ALTAIR 20 YEARS

2022

Altair Advisers

FALL FORUM

An In-Person and Virtual Event

ALTAIR 20 YEARS

MARKET UPDATE AND OUTLOOK

Jason Laurie, Altair Advisers

High-Wire Act

Forward-looking statements may not come true. See disclosures at end of document.
Sources: Altair Advisers, Noah Kroese Illustration for Altair Advisers

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Navigating Rough Waters

Forward-looking statements may not come true. See disclosures at end of document.
Sources: Altair Advisers, Noah Kroese Illustration for Altair Advisers

Almost There

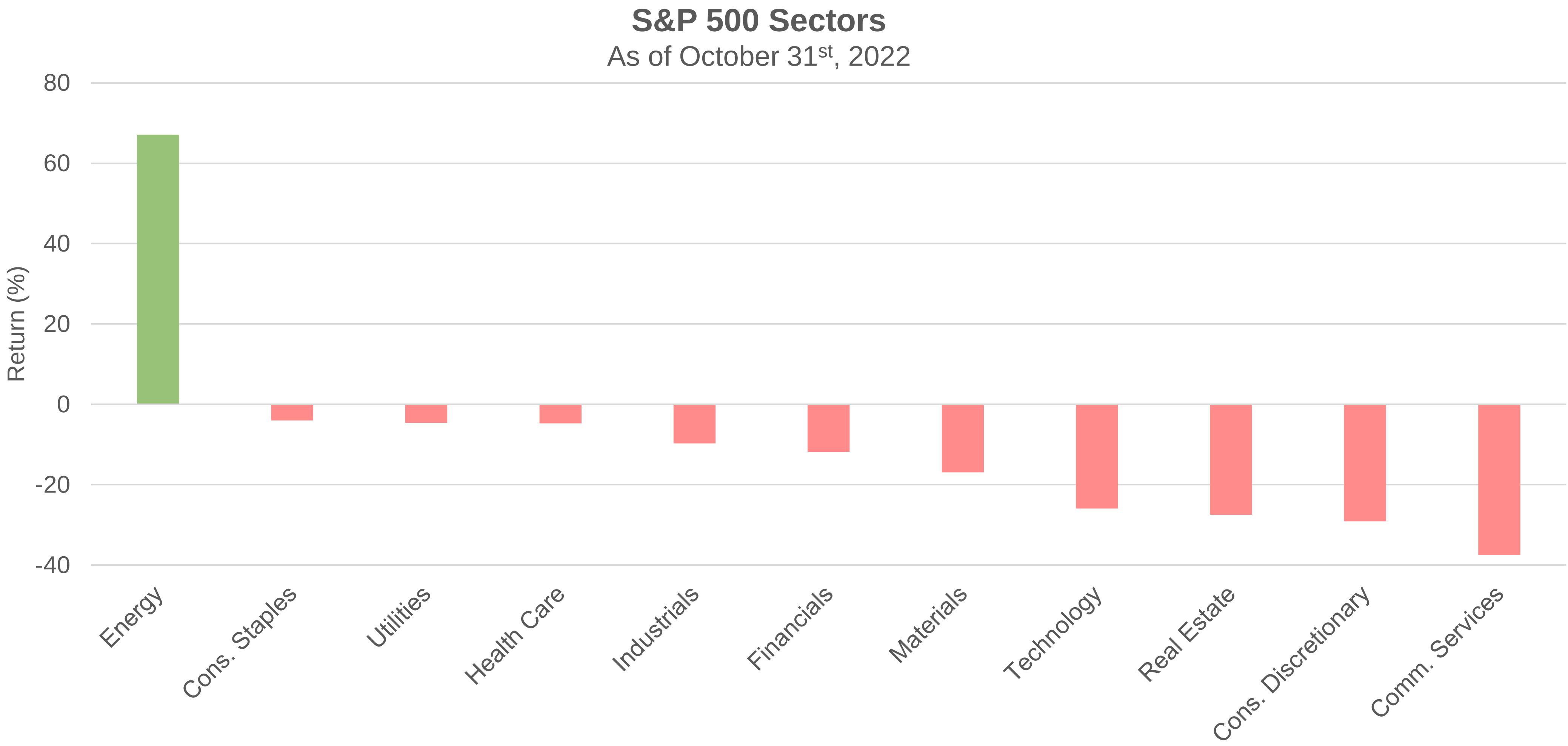
Forward-looking statements may not come true. See disclosures at end of document.
Sources: Altair Advisers, Noah Kroese Illustration for Altair Advisers

Select Market Returns

Markets	YTD Return (%)
iShares Core S&P 500 (large cap)	-15.1%
Russell 1000 Growth ETF (large growth)	-24.8%
Russell 1000 Value ETF (large value)	-6.0%
iShares Russell 2000 (small cap)	-15.2%
iShares MSCI EAFE (international)	-15.1%
iShares MSCI EM (emerging markets)	-22.0%
Vanguard REIT Index Fund (real estate)	-23.2%
Vanguard Global ex-US REIT Index Fund (real estate)	-22.6%
Vanguard Total Bond Market ETF (taxable)	-14.3%
Market Vectors Sh/Inter Muni ETF (municipal)	-8.0%

As of 11/11/22

Energy Only Positive Sector



See disclosures at end of document. Source: Morningstar

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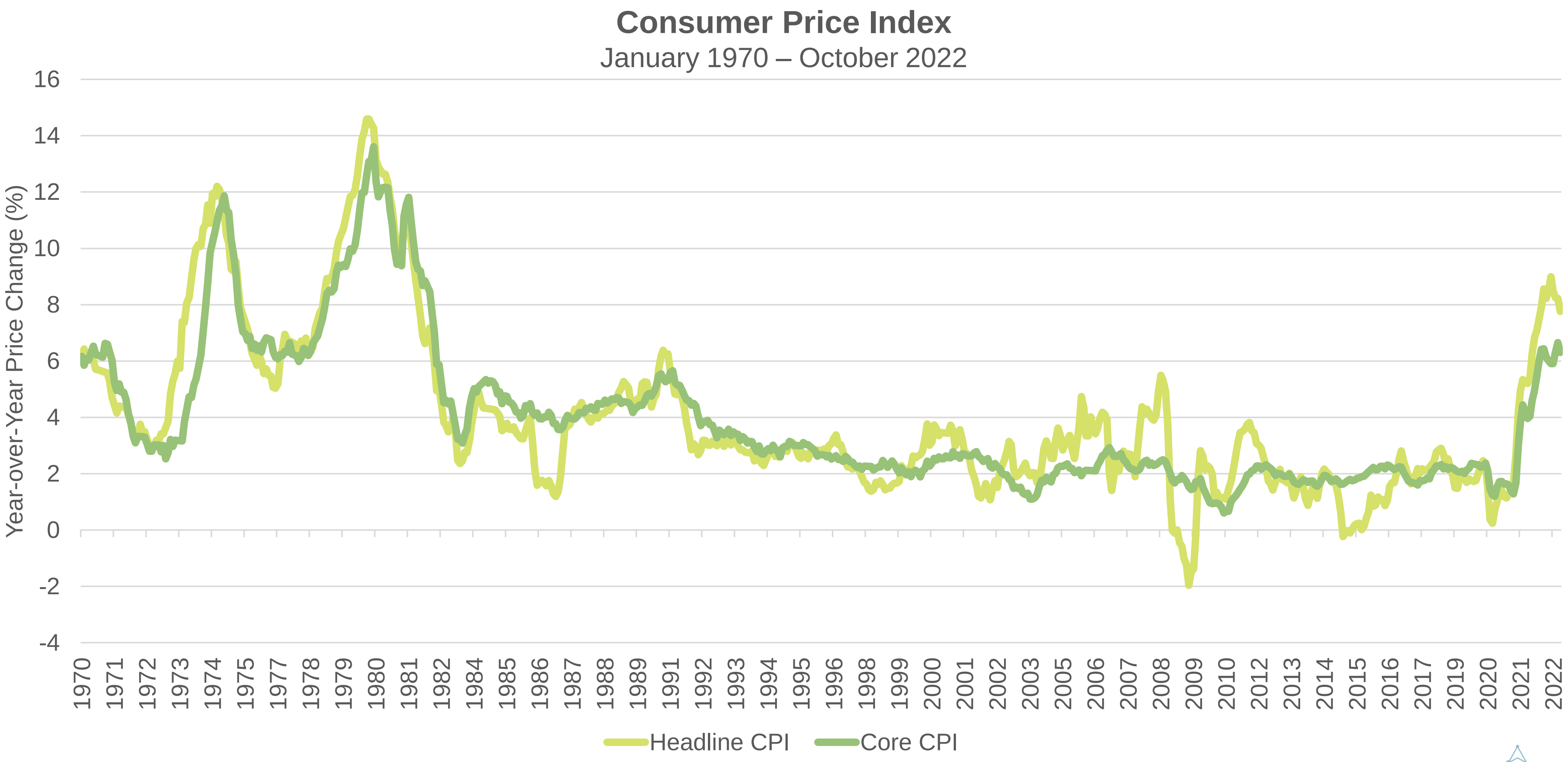
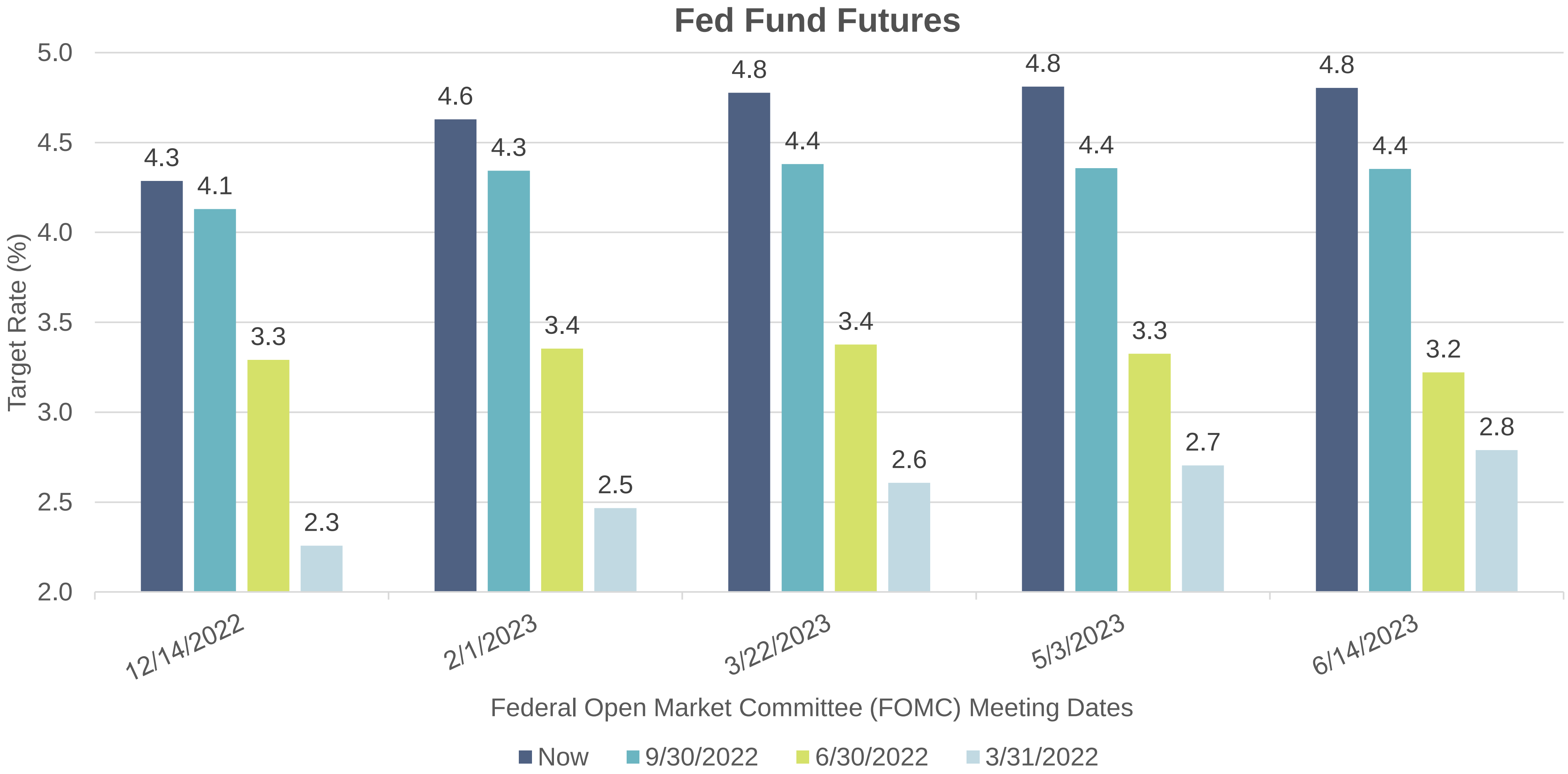
Inflation at Four-Decade High



