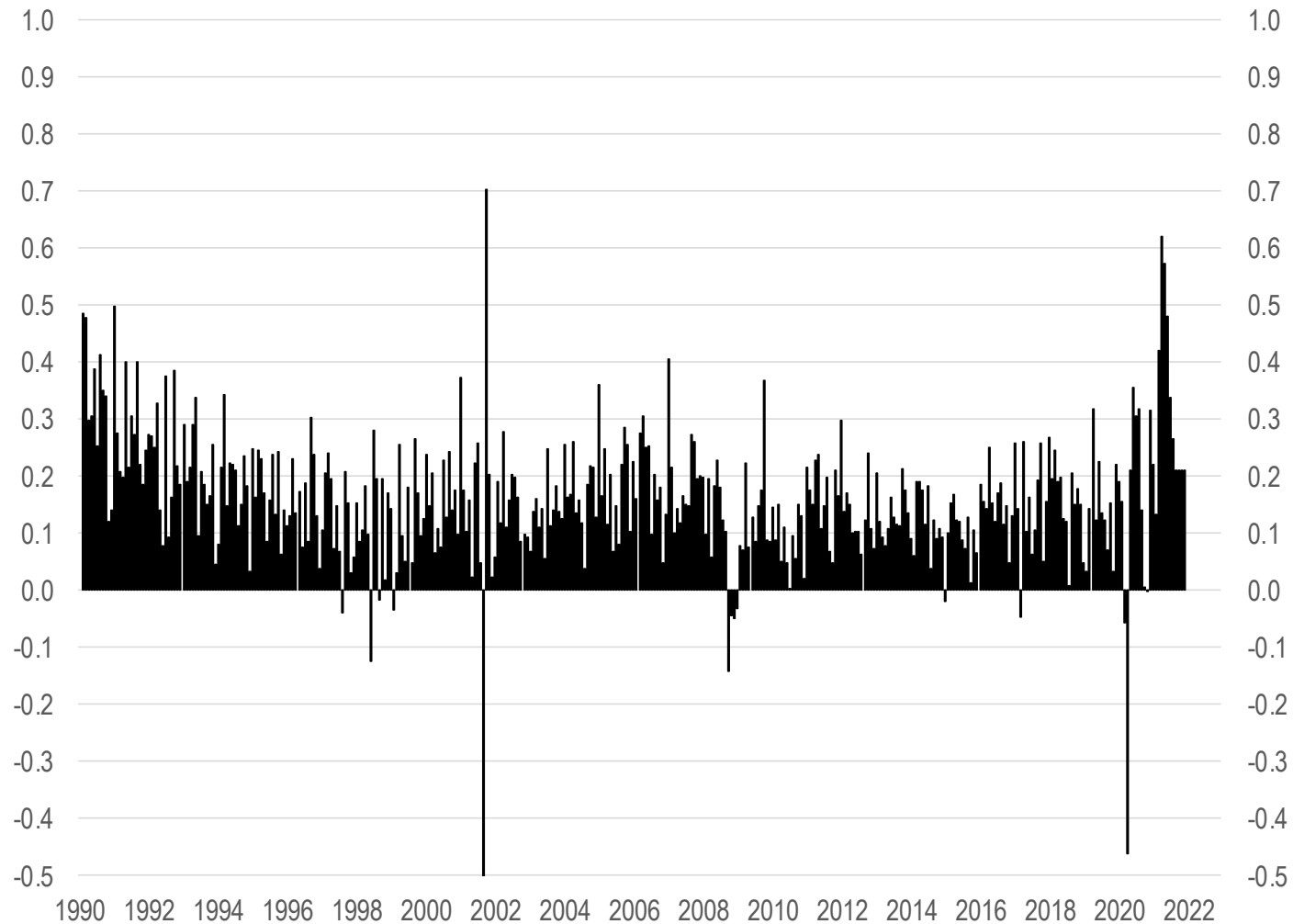
Chain PCE price index (percent change from the previous month)



Note: Last three columns ((representing October, November, and December are the September change to make clear that September change)..
Sources: Haver Analytics; U.S. Department of Commerce. Updated through September 2021.

Monthly Core Chain PCE Price Readings

Core chain PCE price index (percent change from the previous month)

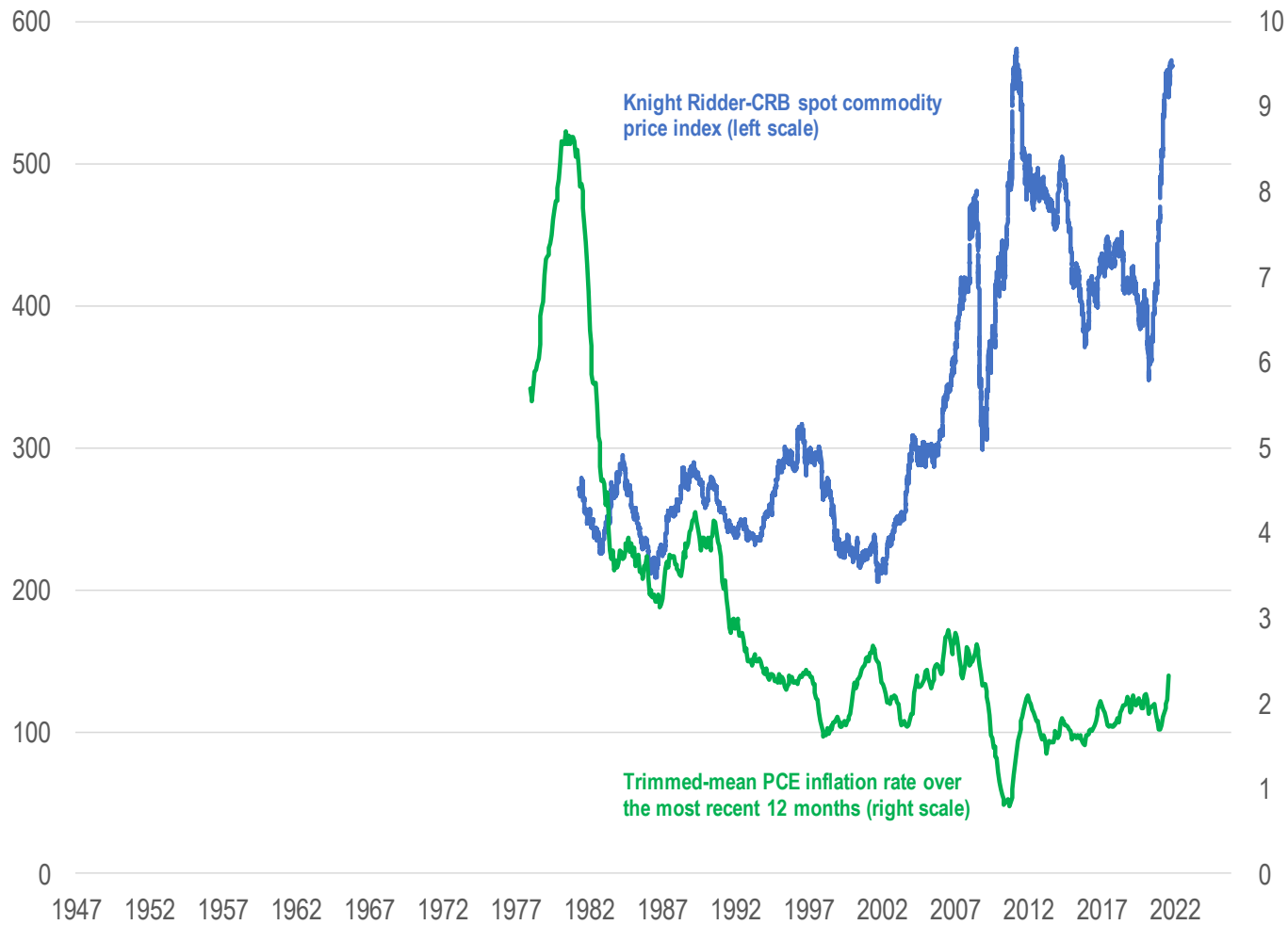


Note: Last three columns ((representing October, November, and December are the September change to make clear that September change)..
Sources: Haver Analytics; U.S. Department of Commerce. Updated through September 2021.

Why Consumers Don't See What Businesses See

CRB spot commodity price index (1967 = 100)

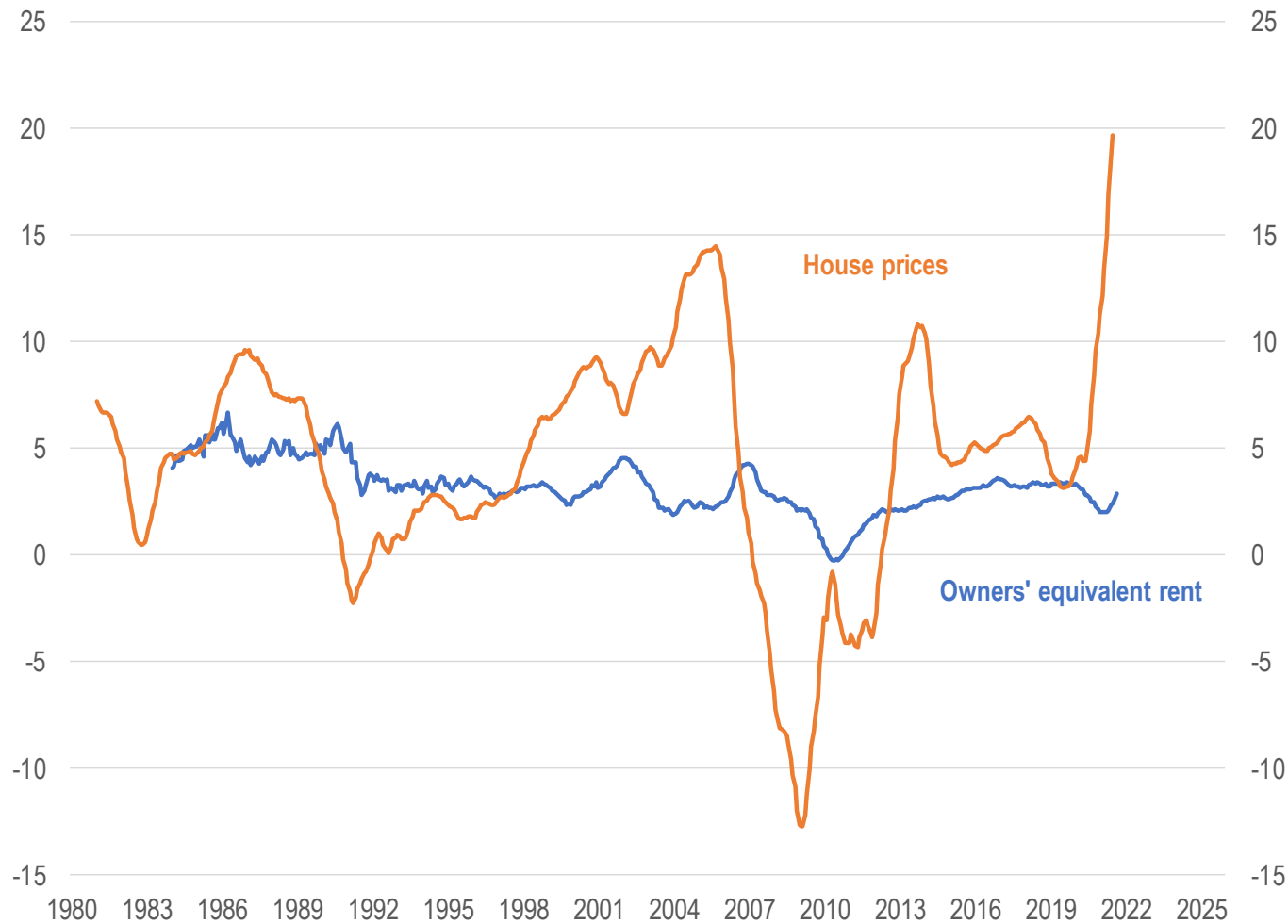
Trimmed-mean PCE inflation rate (annual percent change)



Sources: Haver Analytics; Commodity Research Bureau; Federal Reserve Bank of Dallas. Updated through September 2021 (inflation) and November 5, 2021 (CRB).

Why Price Metrics Don't Show What Home Buyers See

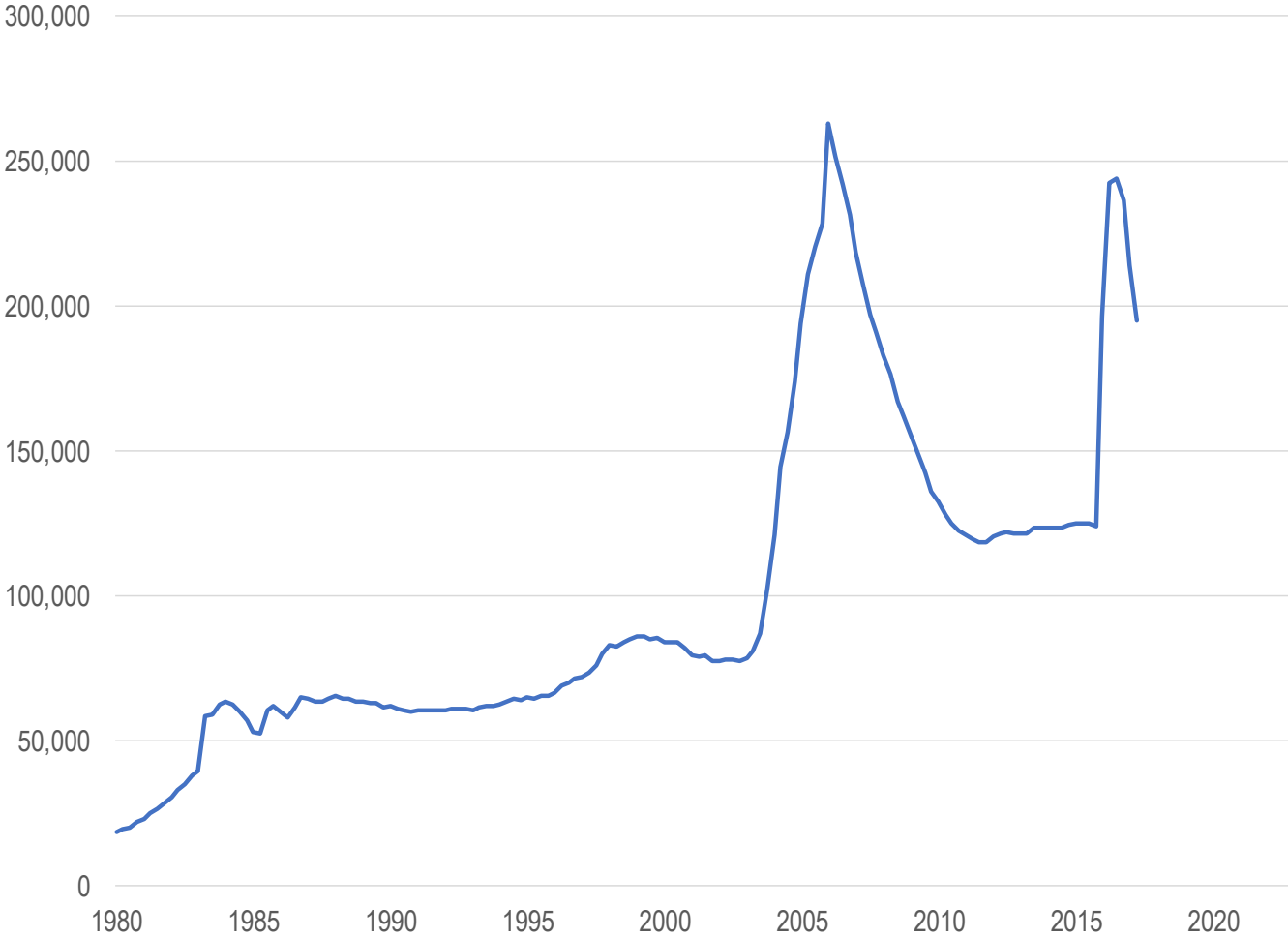
House prices and owners' equivalent rent (percent change from 12 months earlier)



Sources: Haver Analytics; Case-Shiller; U.S. Department of Labor. Updated through September 2021.

If Smart People Were Confused ...

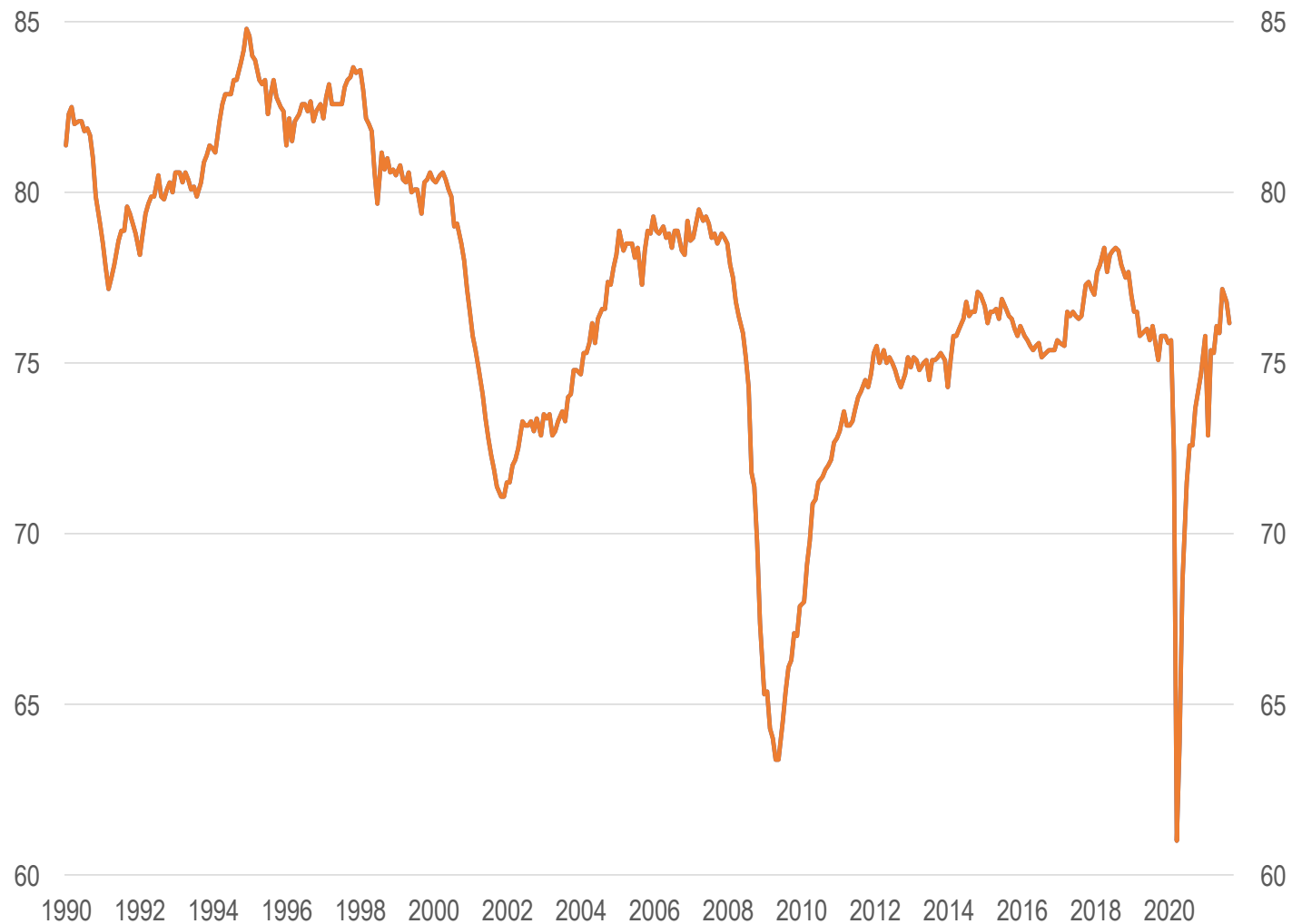
Loan loss provisions (millions of dollars)



Sources: Haver Analytics; FDIC. Updated through June 30, 2021.