Market Sees Interest Rate Topping Out Near 5%



See disclosures at end of document. Source: CME Group

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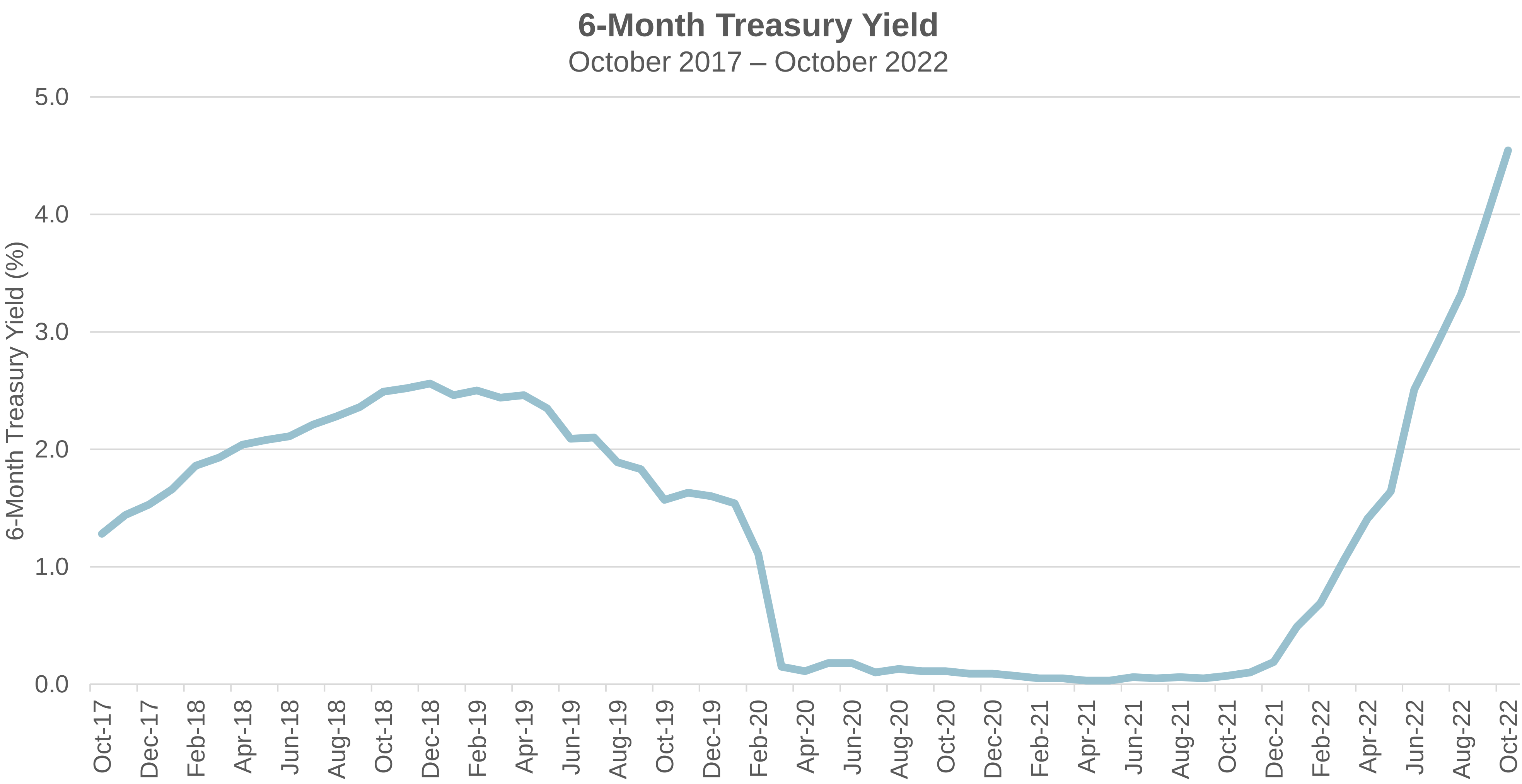
Treasury Rate Prices In Fed Action



See disclosures at end of document. Source: St. Louis Federal Reserve

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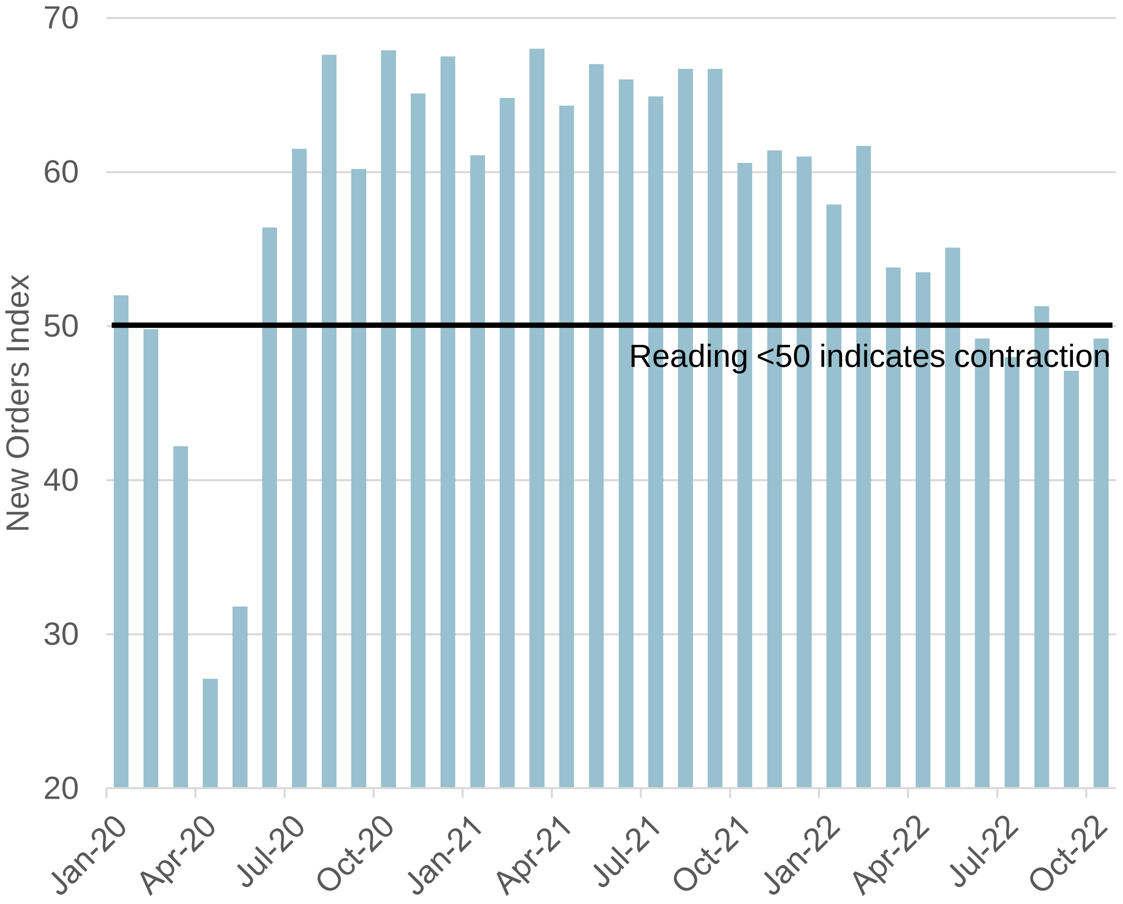
Goods Prices Already Moderating, Services Not Yet