Bottlenecks Are Mostly a Supply Issue

Manufacturing capacity utilization (percent of capacity in use)

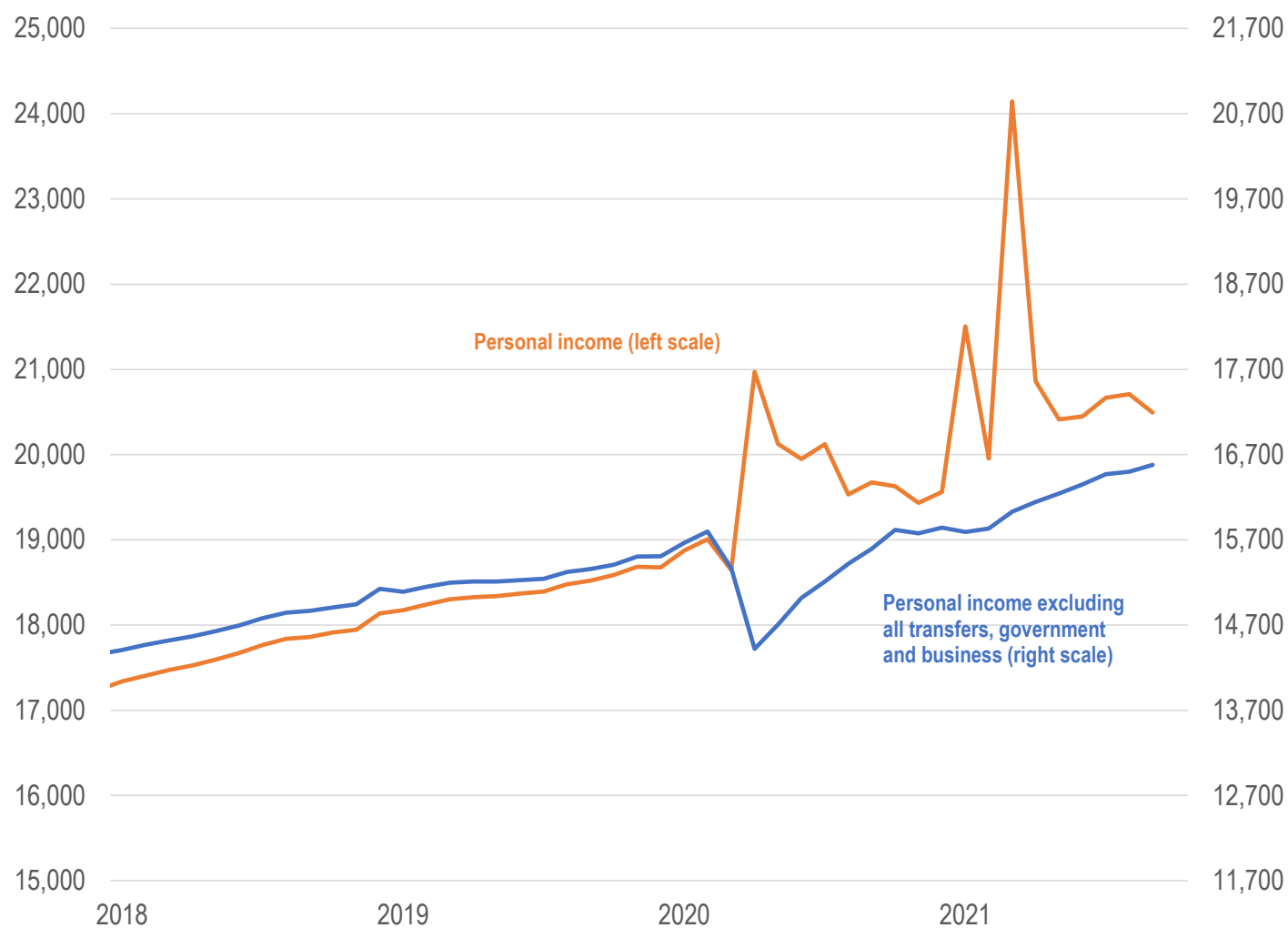


Sources: Haver Analytics; U.S. Department of Federal Reserve. Updated through September 2021.

And the Aggressive Fiscal Response Helped

Personal income (billions of dollars)

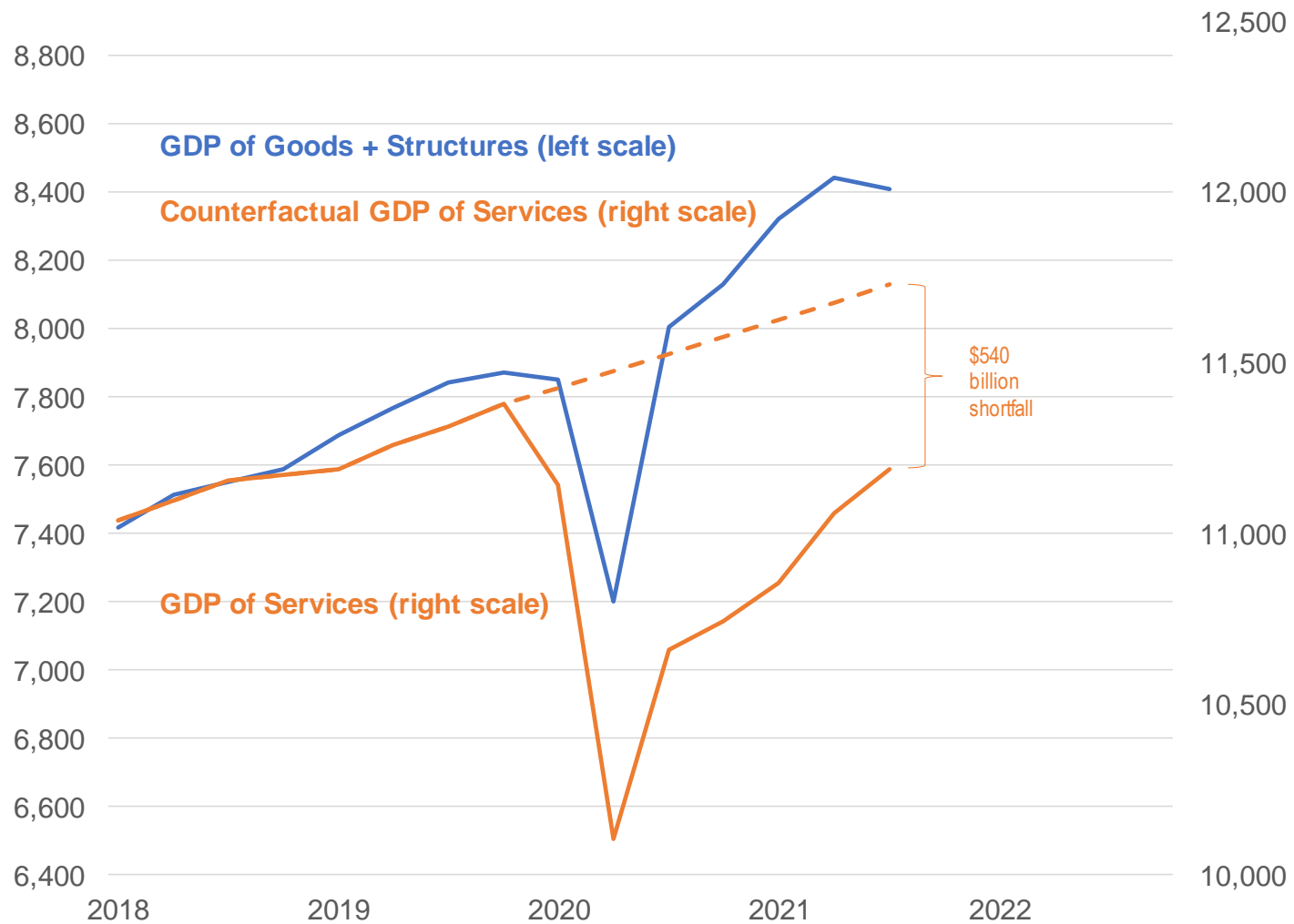
Personal income excluding all transfers (billions of dollars)



Sources: Haver Analytics; U.S. Department of Commerce. Updated through September 2021.

Online Channels Did Turbocharge Goods

Real GDP in the goods and services economy (chained 2012 dollars)

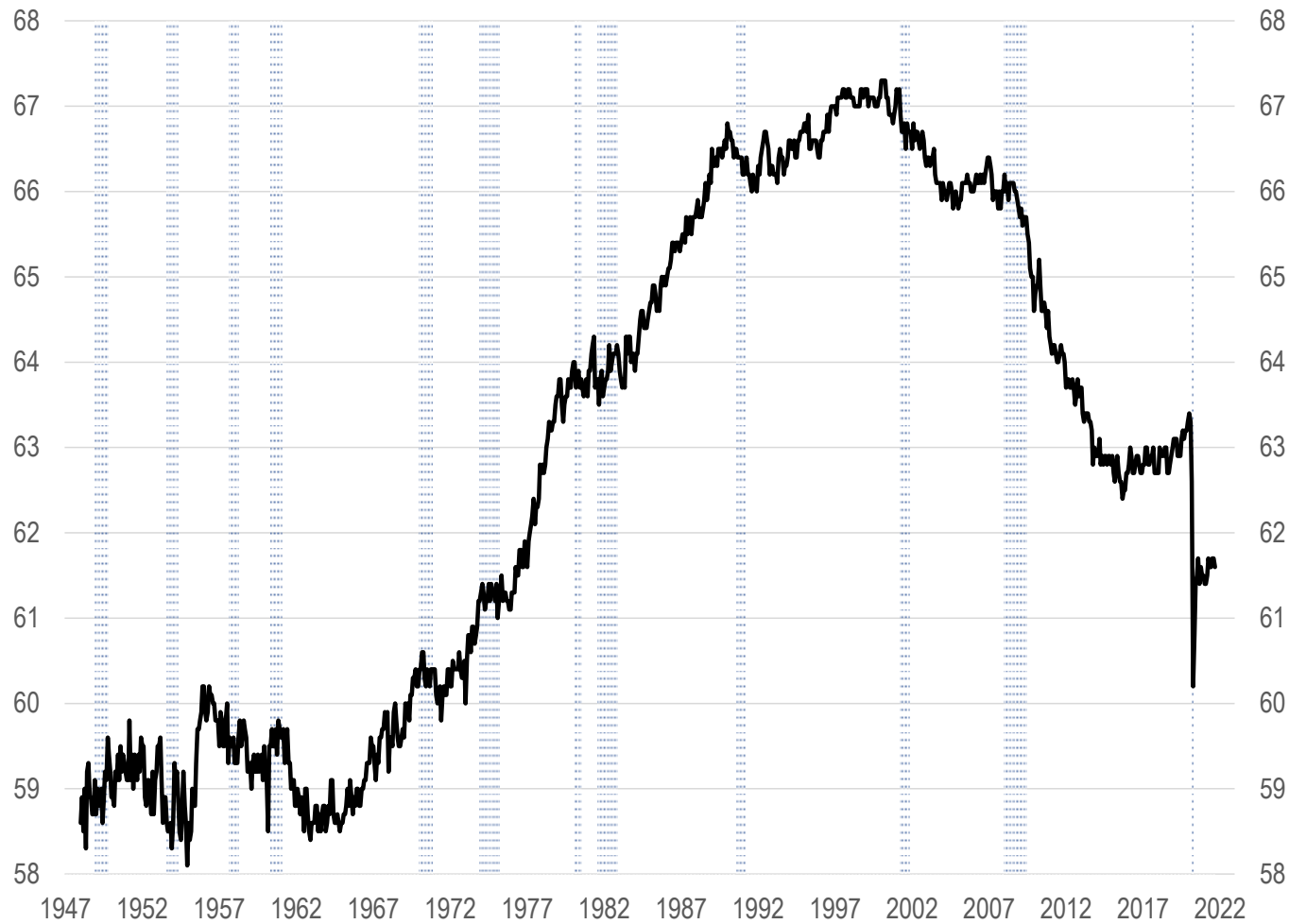


Sources: Haver Analytics, U.S. Department of Commerce. Updated through 2021 Q3.

Here's Why There Are So Many Help Wanted Signs

Job openings (number)

(percent of employment plus job openings)

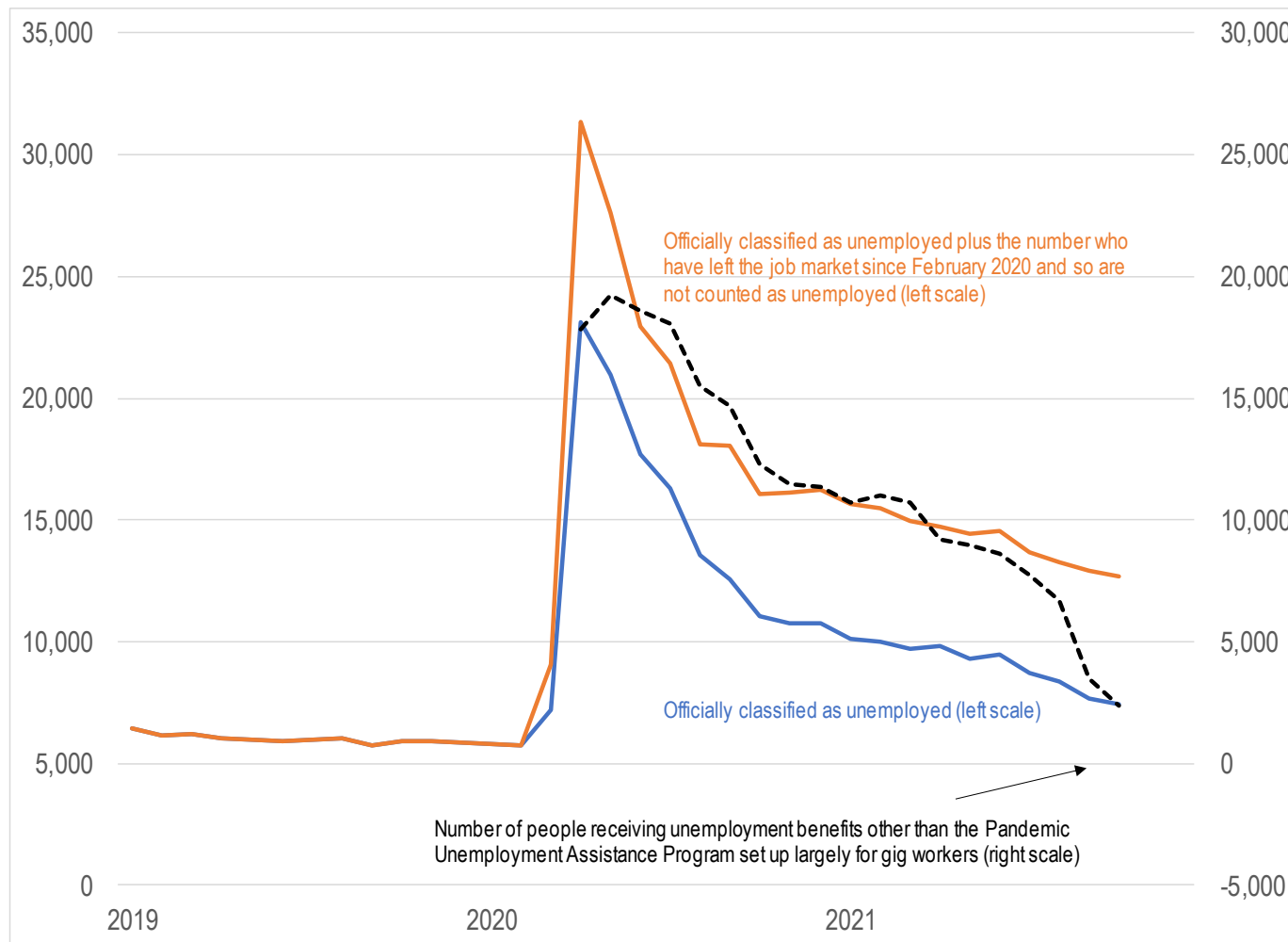


Sources: Haver Analytics; U.S. Department of Labor. Updated through October 2021.