Consumer Price Index Components

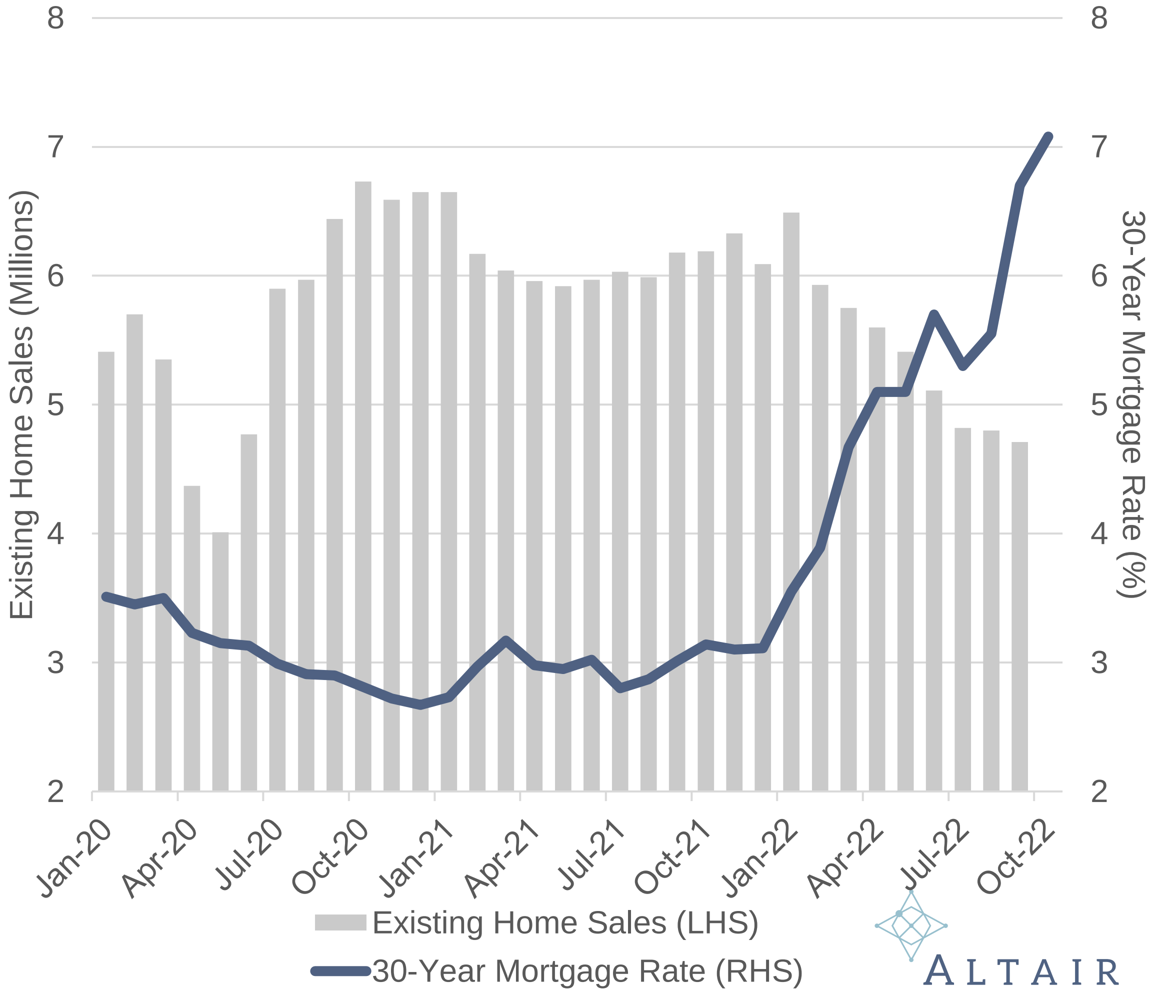
	Category	April Year-over-Year Change (%)	October Year-over-year Change (%)	6-Month Change (%) (Sorted)
Improving	Energy Commodities	44.7	19.3	-25.4
	Transportation Goods	17.2	5.5	-11.7
	Household Furnishings and Supplies	10.6	8.8	-1.8
	Education and Communication Services	1.7	1.3	-0.4
Worsening	Food Away from Home	7.2	8.6	1.4
	Food at Home	10.8	12.4	1.7
	Shelter	5.1	6.9	1.8
	Energy Services	13.7	15.6	1.9
	Medical Care Services	3.5	5.4	2.0
	Transportation Services	8.5	15.2	6.7

Manufacturing and Housing Are Weakening

Purchasing Managers Index for New Orders
January 2020 – October 2022



High Mortgage Rates Hurt Housing Demand
January 2020 – October 2022



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Overall, Leading Indicators Suggest Slowdown …

See disclosures at end of document. Source: The Conference Board

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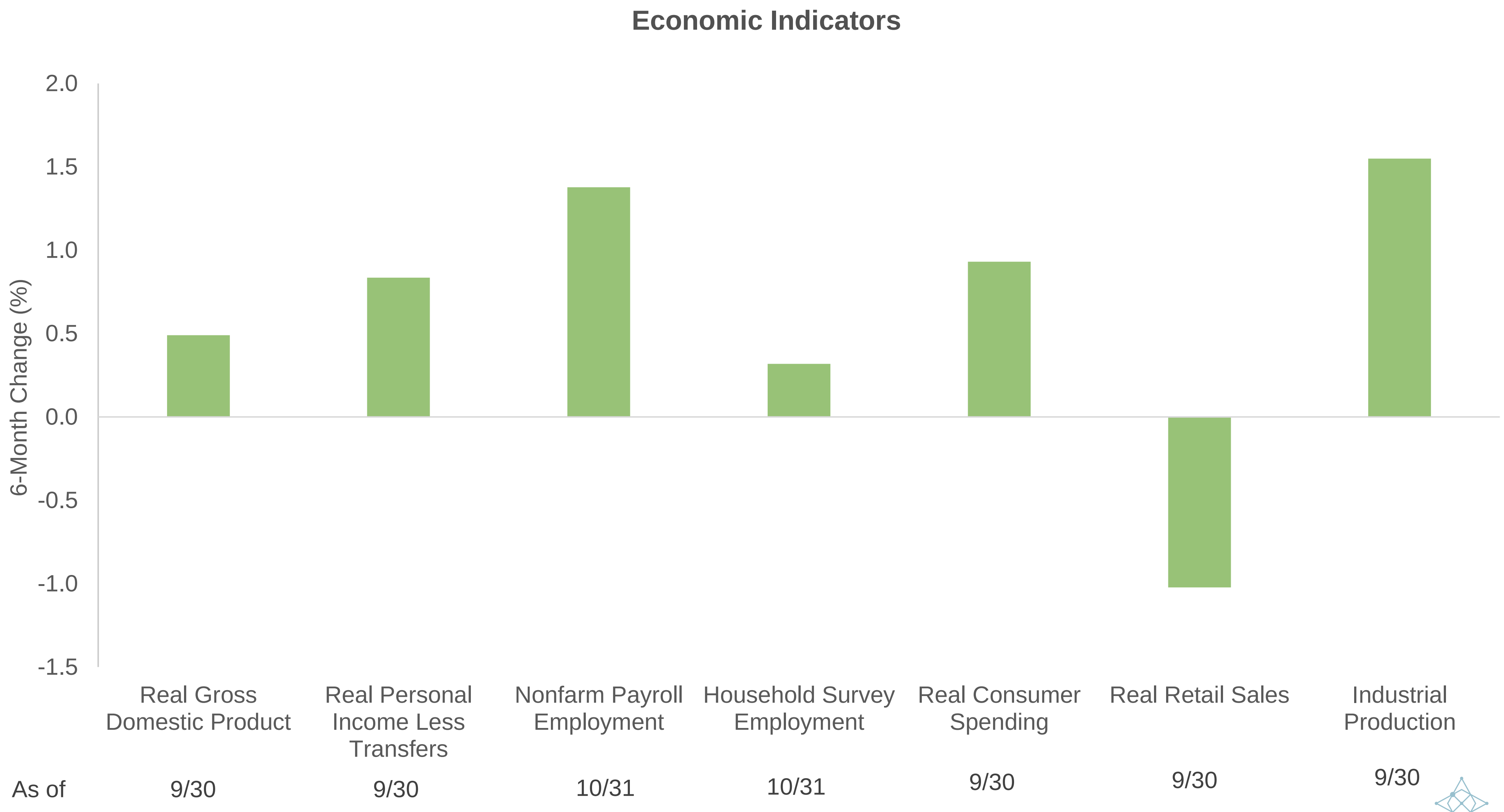
... Other Indicators Mostly Positive



See disclosures at end of document. Source: St. Louis Federal Reserve

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Mild vs. Severe Recessions

Post-WWII Recessions

Market Peak	Market Trough	Price Decline From Peak to Trough (%)	Months from Peak to Trough	Total GDP Decline (%)	Peak to Trough Earnings Decline (%)
6/15/1948	6/13/1949	-20.6	12.1	-1.7	-2.8
1/5/1953	9/14/1953	-14.8	8.4	-2.5	-22.5
12/12/1961	6/26/1962	-28.0	6.5	-1.3	-13.6
11/29/1968	5/26/1970	-36.1	18.1	-1.1	-20.6
2/13/1980	3/24/1980	-16.2	1.3	-2.2	-16.0
11/28/1980	8/12/1982	-27.1	20.7	-2.6	-23.7
8/25/1987	12/4/1987	-33.5	3.4	-1.4	-43.3
1/3/2022	*10/12/2022*	*-25.4*	*9.4*	*?*	*?*
Median		**-24.6**	**8.2**		

Mild

< 3% GDP decline
and
< 50% earnings decline

Market Peak	Market Trough	Price Decline From Peak to Trough (%)	Months from Peak to Trough	Total GDP Decline (%)	Peak to Trough Earnings Decline (%)
7/15/1957	10/22/1957	-20.7	3.3	-3.6	-27.7
1/11/1973	10/3/1974	-48.2	21.0	-3.1	-21.1
3/24/2000	10/9/2002	-49.1	31.0	-0.4	-55.3
10/9/2007	3/9/2009	-56.8	17.2	-4.0	-92.1
2/19/2020	3/23/2020	-33.9	1.1	-10.1	-31.7
Median		**-48.2**	**17.2**		

Severe

> 3% GDP decline
and/or
> 50% earnings decline

See disclosures at end of document. Sources: Altair Advisers, St. Louis Federal Reserve, Morningstar, Robert J. Shiller

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Stocks Typically Perform Well After Inflation Peaks

High Inflation Periods
(1970 – 2010)

		Forward Returns	
Peak Month	**Peak CPI Rate**	**12 Mo.**	**24 Mo.**
February-70	6.4%	15.5%	23.1%
November-74	12.2%	31.3%	53.2%
March-80	14.6%	34.5%	17.4%
March-84	4.9%	16.2%	54.3%
October-90	6.4%	20.7%	32.7%
July-08	5.5%	-21.9%	-16.1%
Median		**18.5%**	**27.9%**

		Forward Returns	
Trough Month	**Trough CPI Rate**	**12 Mo.**	**24 Mo.**
August-72	2.9%	-1.1%	-36.0%
December-76	5.0%	-12.8%	-3.5%
July-83	2.4%	1.7%	13.9%
December-86	1.2%	-9.6%	6.5%
September-98	1.4%	19.1%	31.2%
July-09	-2.0%	6.6%	18.9%
Median		**0.3%**	**10.2%**

Returns are based on S&P 500 Index. See disclosures at end of document. Sources: St. Louis Federal Reserve, Morningstar

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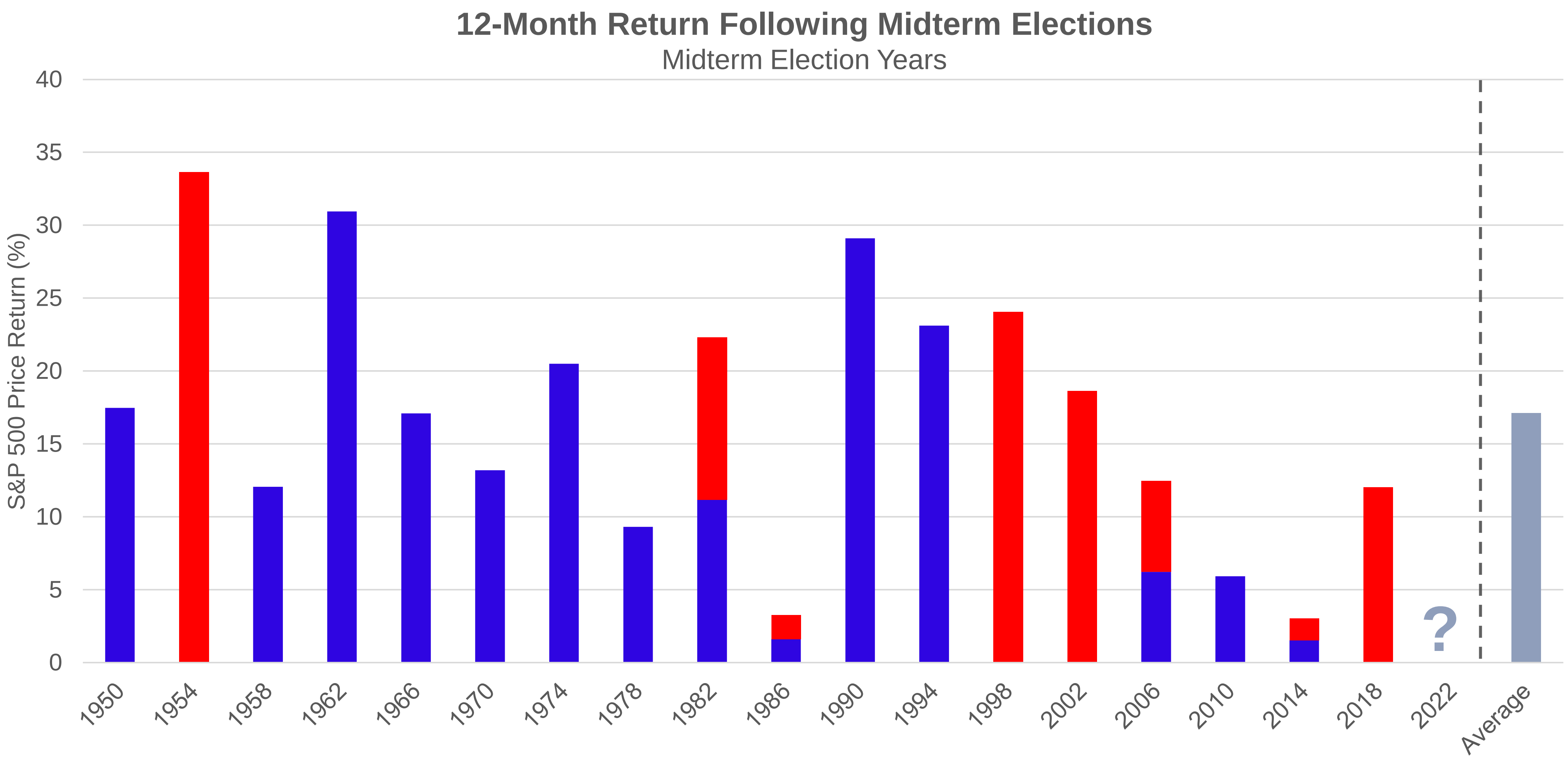
Post-Midterms Market Performance Historically Positive