4 Million Who Jumped Ship Because they Could

Job openings (number)

(percent of employment plus job openings)

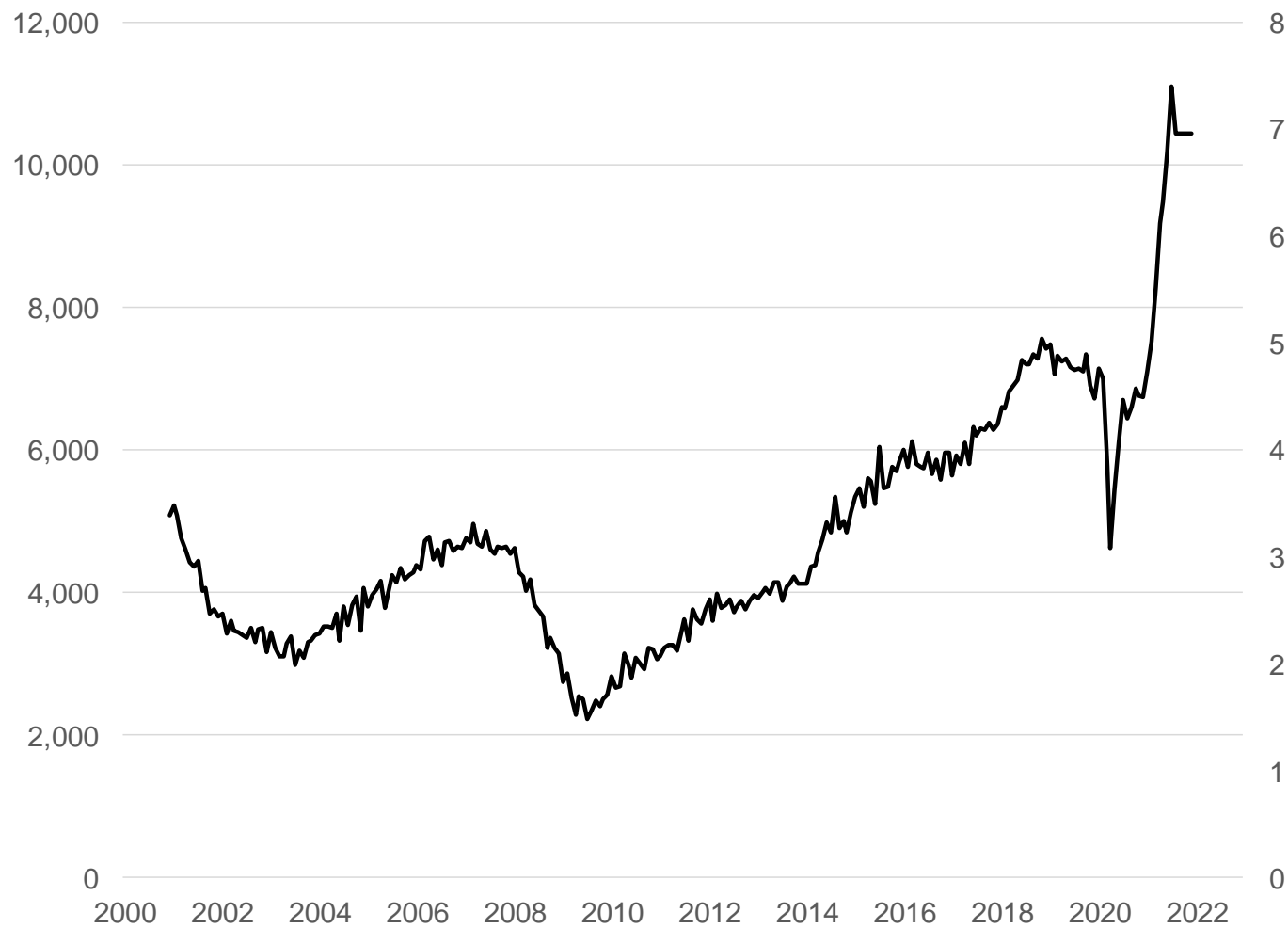


Sources: Haver Analytics; U.S. Department of Labor. Updated through October 2021.

But Labor Shortages Are Structural Too

Job openings (number)

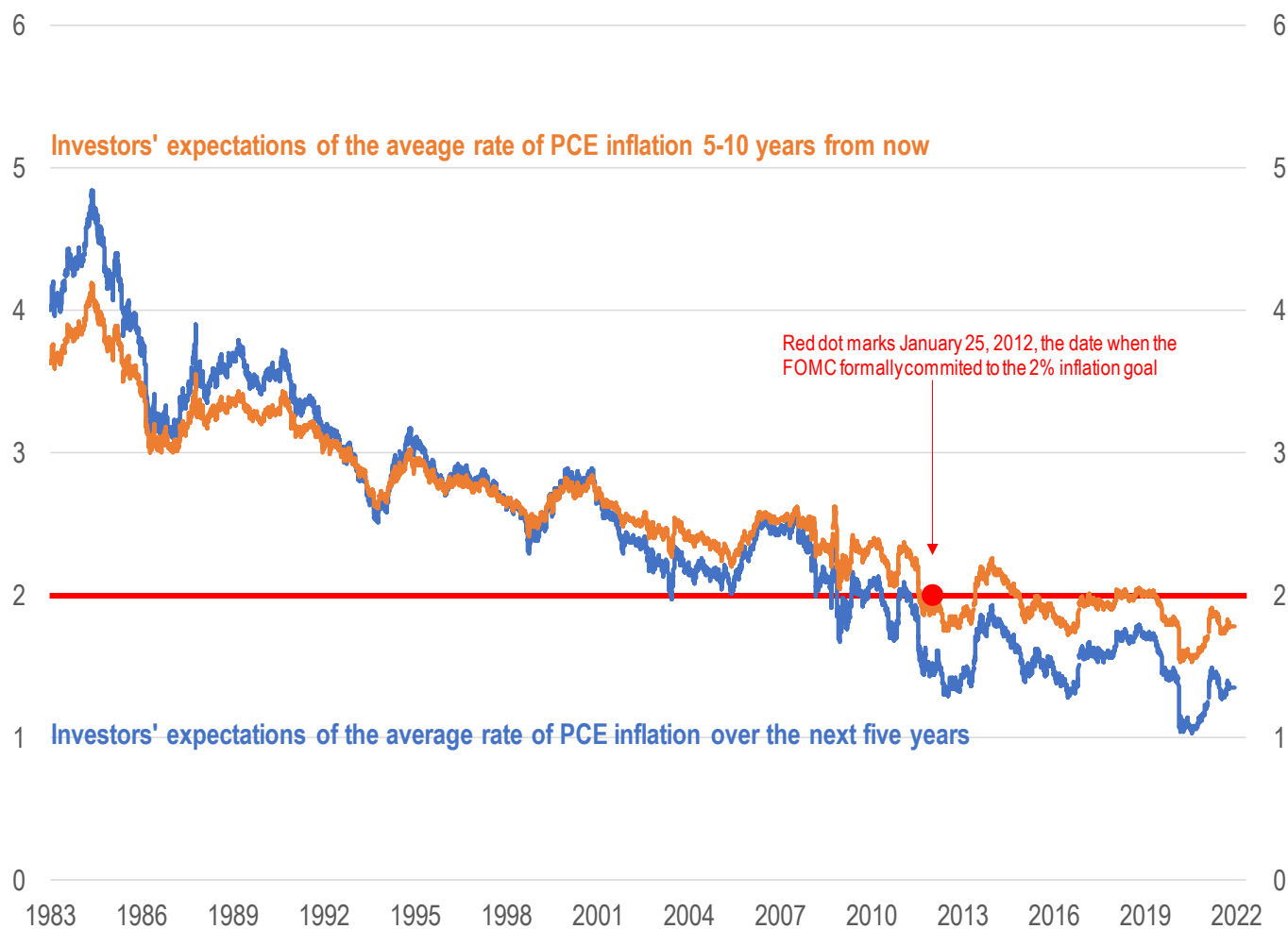
(percent of employment plus job openings)



Sources: Haver Analytics; U.S. Department of Labor. Updated through August 2021.

If This Is Lasting, Bond Investors Don't Agree

Market based inflation expectations over selected horizons (annual rate)



Note: Assumes that the PCE inflation rate will be 0.31 percentage point, the historical differential, below the CPI inflation expectations reflected in the Treasury nominal and TIPS securities yields.
Source: Haver Analytics; Federal Reserve Board. Updated through October 31, 2021.

Progress Report

No Precedent

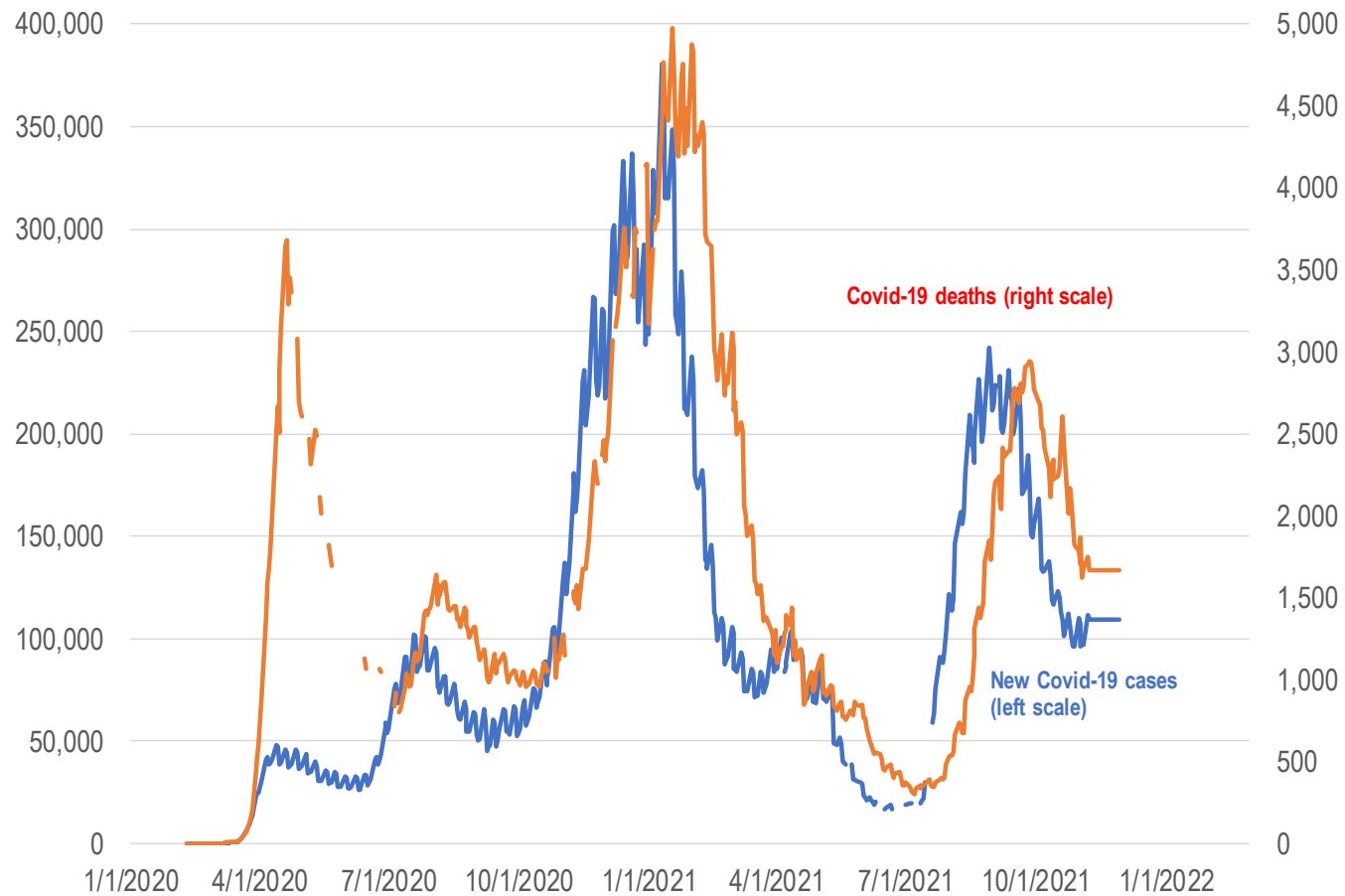
NBER-Designated Business Cycles

National Economy Bottom		National Economy Peak		Duration of Expansion	Duration of Next Downturn
(Month)	(Year)	(Month)	(Year)	(Months)	(Months)
December	1854	June	1857	30	18
December	1858	October	1860	22	8
June	1861	April	1865	46	32
December	1867	June	1869	18	18
December	1870	October	1873	34	65
March	1879	March	1882	36	38
May	1885	March	1887	22	13
April	1888	July	1890	27	10
May	1891	January	1893	20	17
June	1894	December	1895	18	6
June	1897	June	1899	24	18
December	1900	September	1902	21	23
August	1904	May	1907	33	13
June	1908	January	1910	19	24
January	1912	January	1913	12	23
December	1914	August	1918	44	7
March	1919	January	1920	10	18
July	1921	May	1923	22	14
July	1924	October	1926	27	13
November	1927	August	1929	21	43
March	1933	May	1937	50	13
June	1938	February	1945	80	8
October	1945	November	1948	37	11
October	1949	July	1953	45	10
May	1954	August	1957	39	8
April	1958	April	1960	24	10
February	1961	December	1969	106	11
November	1970	November	1973	36	16
March	1975	January	1980	58	6
July	1980	July	1981	12	16
November	1982	July	1990	92	8
March	1991	March	2001	120	8
November	2001	December	2007	73	18
June	2009	February	2020	128	2
April	2020				

Source: Haver Analytics; NBER. Updated through July 2021.

If You Know This ...

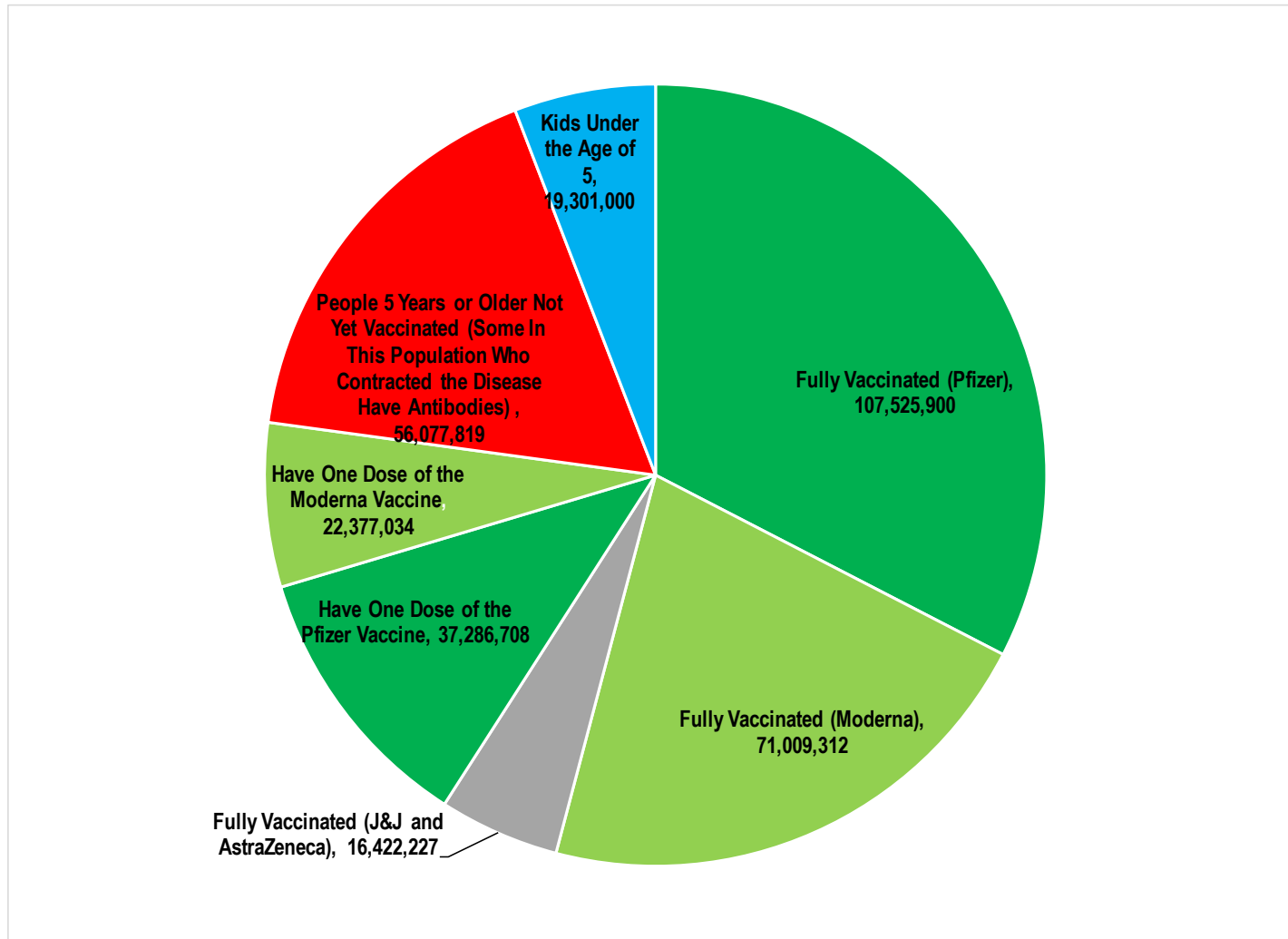
New Covid-19 cases daily, 7-day moving average



Sources: Haver Analytics; Johns Hopkins University. Updated through November 9, 2021.

This Looks Like Herd Immunity ...

Vaccination status of the U.S. population (number of people)

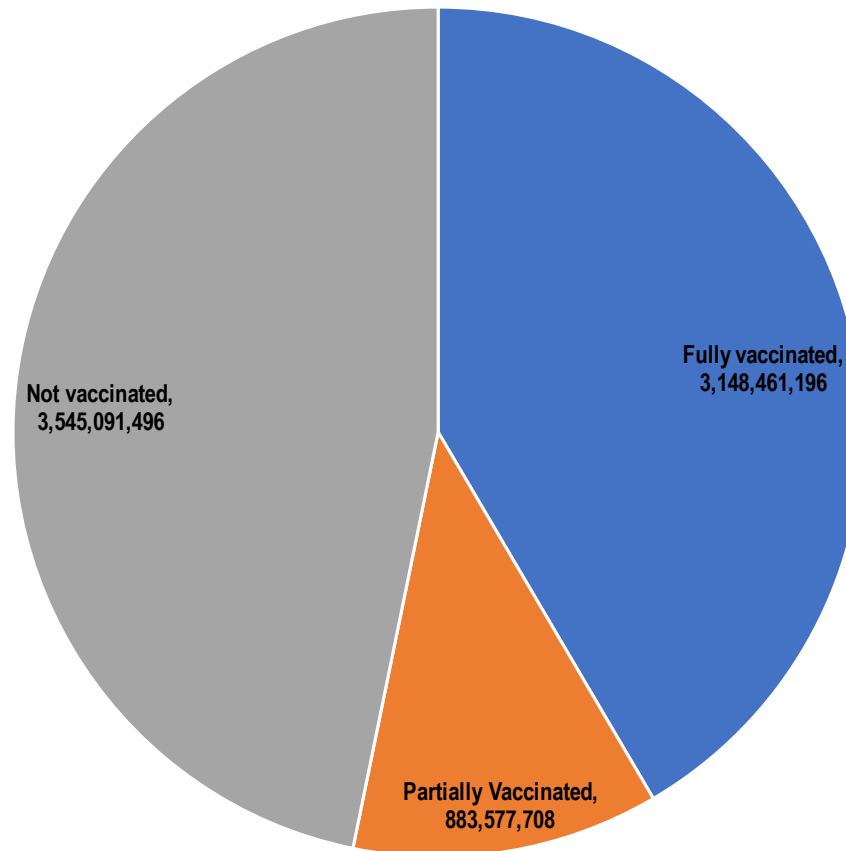


Note: some of the cases of Covid-19 may include people who have been vaccinated.