See disclosures at end of document. Source: Morningstar

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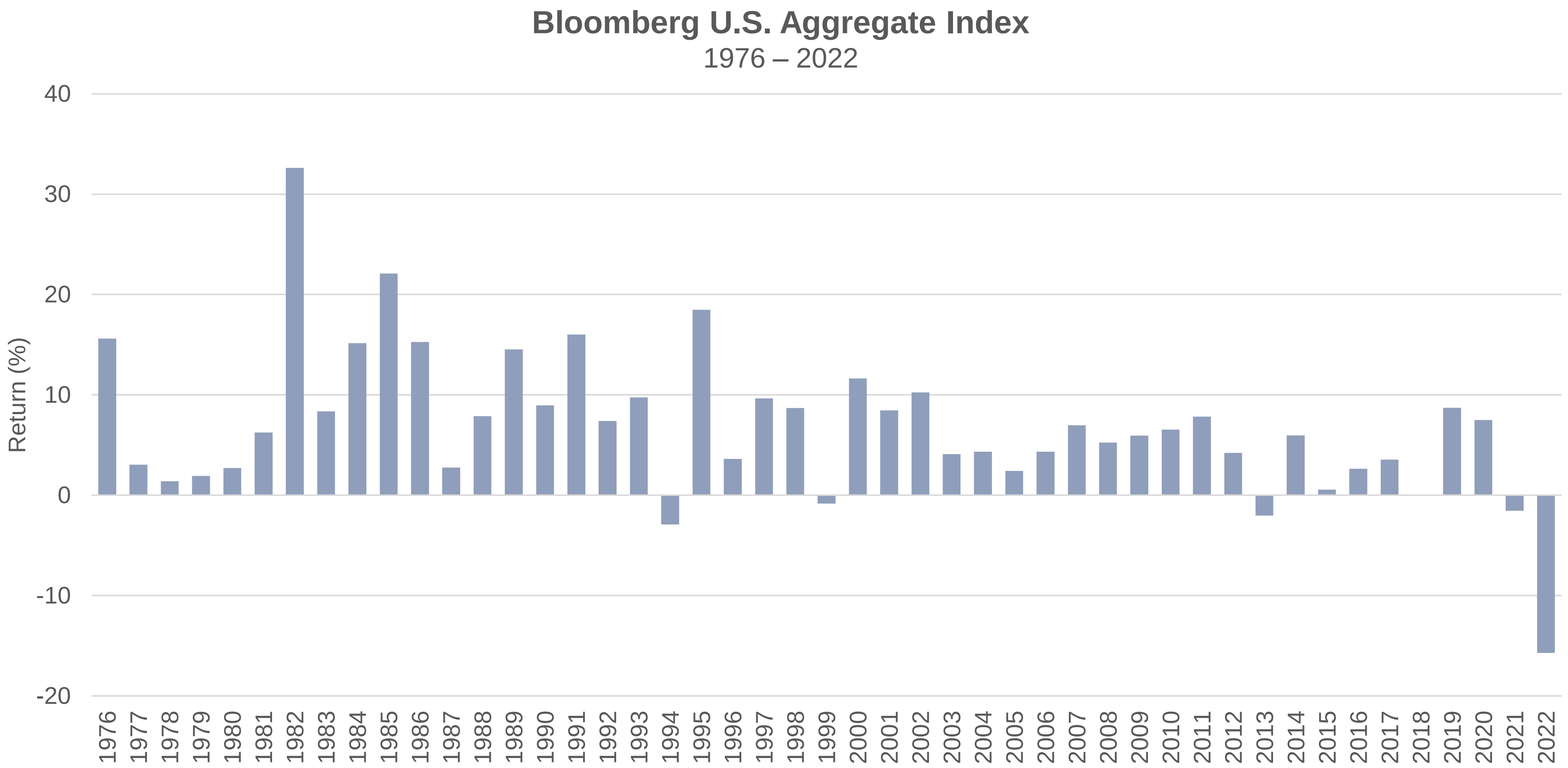
Taxable Bonds Having Record-Shattering Down Year



*2022 returns through 10/31/22

See disclosures at end of document. Source: Morningstar

Recap

- **Virtually all asset** classes have performed poorly this year, with double-digit losses so far for the U.S. and international stocks along with real estate and the worst year on record for bonds. Energy stocks are a rare winner.

- **Inflation persists at** its highest level since 1982, prompting the Fed to become more hawkish, but some contributing components are cooling and we expect inflation to keep trending gradually lower.

- **The Federal Reserve** has made clear it will raise the federal funds rate higher and for longer than previously expected. The market now anticipates a ceiling of 4.75% in the first half of 2023.

- **The U.S. economy** is a mixed picture, with housing and manufacturing among the sectors weakening but a strong labor market and consumer spending keeping it from contracting. We expect that any recession that occurs will be mild.

- **The market stands** to benefit if two trends with a strong historical track record play out: Stocks have typically performed well after inflation peaks and also in the year following midterm elections.

Disclosures

The material shown is for informational purposes only. Past performance is not indicative of future performance, and all investments are subject to the risk of loss. Forward-looking statements are subject to numerous assumptions, risks, and uncertainties, and actual results may differ materially from those anticipated in forward-looking statements. As a practical matter, no entity is able to accurately and consistently predict future market activities. Information presented herein may incorporate Altair Advisers' opinions as of the date of this publication, is subject to change without notice and should not be considered as a solicitation to buy or sell any security. While efforts are made to ensure information contained herein is accurate, Altair Advisers cannot guarantee the accuracy of all such information presented. Material contained in this publication should not be construed as accounting, legal, or tax advice. See Altair Advisers' Form ADV Part 2A and Form CRS at https://altairadvisers.com/disclosures/ for additional information about Altair Advisers' business practices and conflicts identified. All registered investment advisors are subject to the same fiduciary duties as Altair Advisers.

ETFs and mutual funds selected by Altair are intended to approximate the performance of the respective asset class in lieu of an established index. An ETF or mutual fund is generally managed by an adviser and, therefore, can be subject to human judgment while an index is typically comprised of an unmanaged basket of instruments designed to measure the performance attributes of a specific investment category. Unlike indices, the ETFs and mutual funds selected incorporate fees into their performance calculations. There can be no assurance that an ETF or mutual fund will yield the same result as an index. Altair has no relationship with the ETFs and mutual funds selected.

The U.S. Municipal Bonds Benchmark consists of 65% VanEck Short Muni ETF and 35% VanEck Intermediate Muni ETF.

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A HISTORIC YEAR FOR BONDS – WHAT COMES NEXT?

David Lin, Altair Advisers
Kara South, GW&K Investment Management


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BREAK
We will resume in 10 minutes

THE ECONOMIC OUTLOOK

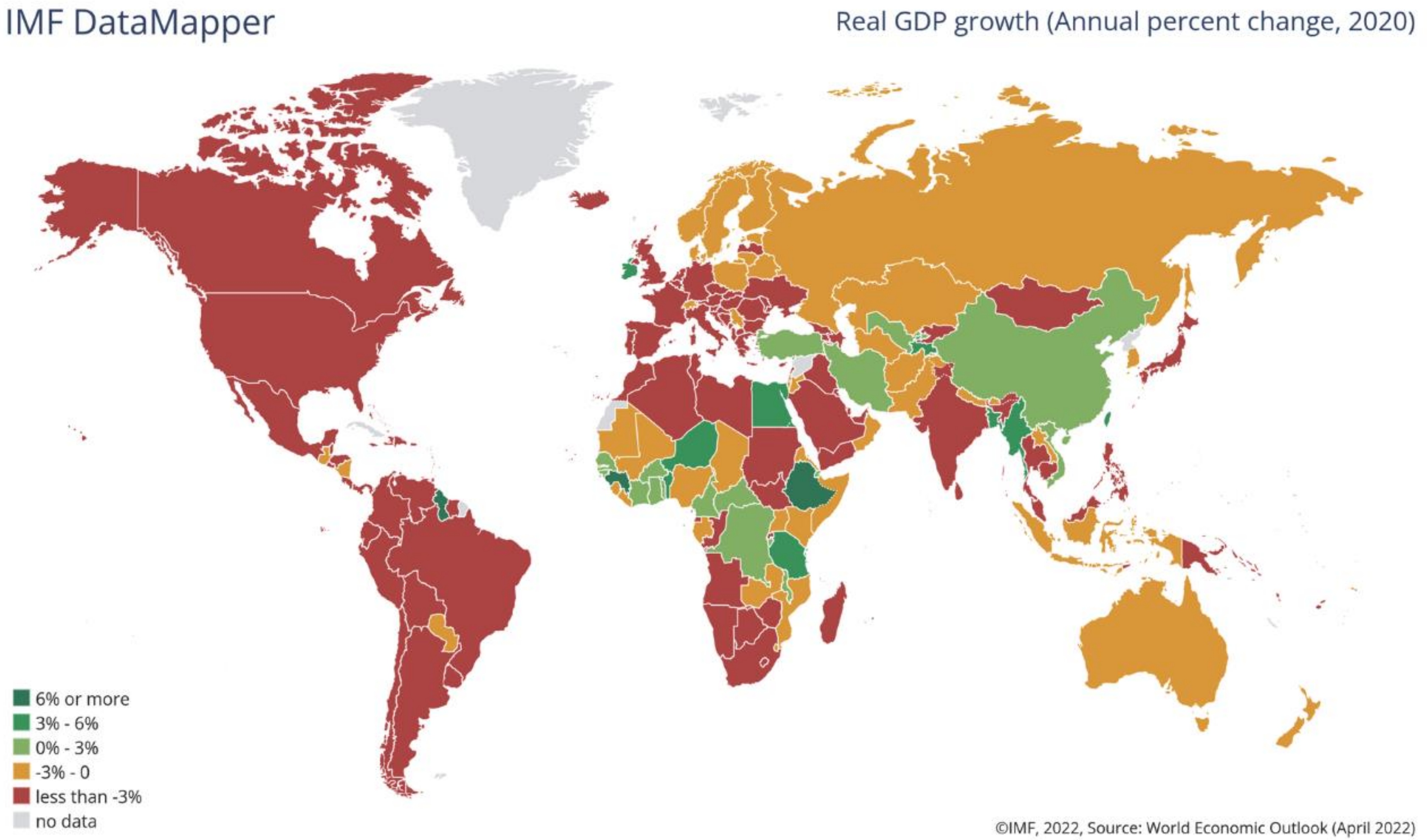
Martin Eichenbaum, Northwestern University