Sources: State, Territory (Guam, American Samoa, Republic of Palau, Federated States of Micronesia, Northern Mariana Islands, Marshall Islands, and Virgin Islands) and Federal Entities (Bureau of Prisons, Department of Defense, Indian Health Services, and Veterans Health). Updated through November 9, 2021.

... Here If Not There

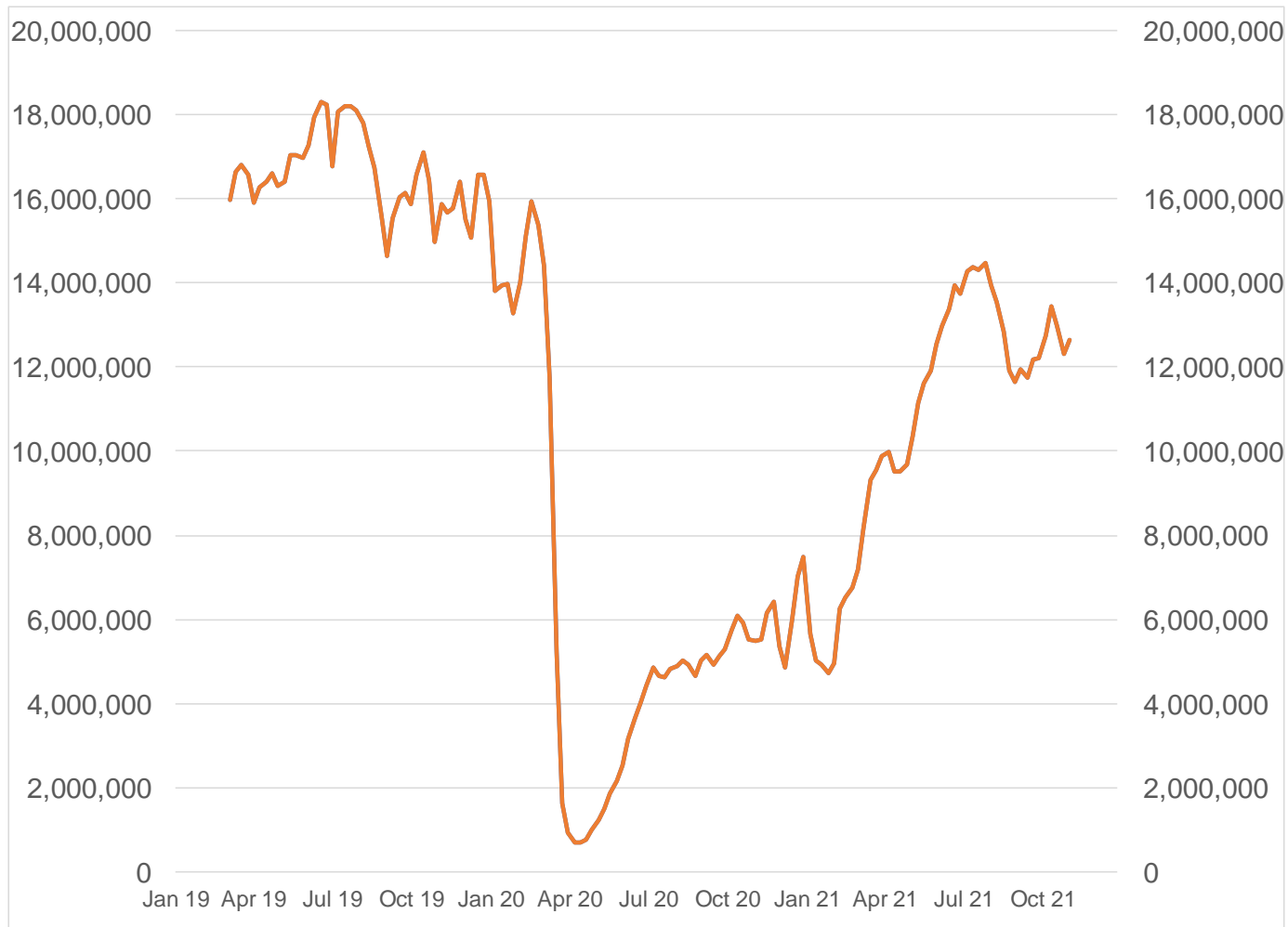
Vaccination status of the global population (number of people)



Sources: Our World in Data. Updated through November 9, 2021.

... You'll Understand This ...

Number of travelers passing through TSA security lines each week



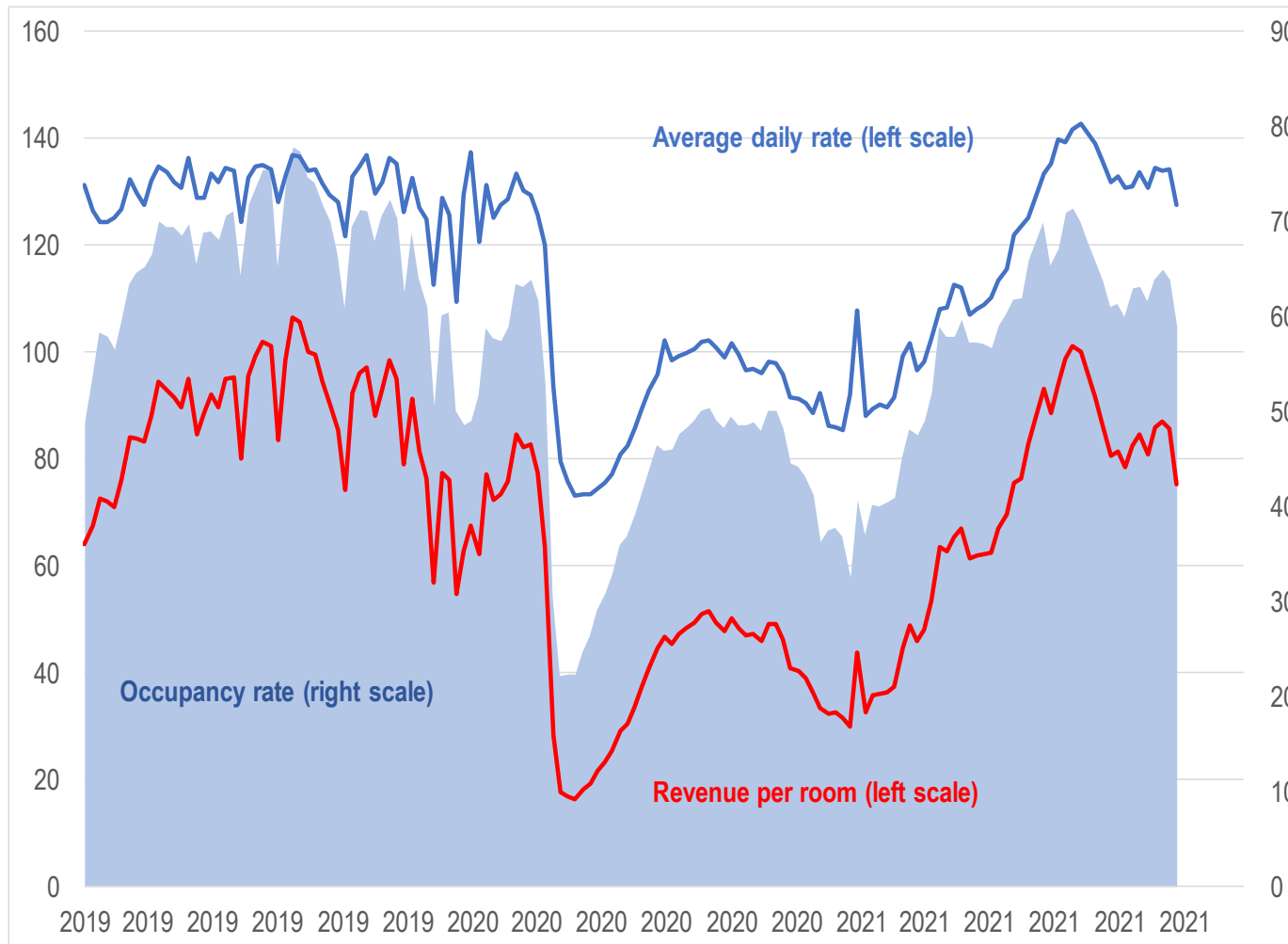
Sources: Haver Analytics; Transportation Security Administration. Updated through November 68 2021.

4

... This ...

Daily rate (dollars)

Hotel occupancy rate (percent of occupancy)



Sources: Haver Analytics; Smith Travel Research Hotel Statistics Weekly. Updated through October 30, 2021.

... and This. That's 99% of the Story.

Employment (number)

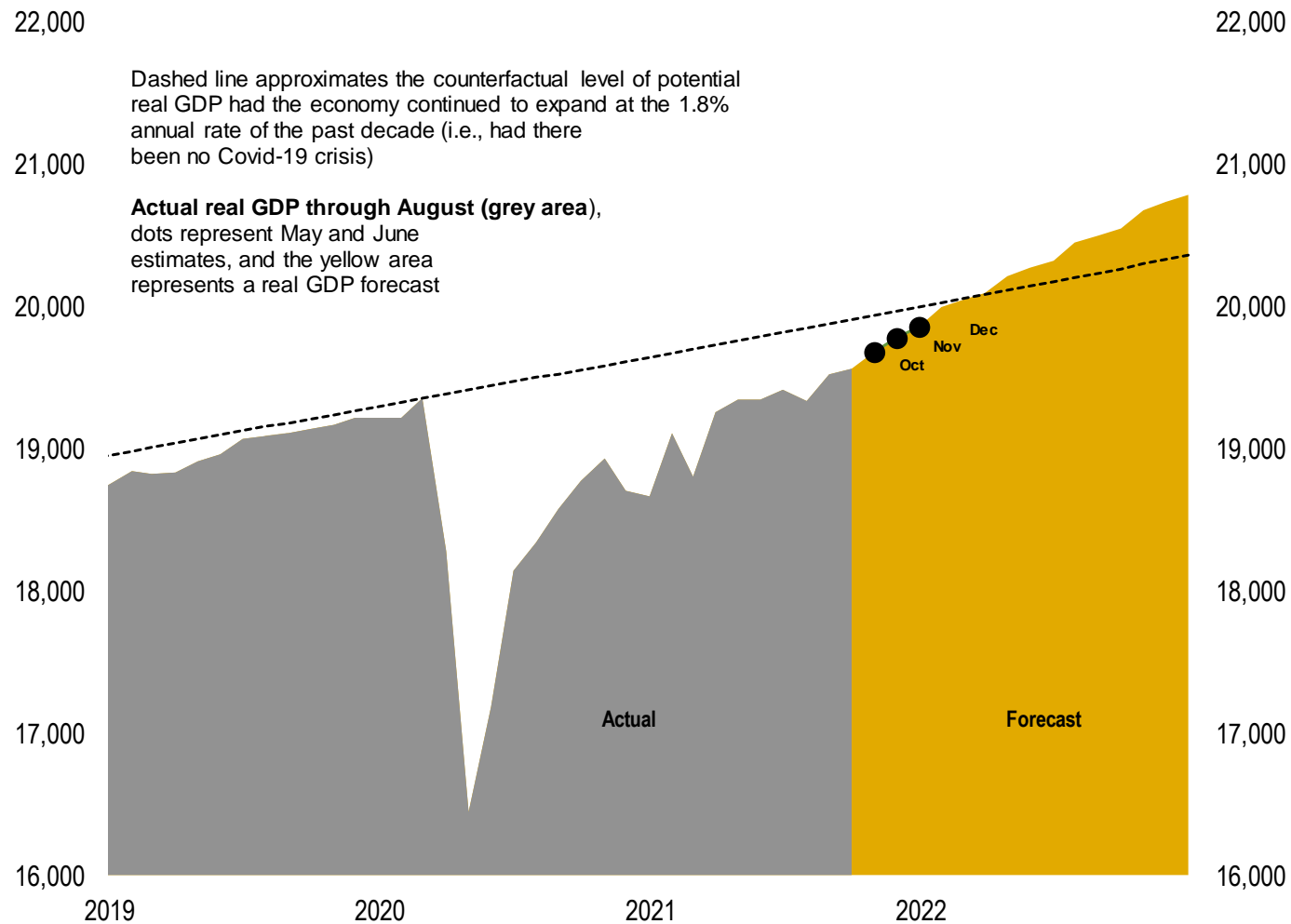
Employment at small business establishments (number)



Sources: Haver Analytics; U.S. Department of Labor; Homebase. Updated through October 5, 2021 (Homebase) and October 2021 (BLS employment).

GDP Is Back

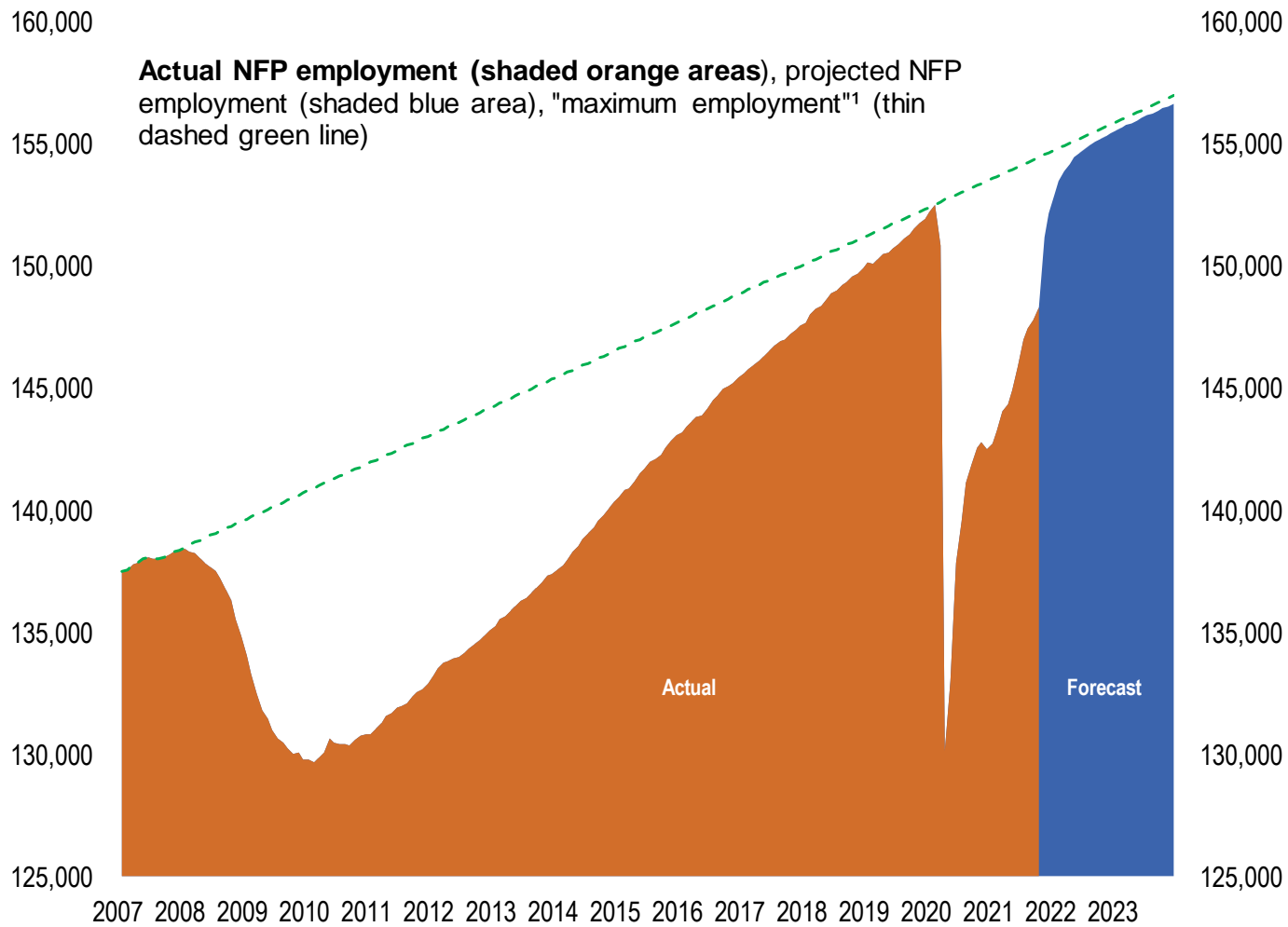
Real GDP (billions of chained 2012 dollars)



Sources: Haver Analytics; IHS Market. Updated through September 2021.