ALTAIR 20 YEARS

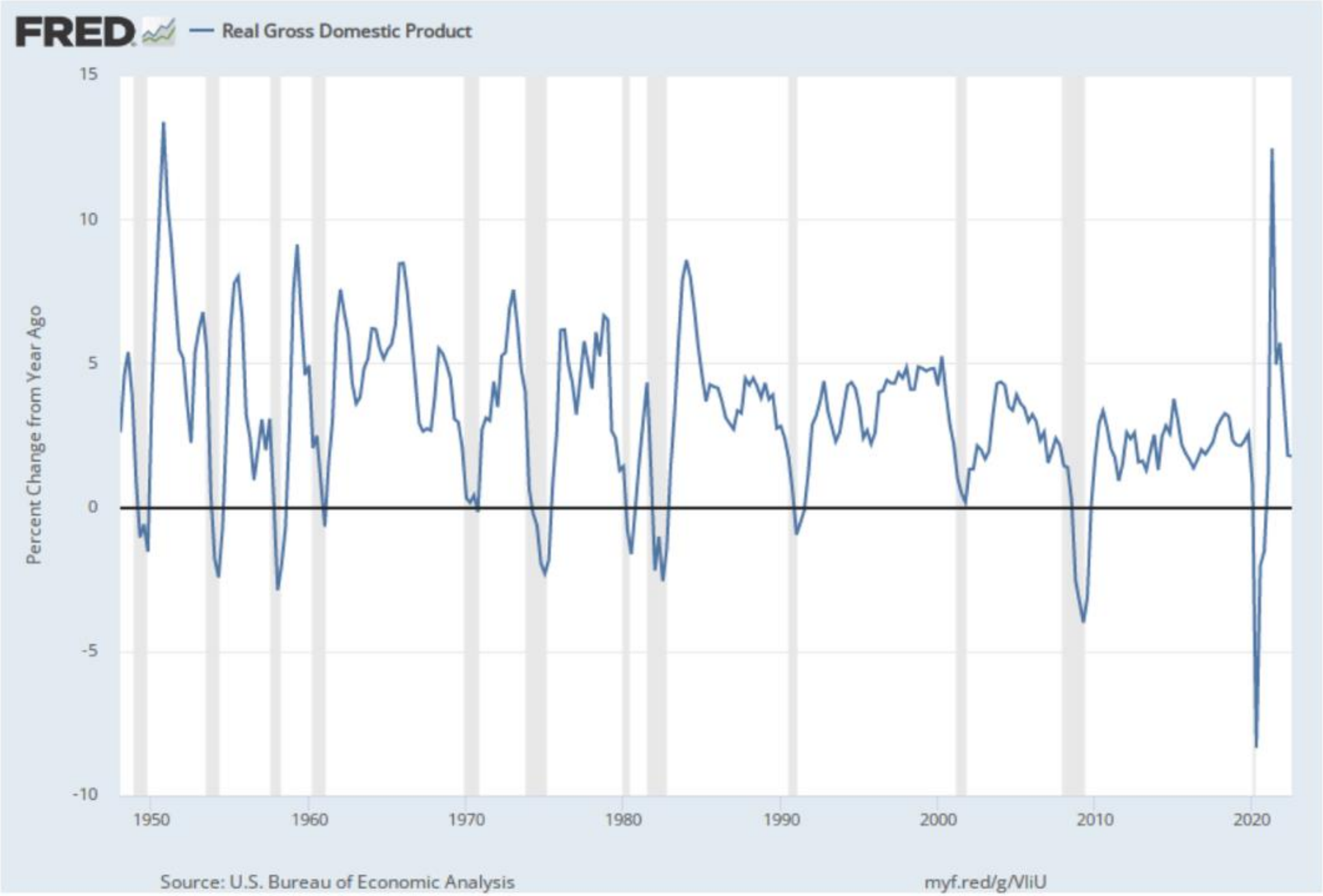
Outline

- Background
    - The Covid recession and the recovery.
- What's causing inflation?
- The Fed's bet on a `soft landing'.
    - Skepticism about this bet.
- Flash points

The initial impact of the pandemic
World real GDP growth: -3.6%



Percent change in real GDP (U.S.): unprecedented post-War decline and recovery.



The U.S. policy response was unprecedented

- Stimulus bills approved by Congress beginning in 2020 unleashed the largest flood of federal money into the United States economy in recorded history.

- Roughly $5 trillion went to households, mom-and-pop shops, restaurants, airlines, hospitals, local governments, schools and other institutions around the country grappling with the blow inflicted by Covid-19.

MASSIVE FED INTERVENTION TO SUPPORT THE ECONOMY AND FINANCIAL MARKETS

- **Federal funds rate:** The Fed cut its target for the federal funds rate, to a range of 0% to 0.25%.
- **QUANTITATIVE EASING**: Massive purchases of debt securities by the Fed (Treasury and mortgage-backed securities).
- **Lending to securities firms:** Fed offered low interest rate loans up to 90 days to primary dealers.
- **Backstopping money market mutual funds:** lent to banks against collateral they purchased from prime money market funds.
- **Repo operations:** The Fed vastly expanded the scope of its repurchase agreement (repo) operations to funnel cash to money markets.

Supporting Corporations and Businesses

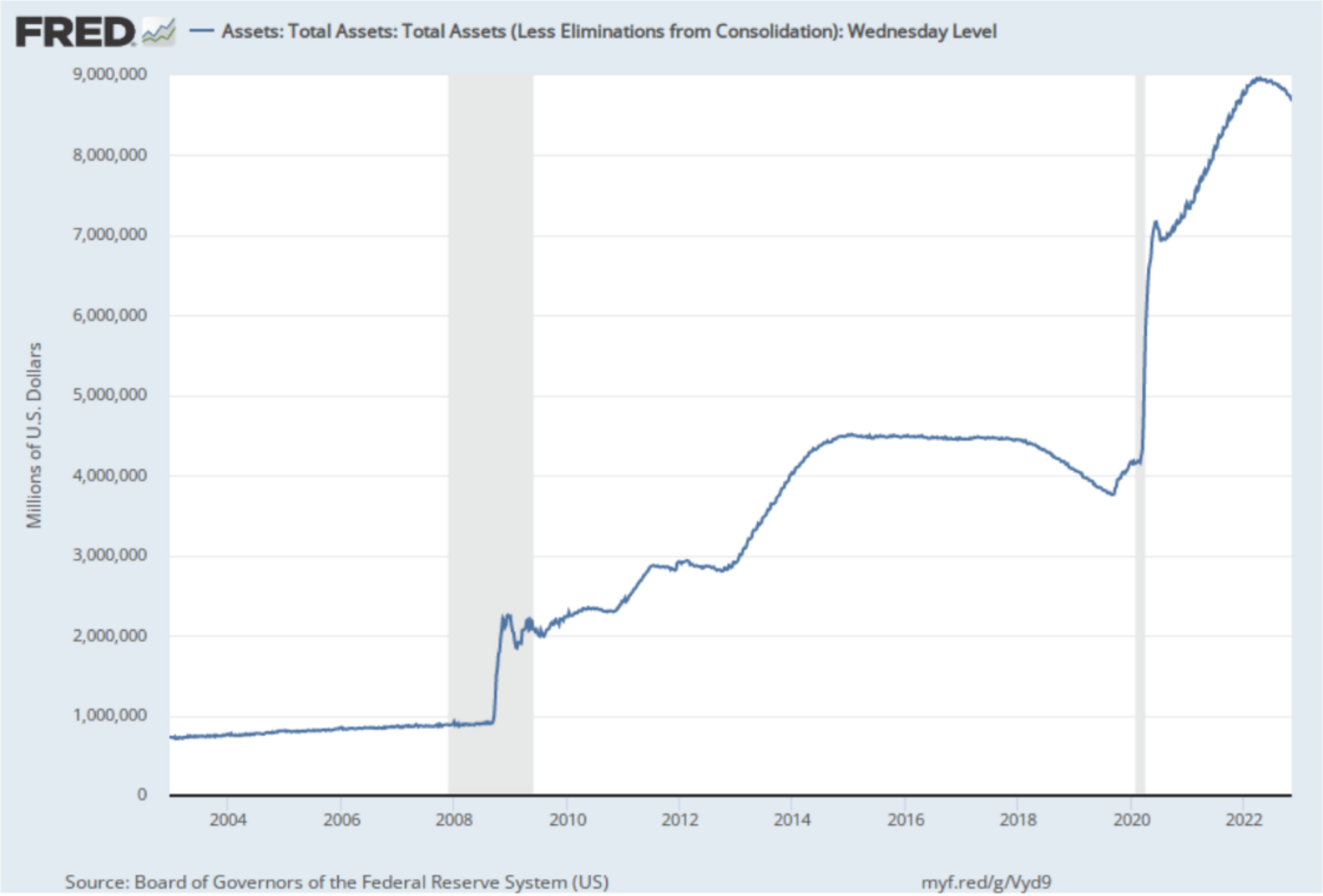
- Direct lending to major corporate employers: Buying new bond issues and providing loans.
- The Fed purchased existing corporate bonds as well as exchange-traded funds investing in investment-grade corporate bonds.
- The Fed bought commercial paper, essentially lending directly to corporations for up to three months.
- Loans to small- and mid-sized businesses.

Supporting Households and Consumers

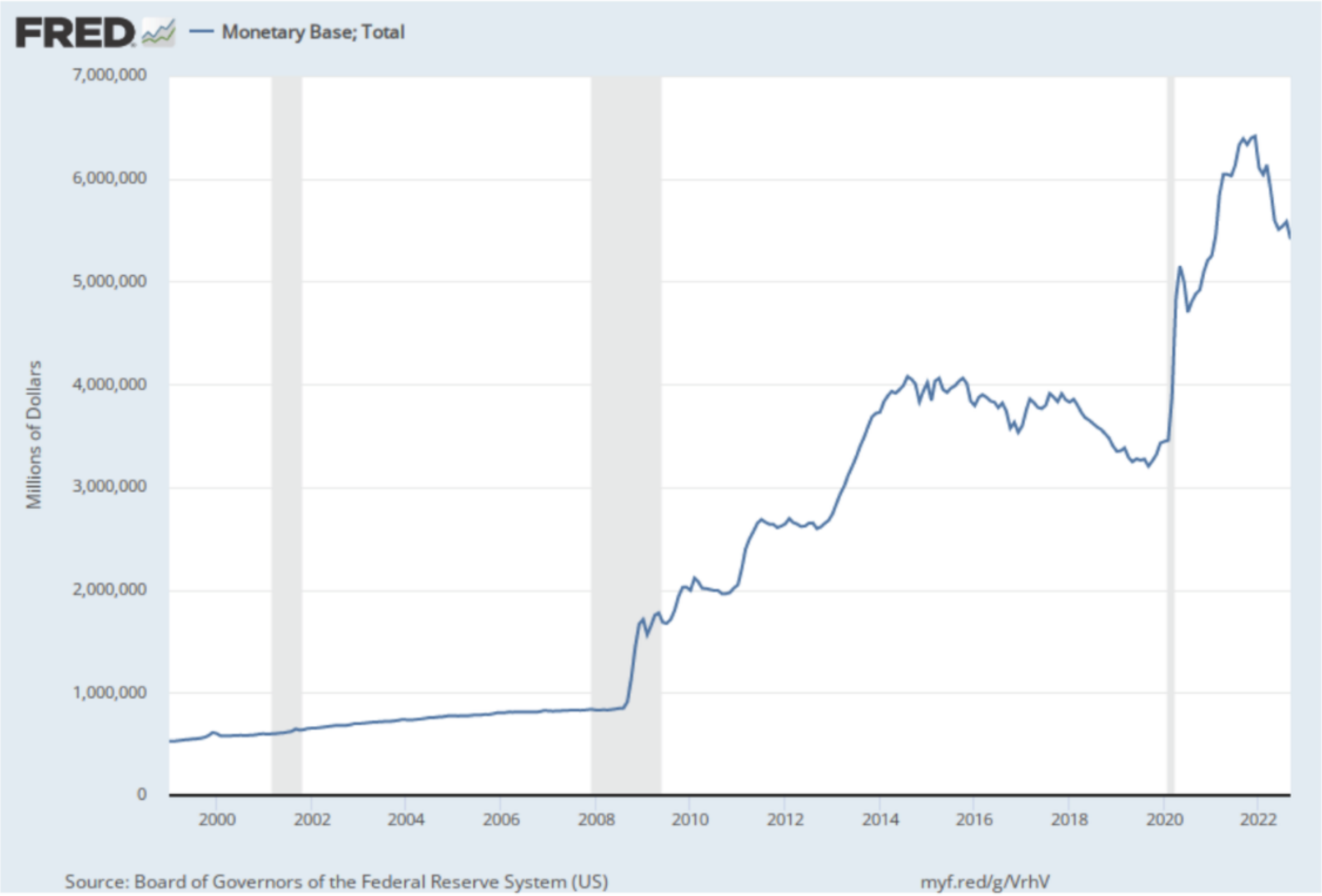
- The Fed supported households, consumers, and small businesses by lending to holders of asset-backed securities collateralized by new loans.

- These loans included student loans, auto loans, credit card loans, and loans guaranteed by the SBA, existing commercial mortgage-backed securities and newly issued collateralized loan obligations of the highest quality.

The size of the Fed's balance sheet exploded to about 9 trillion (!!) dollars



How did the Fed pay for the new assets? They printed money and created bank reserves!

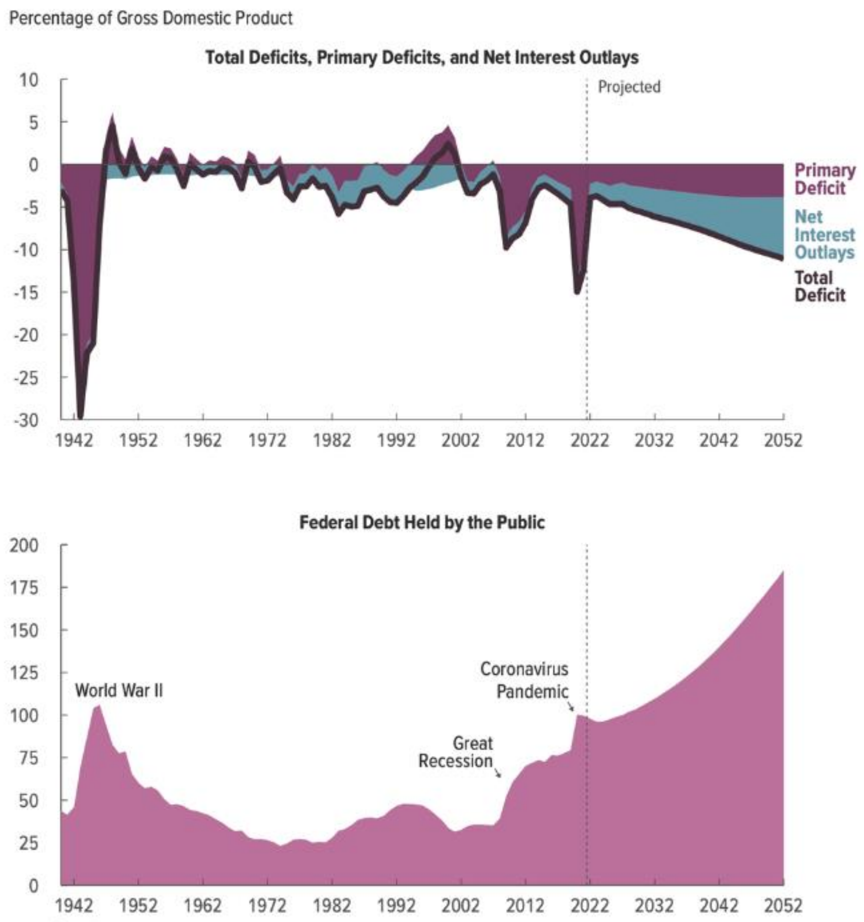


M0: currency in public circulation and commercial bank deposits held in the central bank's reserves.

THE GOVERNMENT DEFICIT

- The primary deficit (excludes interest-rate payments) of the federal government exploded rising to 15% of GDP in 2020 and 12.4% in 2021.
- A large part of this deficit was financed by the Fed's purchases of Treasury securities.
- In effect the Fed helped to pay for the deficit by creating bank reserves.

The deficit and national debt expanded dramatically

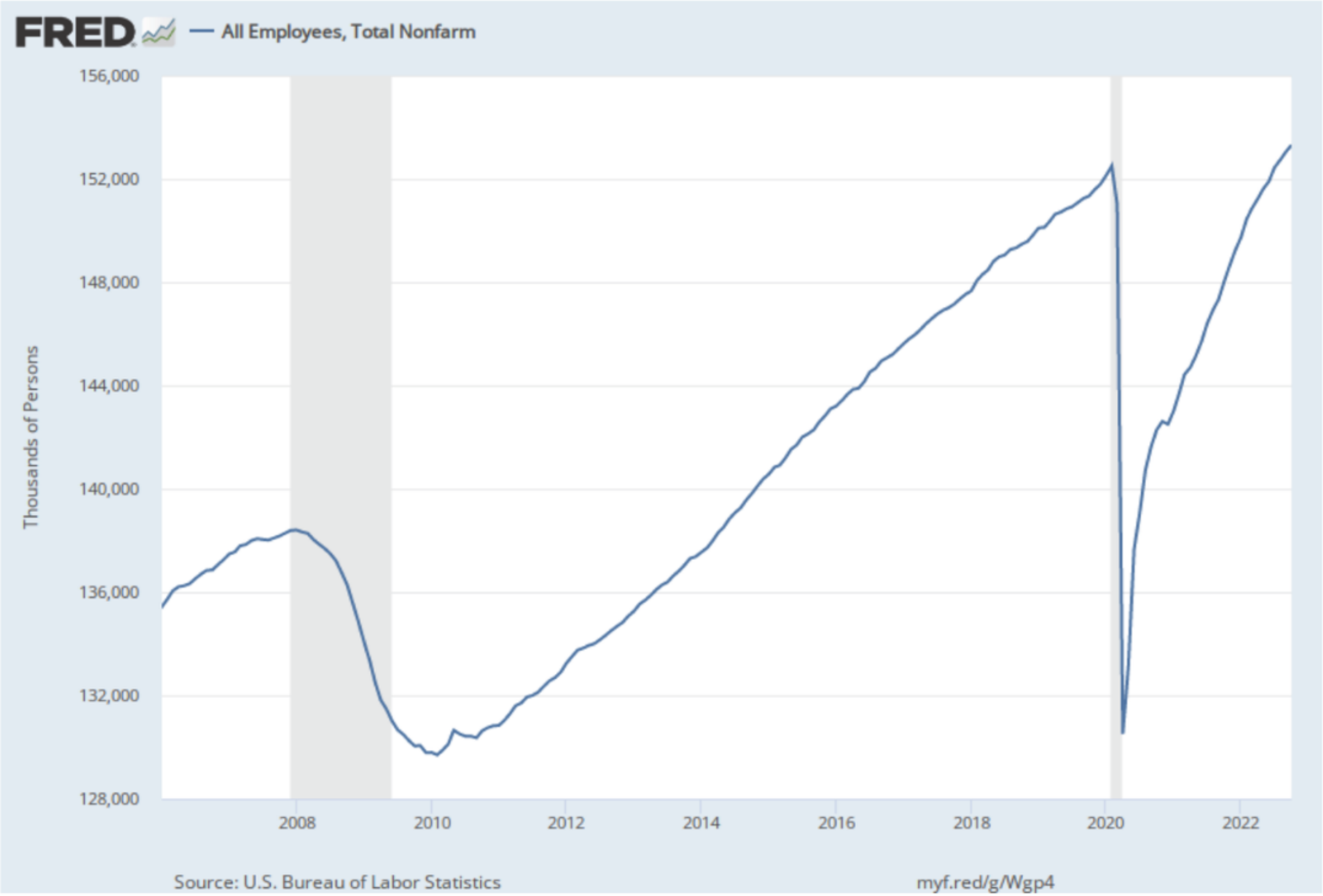


See figure 1-1 on page 6

Net interest outlays more than quadruple as a percentage of GDP over the 2022–2052 period in CBO's projections, reaching 7.2 percent of GDP in 2052. Primary deficits (which exclude net interest costs) grow in most years and reach 3.9 percent of GDP at the end of the projection period; they exceed the 50-year average of 1.5 percent of GDP throughout the period.