Jobs Aren't

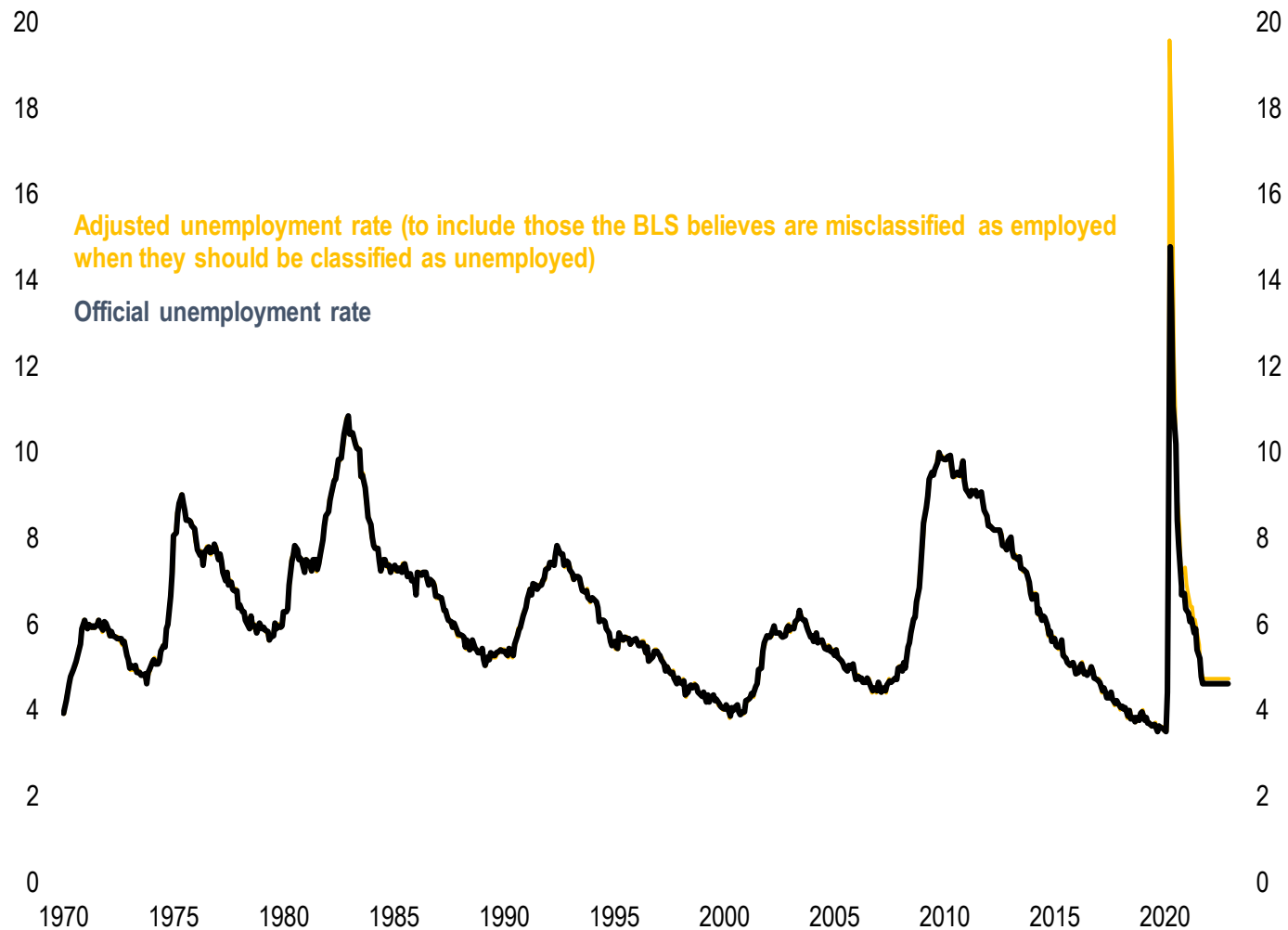
Nonfarm payrolls (thousands)



Sources: Haver Analytics; IHS Market. Updated through October 2021.

“Unemployment” Is Almost Back

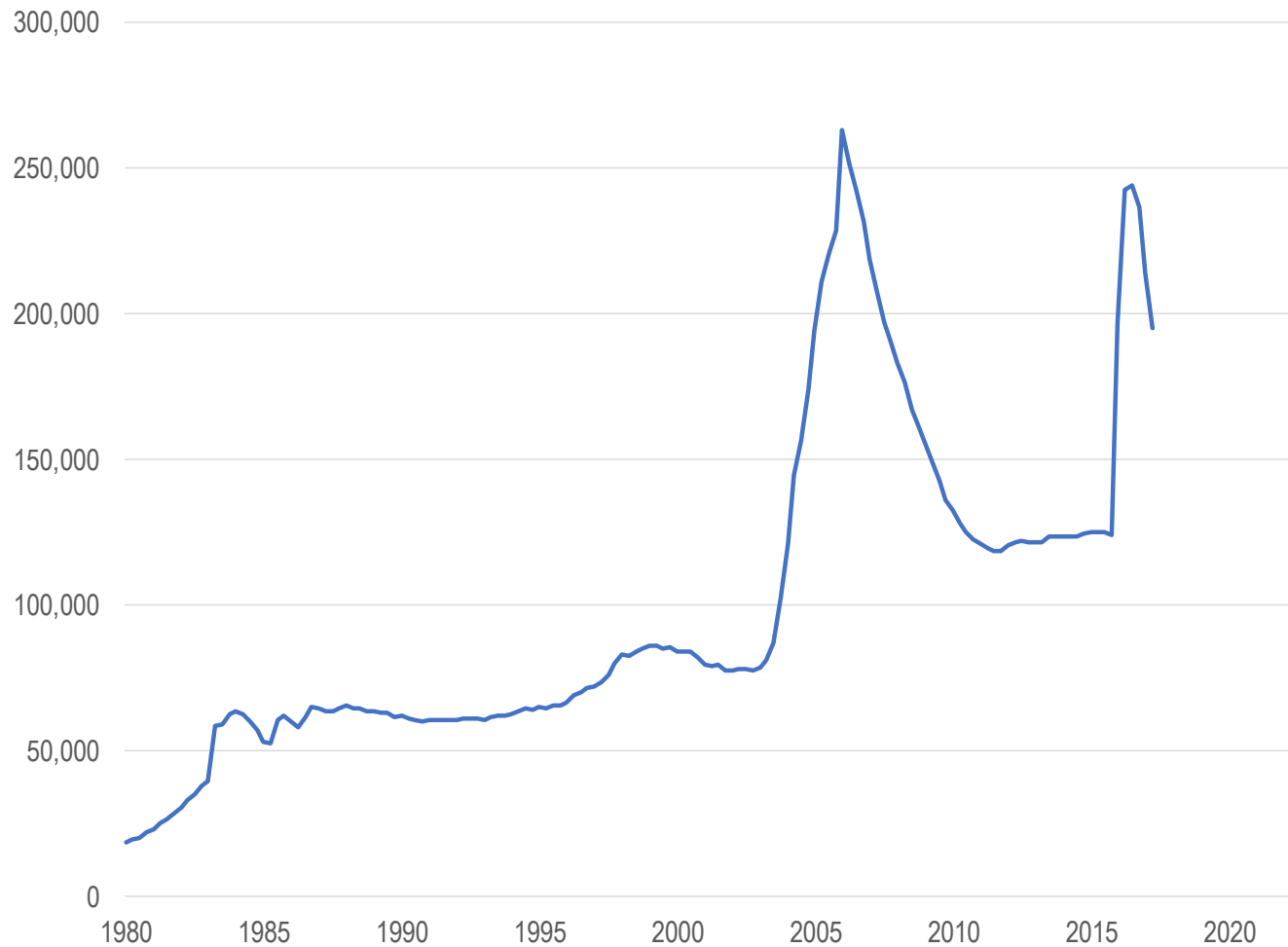
Unemployment (percent of the labor force)



Sources: Haver Analytics; U.S. Department of Labor. Updated through October 2021.

Financial Distress ...

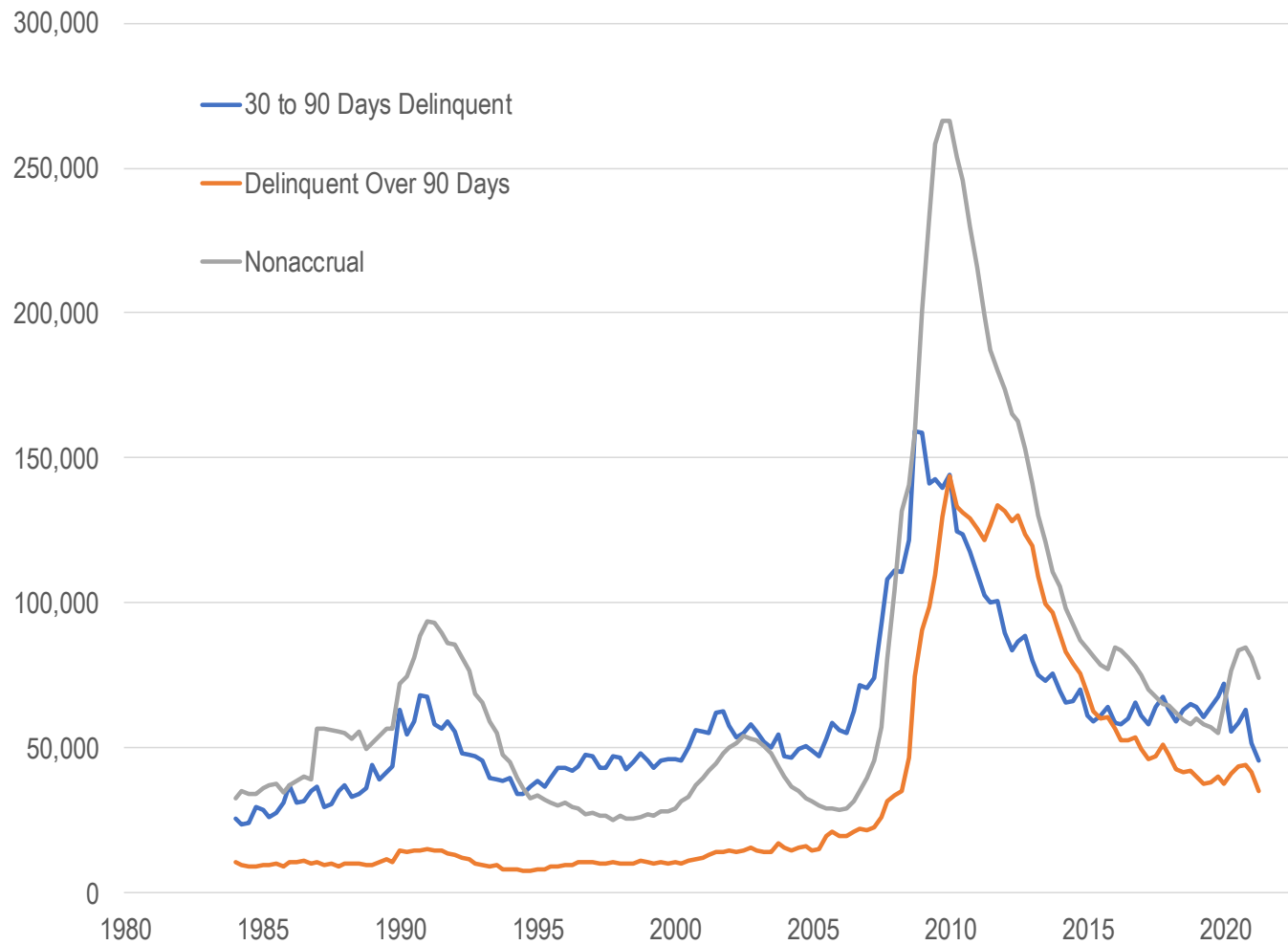
Loan loss provisions (millions of dollars)



Sources: Haver Analytics; FDIC. Updated through June 30., 2021.

... Is Limited

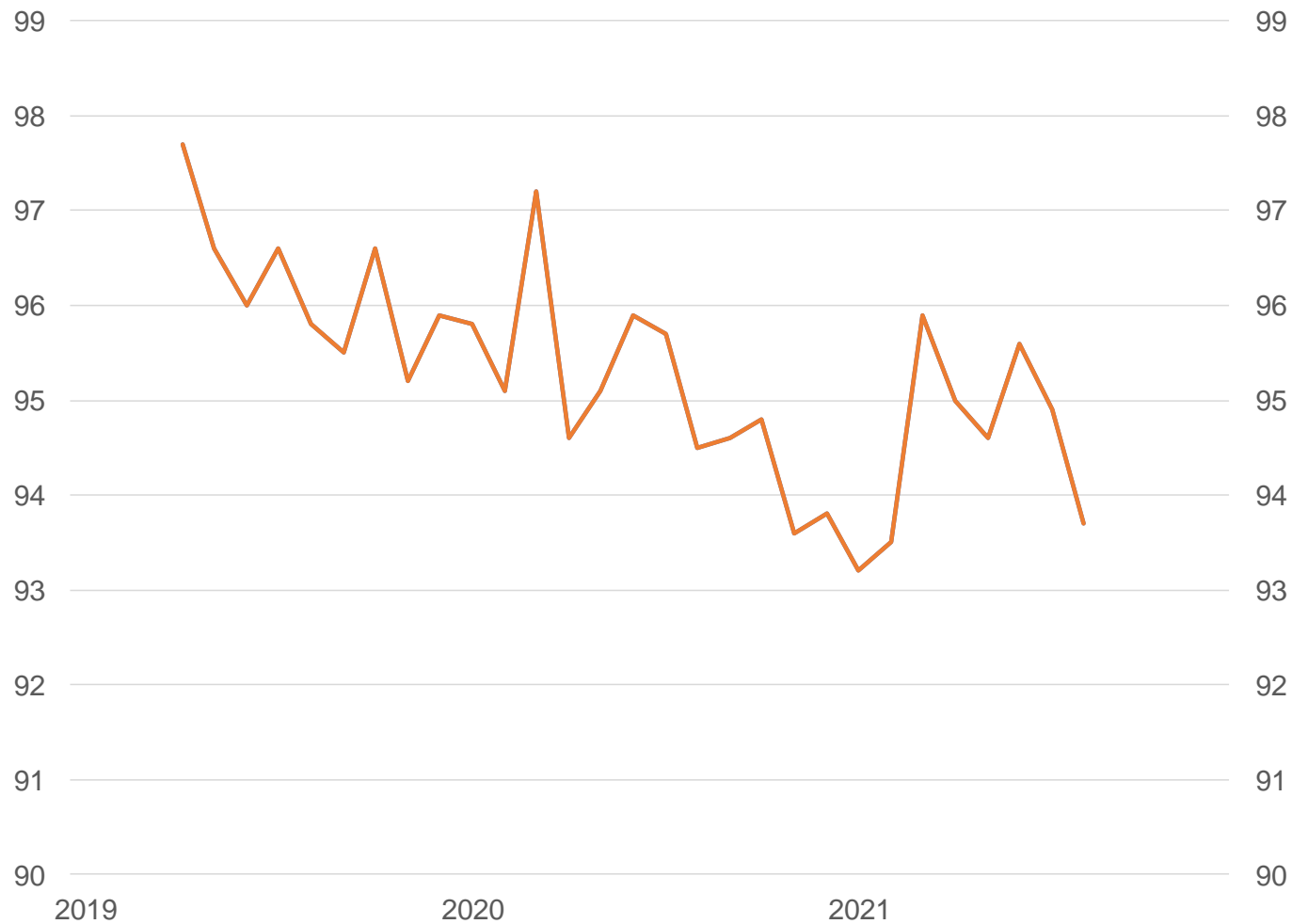
Status of bank loans (number of people)



Sources: Haver Analytics; FDIC. Updated through June 30, 2021.

Consumers Honor Financial Obligations

Percent of rents received by the end of the month for multifamily units

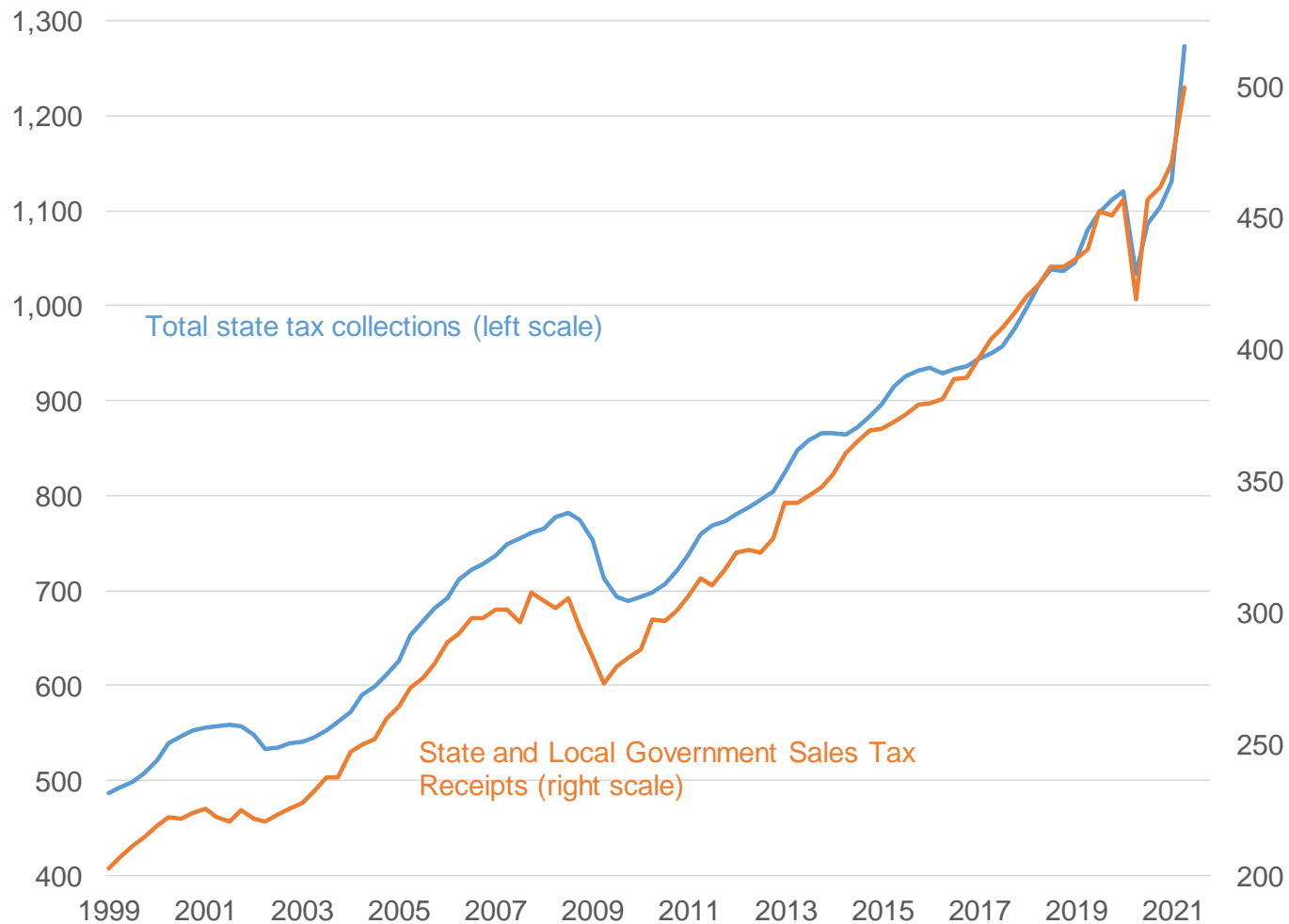


Source: National Multifamily Housing Council. Updated through August 2021.

State & Local Government Finances Thrive

State tax collections (\$ billions, 4-qtr sum)

State & local government sales tax collections (\$ billions, saar)



Sources: Haver Analytics; Census; Bureau of Economic Analysis. Updated through June 2021.

We're Not that Different, All In

State tax revenues (percent of state GDP)

Vermont	16.6	Dist of Col	7.2
Connecticut	12.4	Wyoming	7.2
Hawaii	11.6	Iowa	7.1
Arkansas	10.4	Pennsylvania	7.1
Minnesota	10.2	Oklahoma	6.9
Mississippi	10.0	Oregon	6.9
Maine	9.7	North Carolina	6.9
West Virginia	9.5	Massachusetts	6.9
New Mexico	9.5	Illinois	6.9
Idaho	9.5	New York	6.9
California	9.4	Louisiana	6.9
Delaware	9.2	South Carolina	6.5
New Jersey	9.1	Arizona	6.4
Montana	8.9	Tennessee	6.4
Wisconsin	8.7	Ohio	6.1
North Dakota	8.3	Washington	6.1
Maryland	8.2	Nebraska	6.1
Nevada	8.1	Colorado	5.4
Rhode Island	8.1	Missouri	5.3
Kentucky	8.1	Florida	5.3
Indiana	7.9	Georgia	5.3
Kansas	7.8	South Dakota	4.7
Michigan	7.6	Texas	4.3
Alabama	7.4	New Hampshire	4.2
Utah	7.3	Alaska	2.6
Virginia	7.3		

Sources: Haver Analytics; Bureau of the Census. Updated through June 30, 2021

Mission Incomplete

Consumers Have the Will and the Way ...

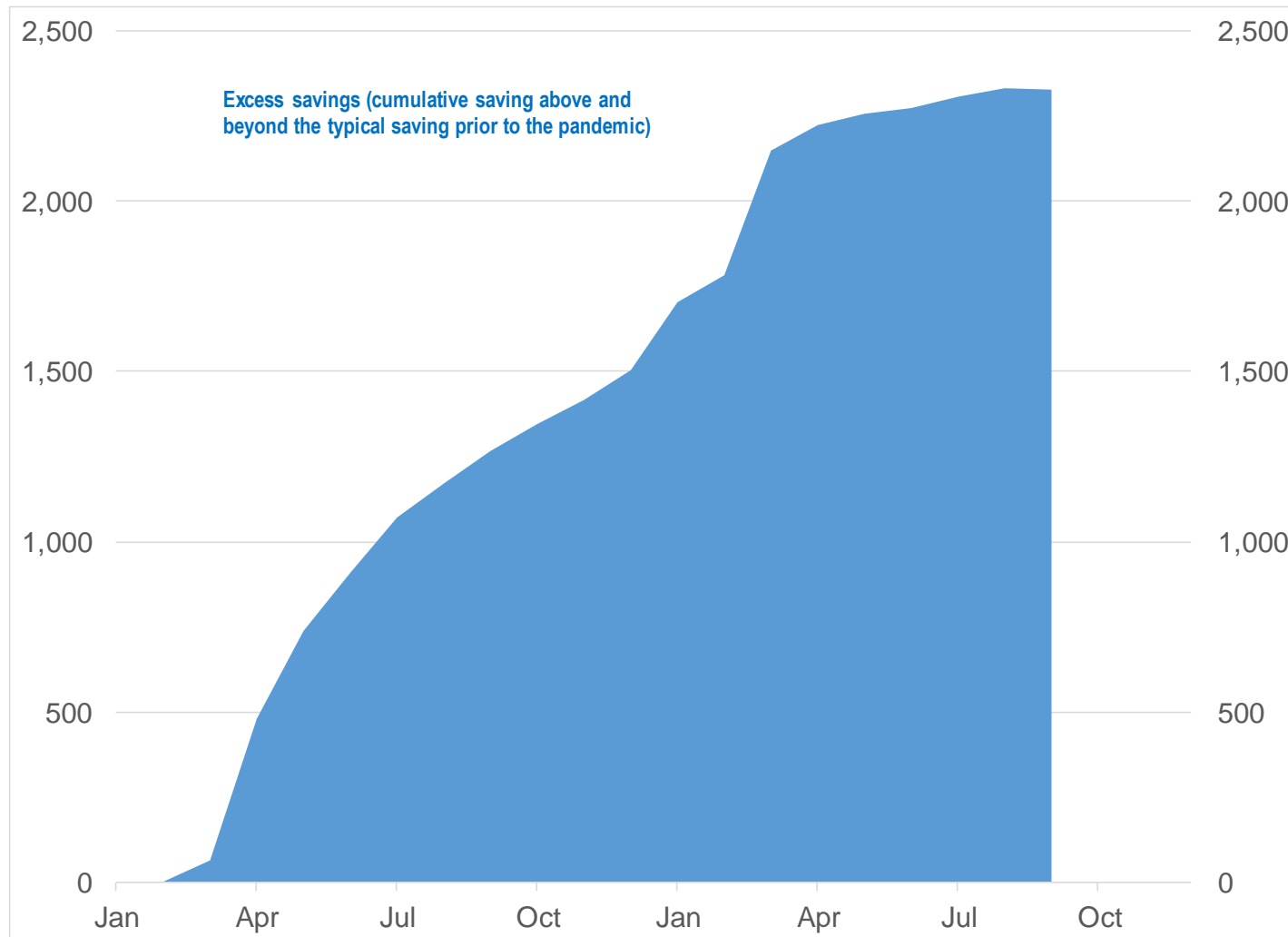
Monthly household saving compared with pre-crisis saving (billions of dollars)



Sources: Haver Analytics; U.S. Department of Commerce. Updated through September 2021.

... a Savings Buildup

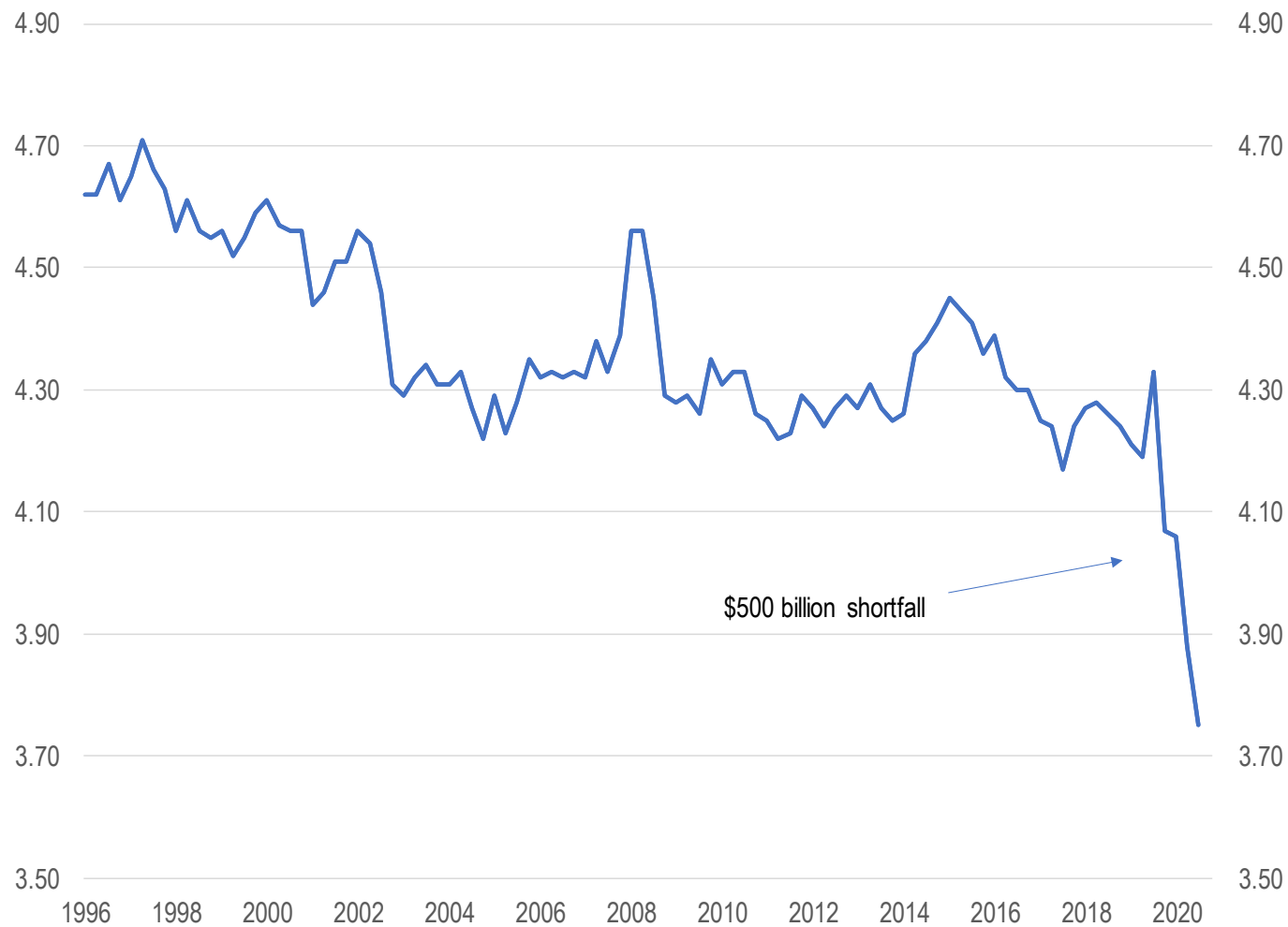
Accumulation of saving over and above the normal pace since February 2020 (billions of dollars)



Sources: Haver Analytics; U.S. Department of Commerce. Updated through September 2021.

Business Has Some Wood to Chop

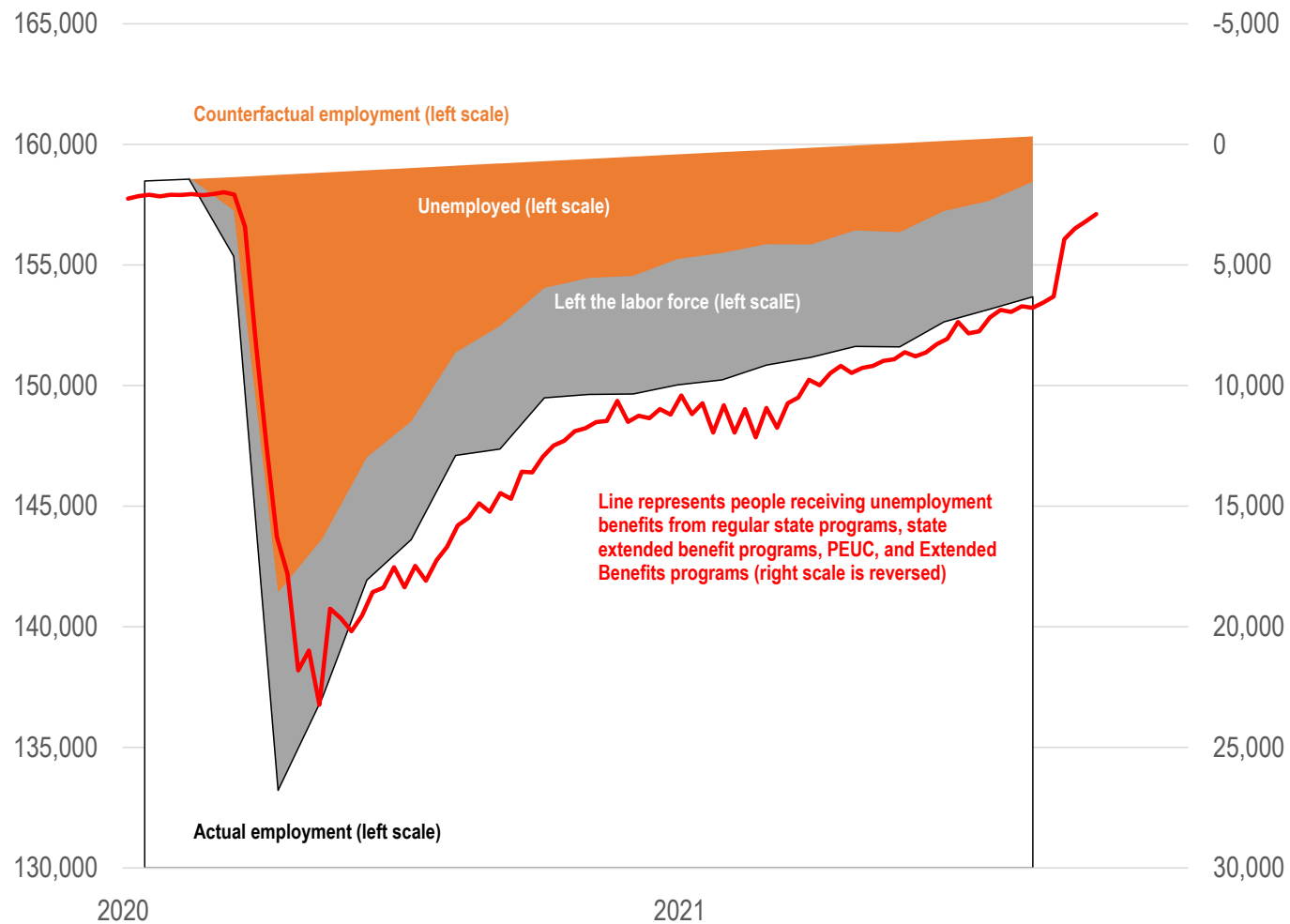
Ratio of private nonfarm inventories to final sales of goods plus structures spending



Sources: Haver Analytics; U.S. Department of Commerce. Updated through 2021 Q2.

Room For Improvement If They Return ...

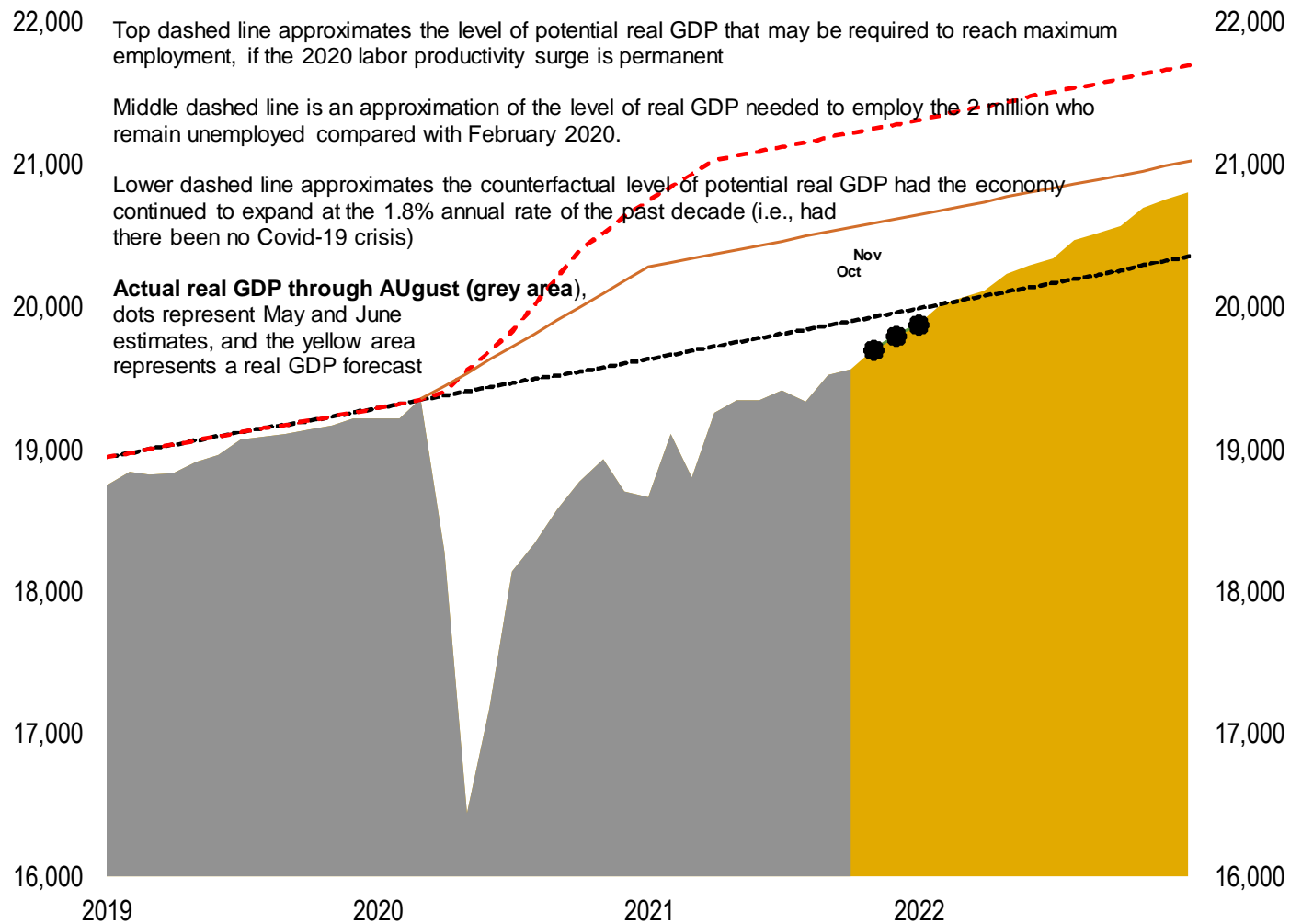
Evolution of the labor force (thousands of people)



Sources: Haver Analytics; U.S. Department of Labor. Updated through September 2021.

It Will Determine How Much GDP We Need

Actual and counterfactual real GDP paths (chained 2012 dollars)

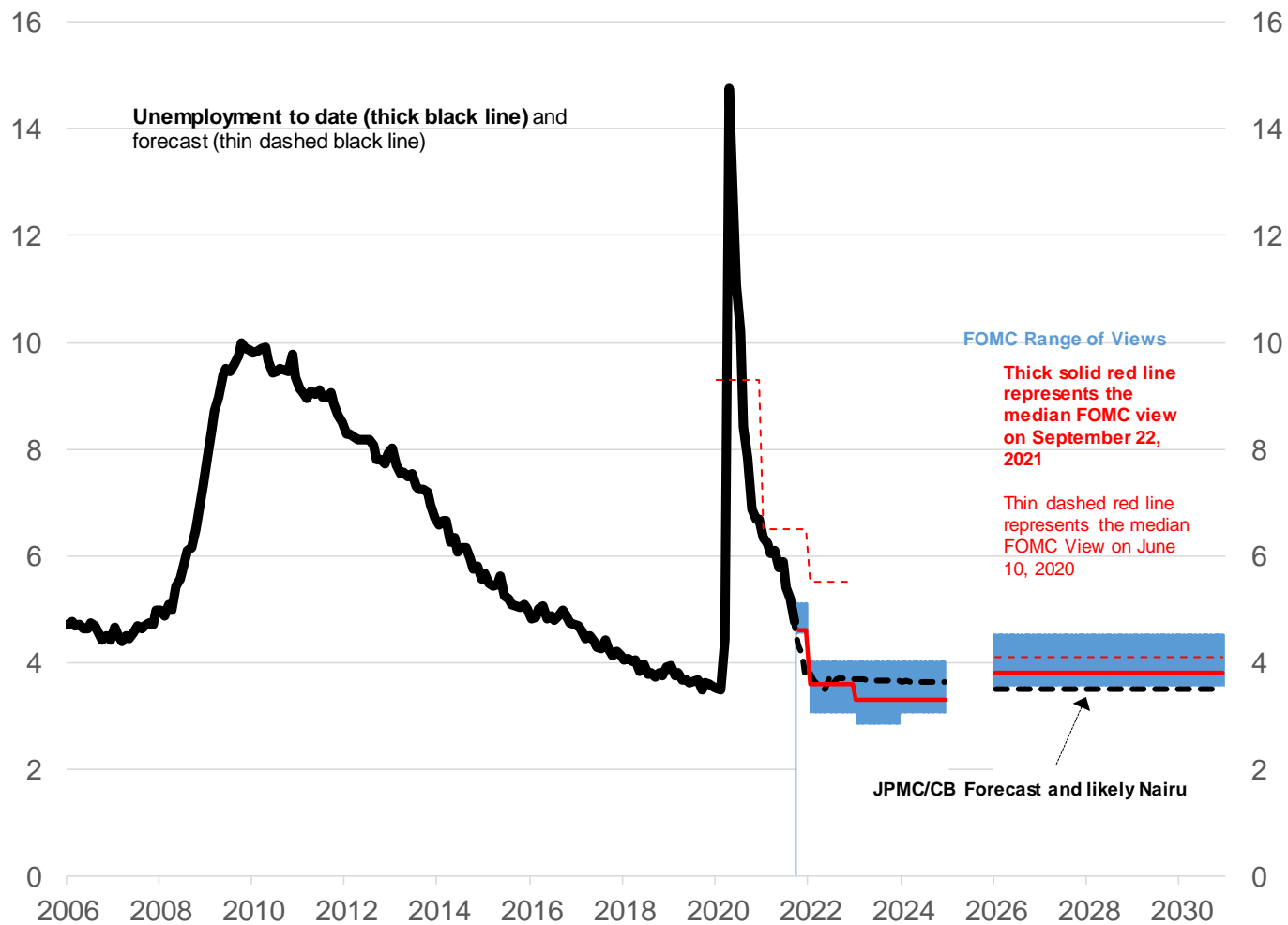


Sources: Haver Analytics; IHS Markit. Updated through September 2021.

Interest Rates

Maximum Employment Is the Fed's GPS ...

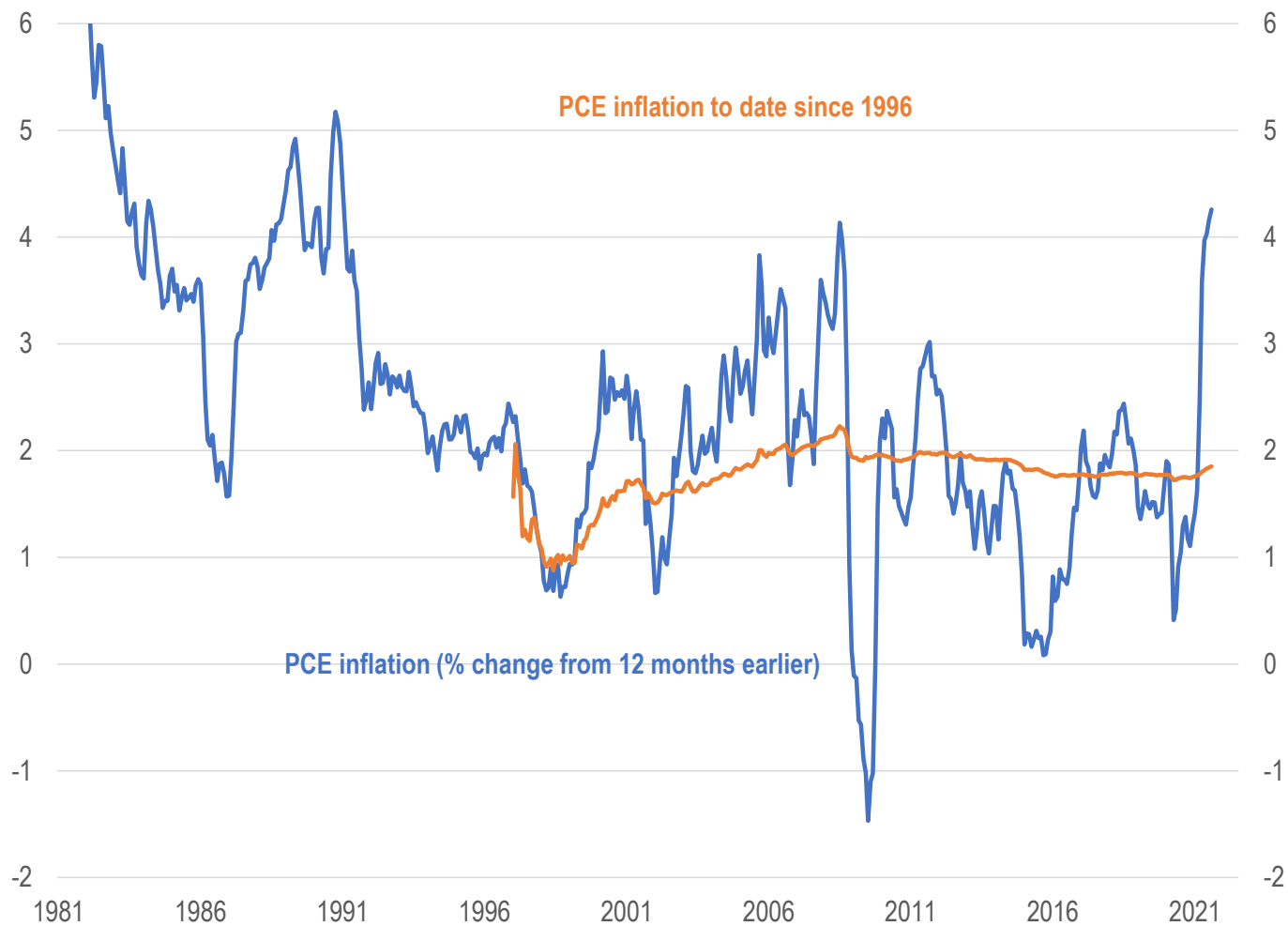
Unemployment rate (percent of the labor force)



Sources: Haver Analytics; U.S. Department of Labor; Federal Reserve Board. Updated through September 2021 (unemployment) and September 22, 2021 (FOMC).

... But 2% Inflation Is the Ultimate Goal

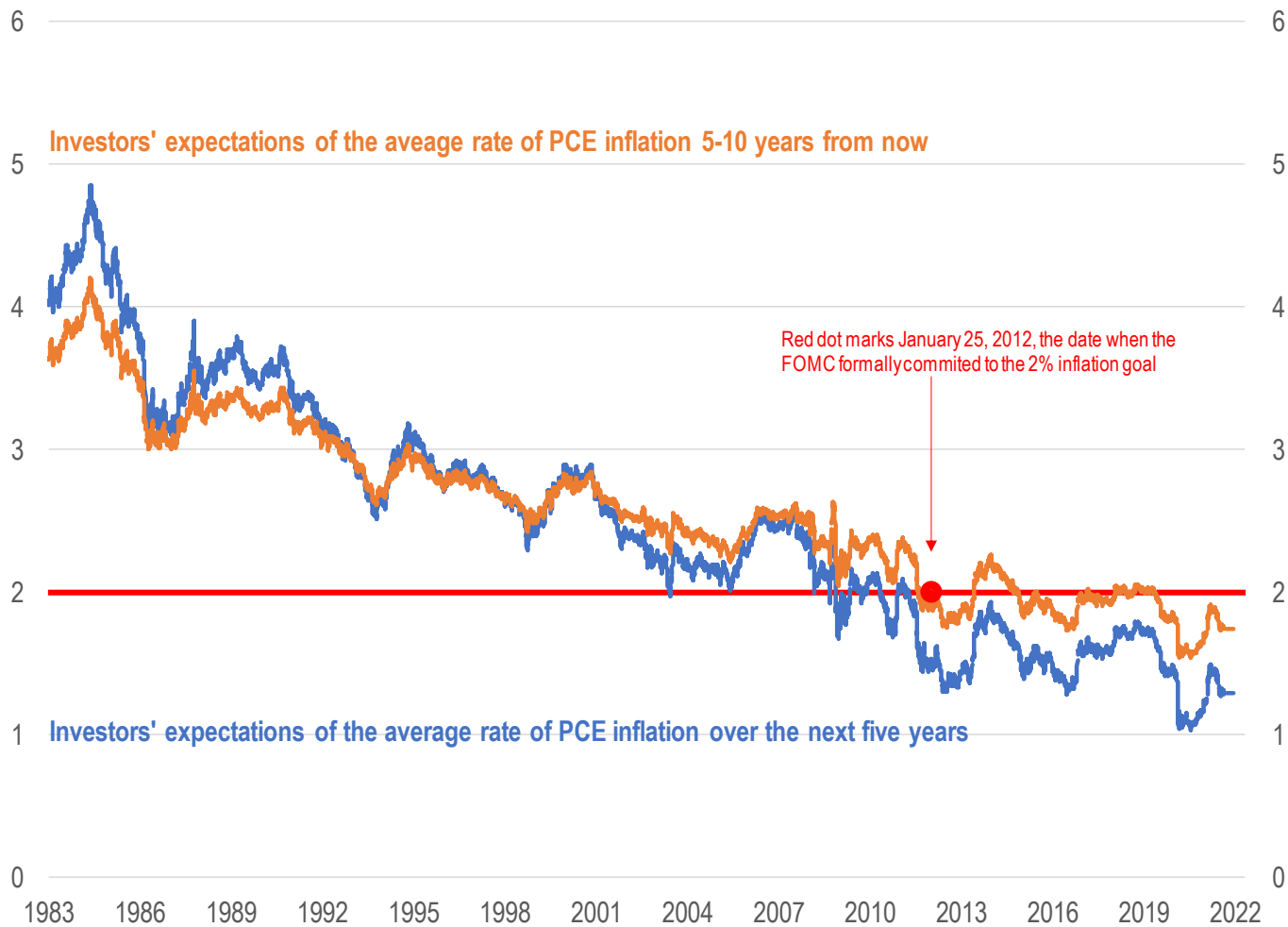
Chain PCE price index, annual change and 1996-to-date rate (annual percent change)



Sources: Haver Analytics; U.S. Department of Labor; U.S. Department of Commerce. Updated through August 2021.

It's More About Anchoring Expectations ...

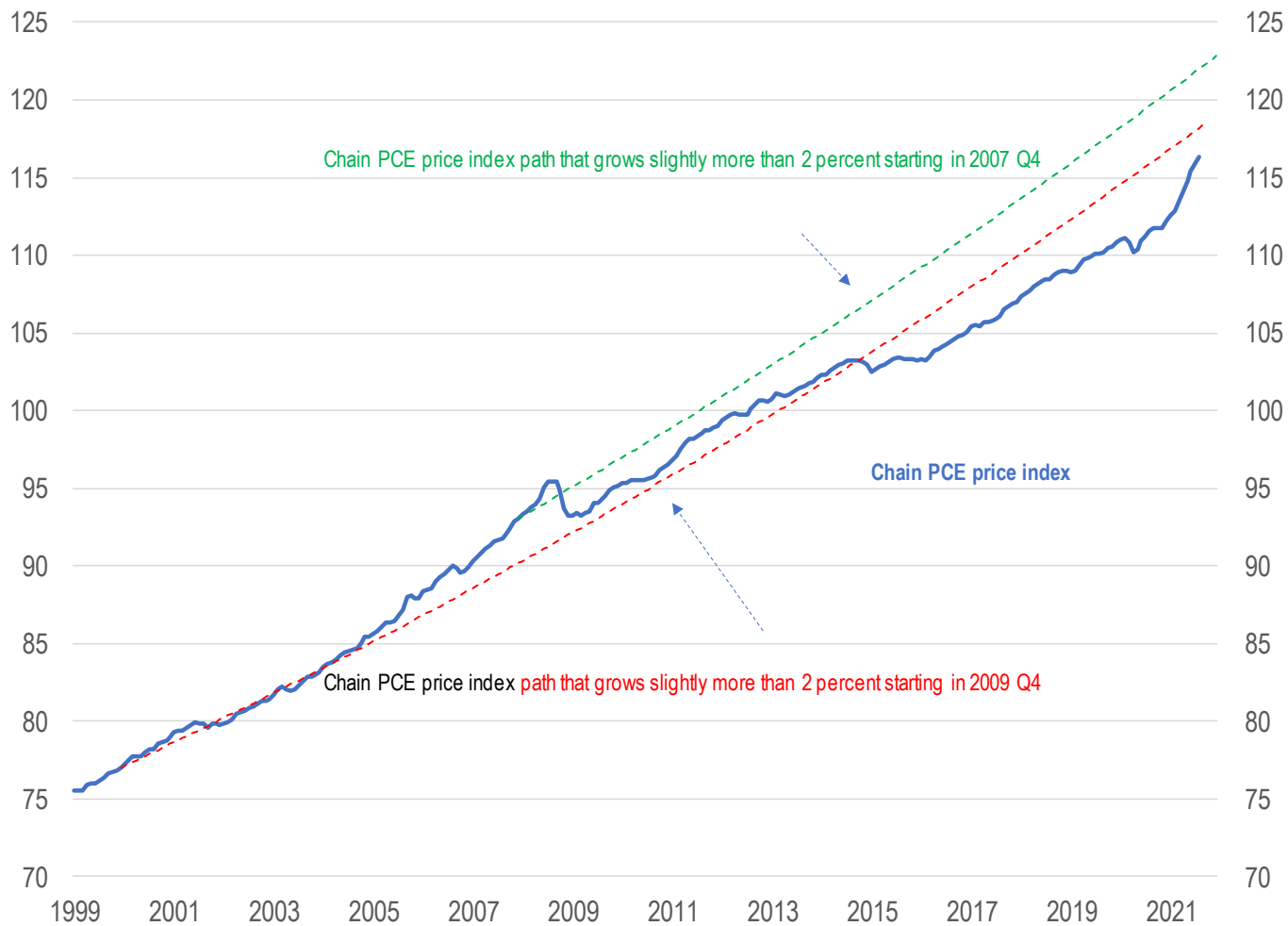
Market based inflation expectations over selected horizons (annual rate)



Note: Assumes that the PCE inflation rate will be 0.31 percentage point, the historical differential, below the CPI inflation expectations reflected in the Treasury nominal and TIPS securities yields.
Source: Haver Analytics; Federal Reserve Board. Updated through October 31, 2021.

... than Hitting Some Price Target

Chain PCE price index and the Federal Reserve's 2% target (2012 = 100)



Sources: Haver Analytics; U.S. Department of Commerce, Eurostat; Bank of Japan. Updated through September 2021.

The Fed's Road Map ...

Selected FOMC forecasts

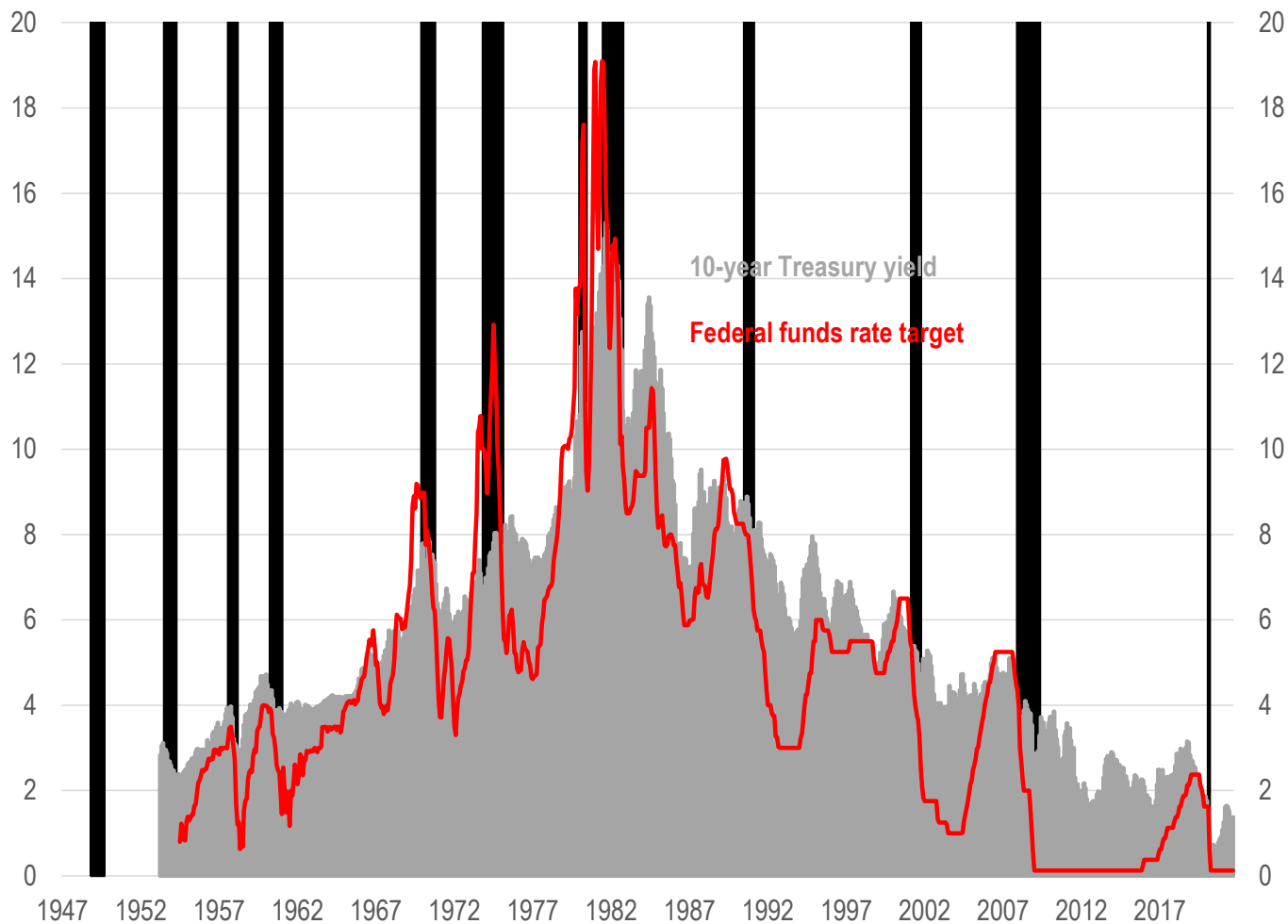
	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>Long Term</u>
Real GDP (% Change Over the Four Quarters)				
Median				
Central Tendency	2.2 - 2.7	2.8 - 3.2	3.3 - 3.0	2.3 - 2.6
Range	2.1 - 3.0	2.4 - 3.8	2.8 - 4.3	2.2 - 3.0
PCE Inflation (% Change Over the Four Quarters)				
Median				
Central Tendency	1.4 - 1.8	1.4 - 2.0	1.6 - 2.0	2.0
Range	1.3 - 2.5	1.4 - 2.3	1.5 - 2.1	2.0
Unemployment Rate (% in the Fourth Quarter)				
Median				
Central Tendency	8.2 - 8.5	7.4 - 8.1	6.7 - 7.6	5.2 - 6.0
Range	7.8 - 8.6	7.0 - 8.2	6.3 - 7.7	5.5 - 6.0
Federal Funds Rate (% in the Fourth Quarter)				
Median	0.125	0.125	0.750	4.200
Central Tendency	0.125	0.125 - 0.750	0.125 - 2.500	4.000 - 4.250
Range	0.125 - 1.000	0.125 - 1.900	0.125 - 2.750	3.800 - 4.500
<hr/>				
Details of Members Views, January 24-25, 2012 ¹	14 * 0.125	11 * 0.125	6 * 0.125	1 * 3.800
	1 * 0.500	1 * 0.500	2 * 0.500	7 * 4.000
	2 * 1.000	2 * 0.750	1 * 0.750	2 * 4.200
		1 * 1.000	2 * 1.000	1 * 4.250
		1 * 1.750	1 * 1.500	7 * 4.500
		1 * 1.900	1 * 2.000	
			3 * 2.500	
			1 * 2.750	

¹ "# * ###" refers to the number (#) of forecasters who believe the rate (###) is the appropriate level for the federal funds rate target.

Sources: Federal Reserve Board.

... Is Shaped by This

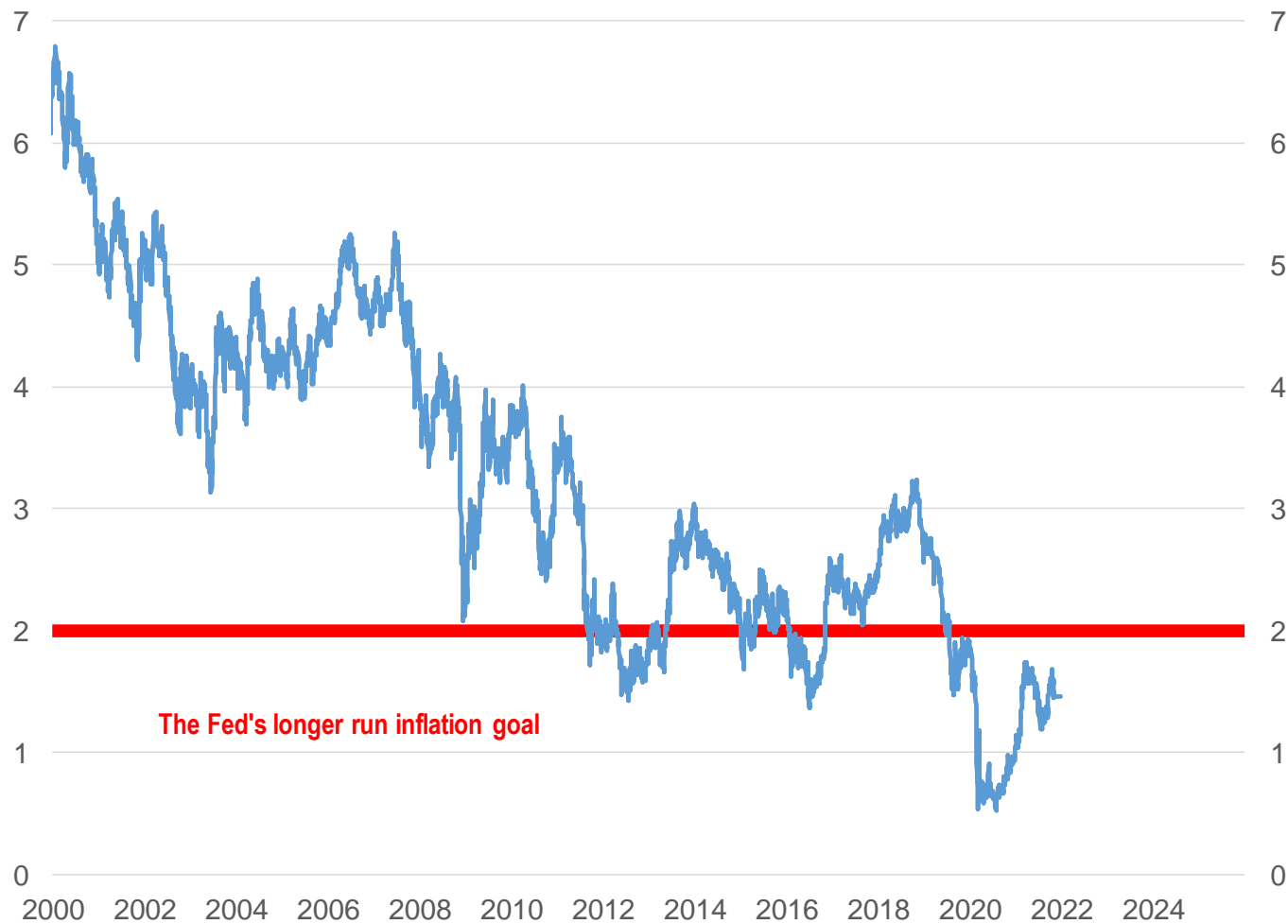
Federal funds rate and 10-year Treasury yield (percent)



Sources: Haver Analytics; NBER-designated recession bars; Federal Reserve Board. Updated through October 22, 2021.

Long-term Interest Rates

10-year Treasury note yield (percent)

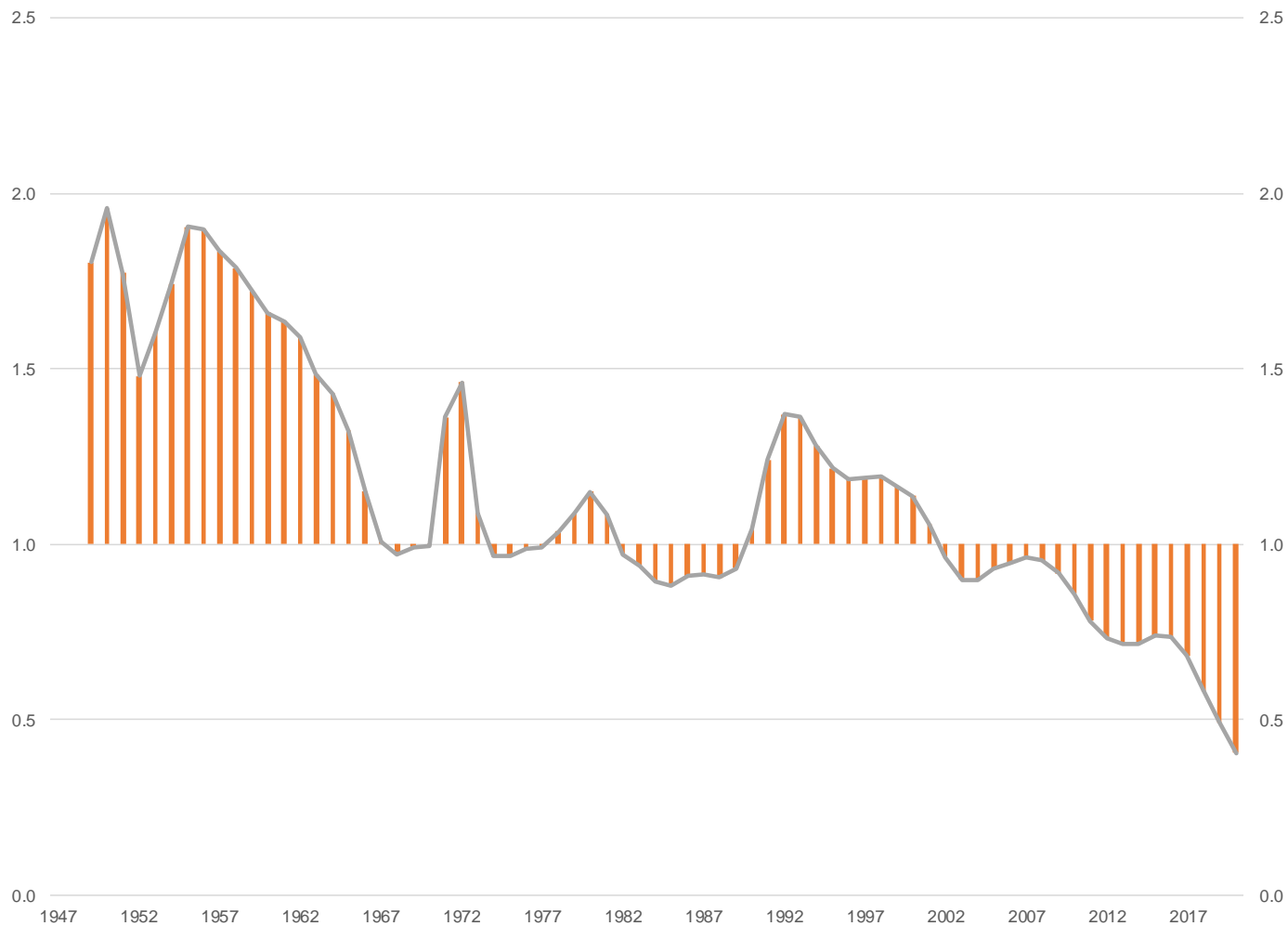


Sources: Haver Analytics; Federal Reserve Board. Updated through November 9, 2021.

Population and the Economy

Slowing Population Growth Is Irrelevant ...

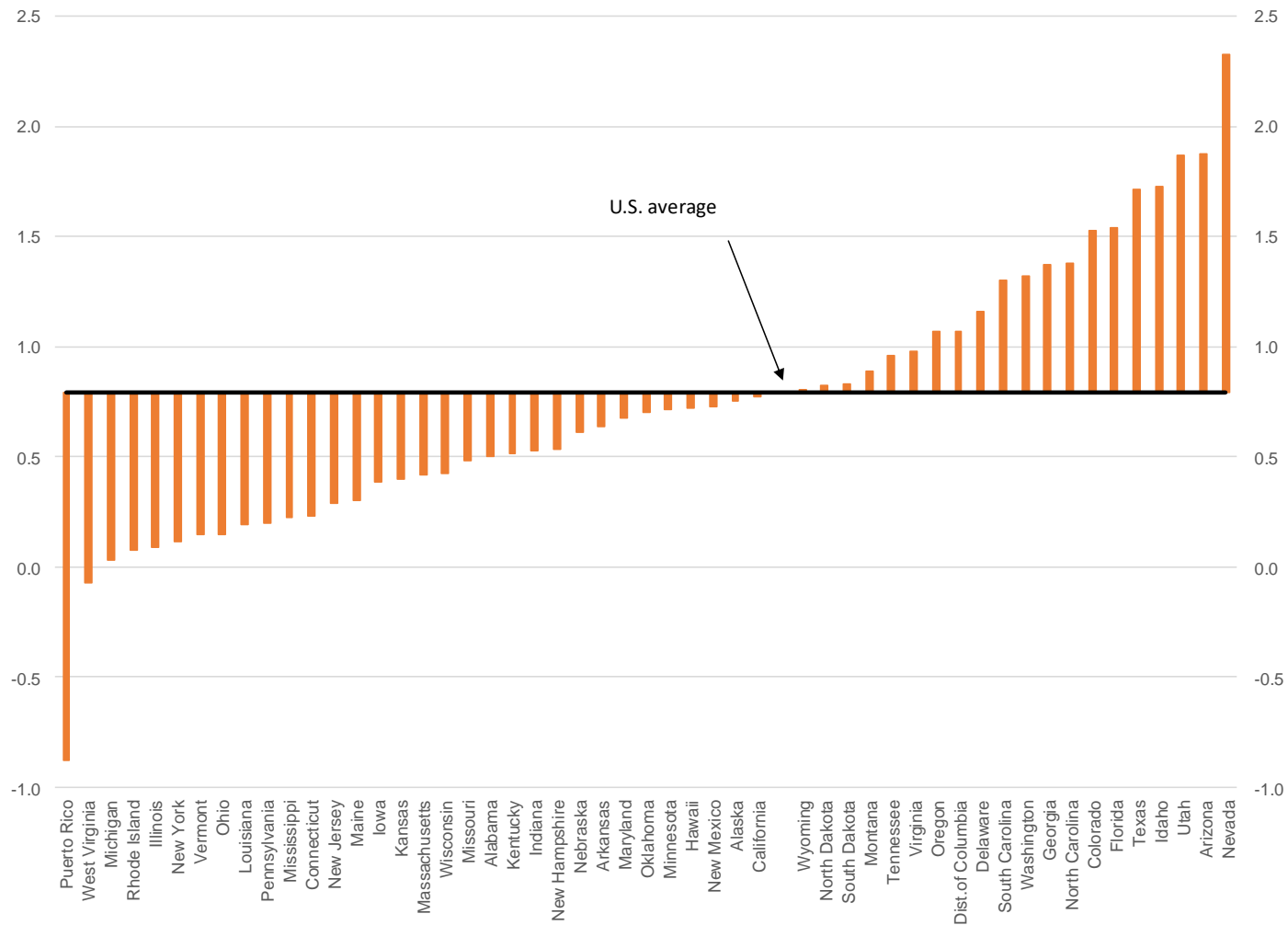
U.S. population growth (annual percent change over two-year rolling intervals)



Sources: Haver Analytics; U.S. Department of Labor. Updated through January 2021.

... With People In Motion ...

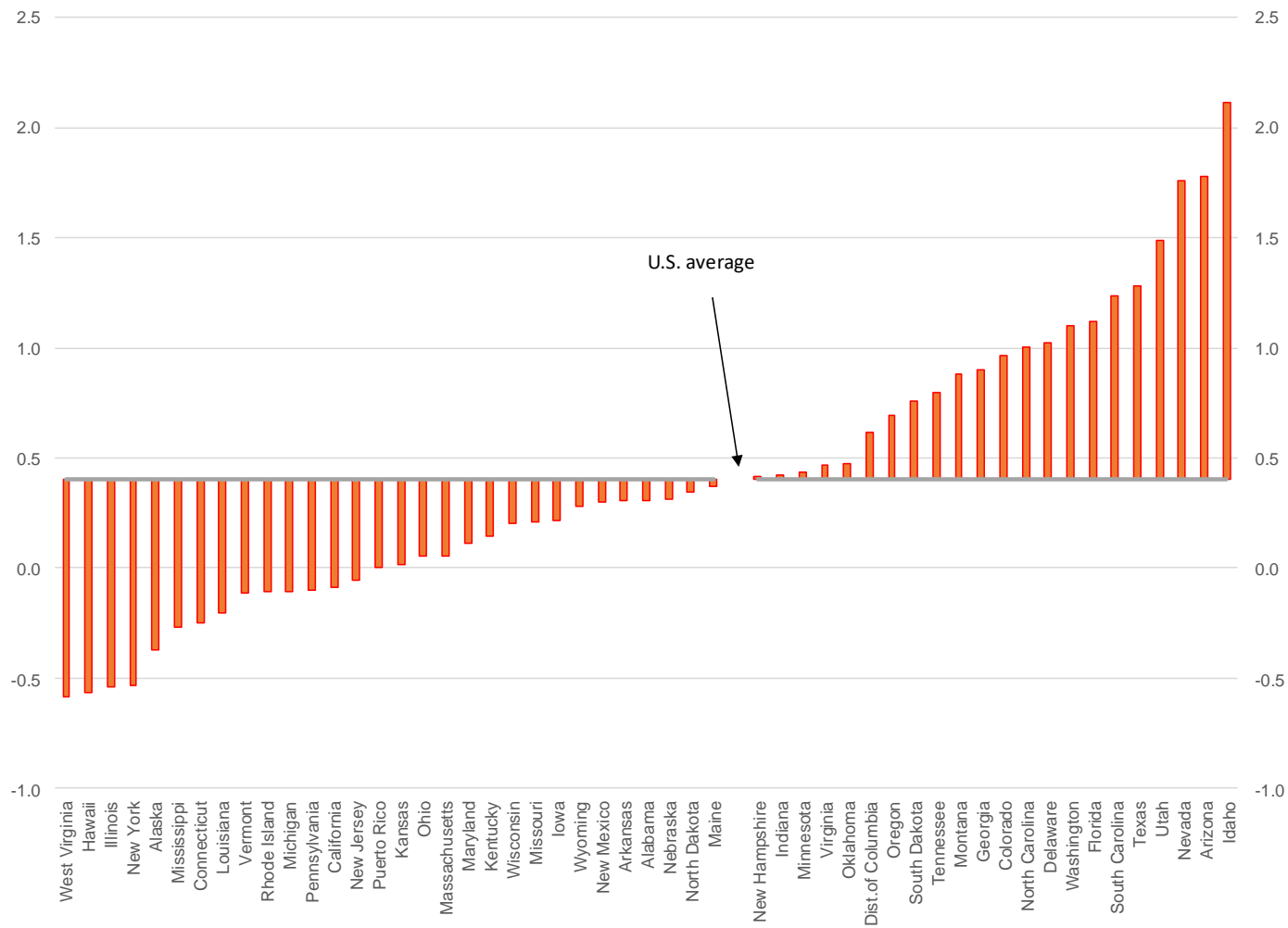
Annual population growth since 1999 (percent change)



Sources: Haver Analytics; Census. Updated through 2020.

... All Across the Nation

Annual percent change since 2018 (percent)



Sources: Haver Analytics; Census. Updated through 2020.

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