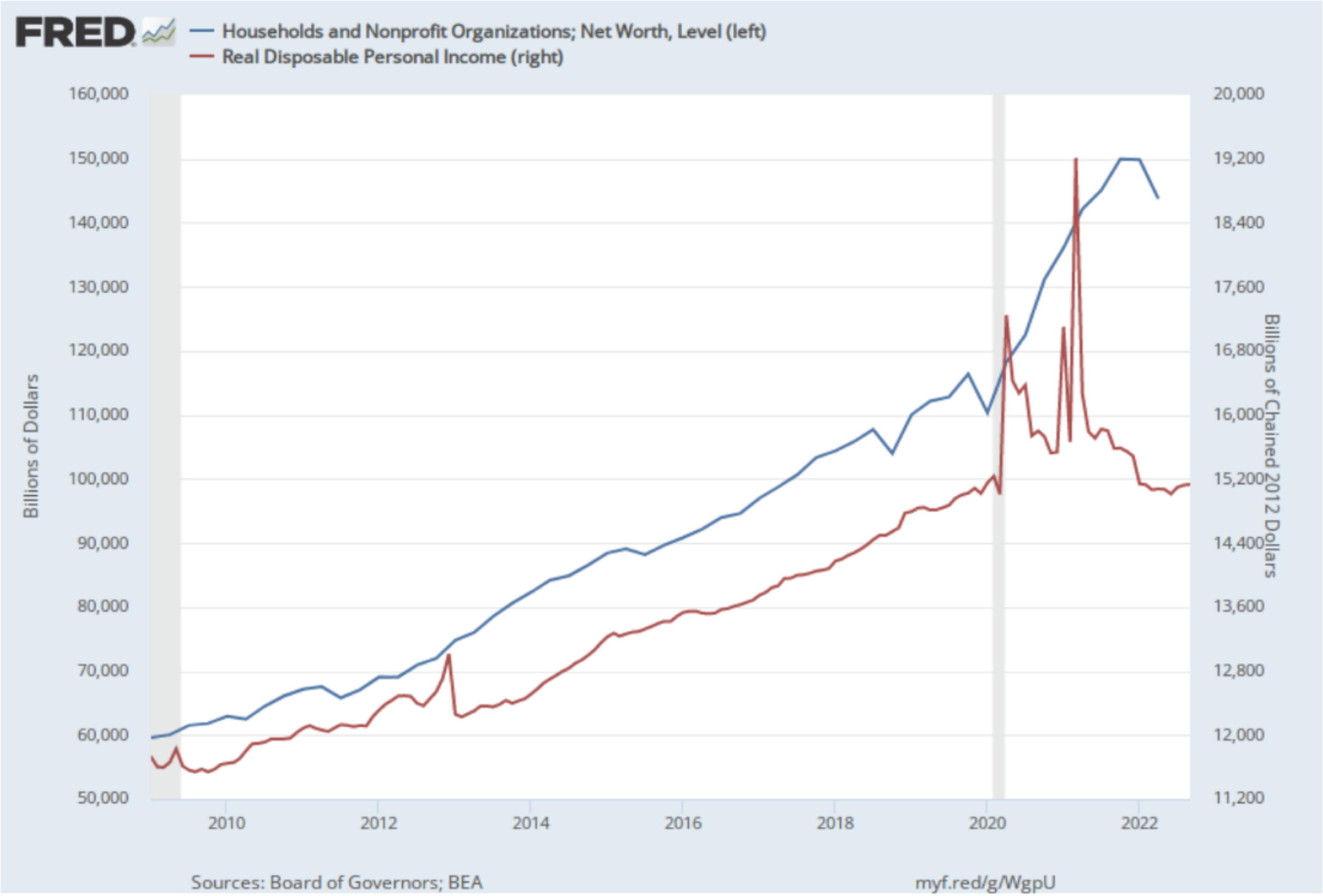
Debt is projected to rise in relation to GDP over the 30-year period, and it is on track to grow even larger after 2052.

Where are we now?
Employment is above Pre-Pandemic Levels

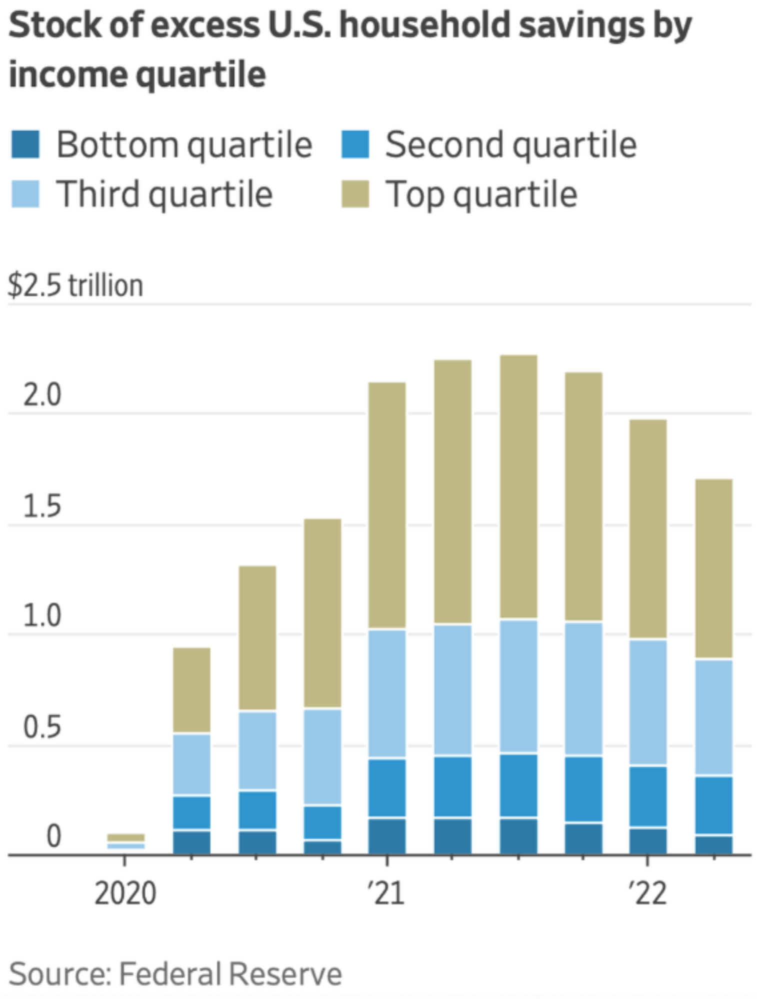


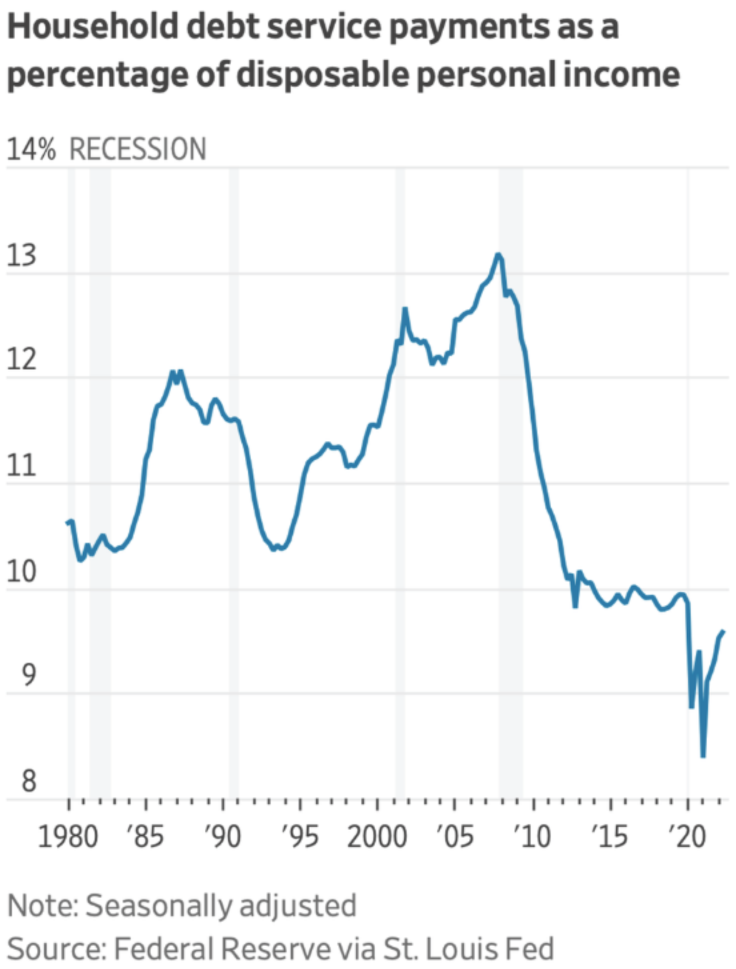
Net worth and disposable income

Big spikes due to Covid stimulus

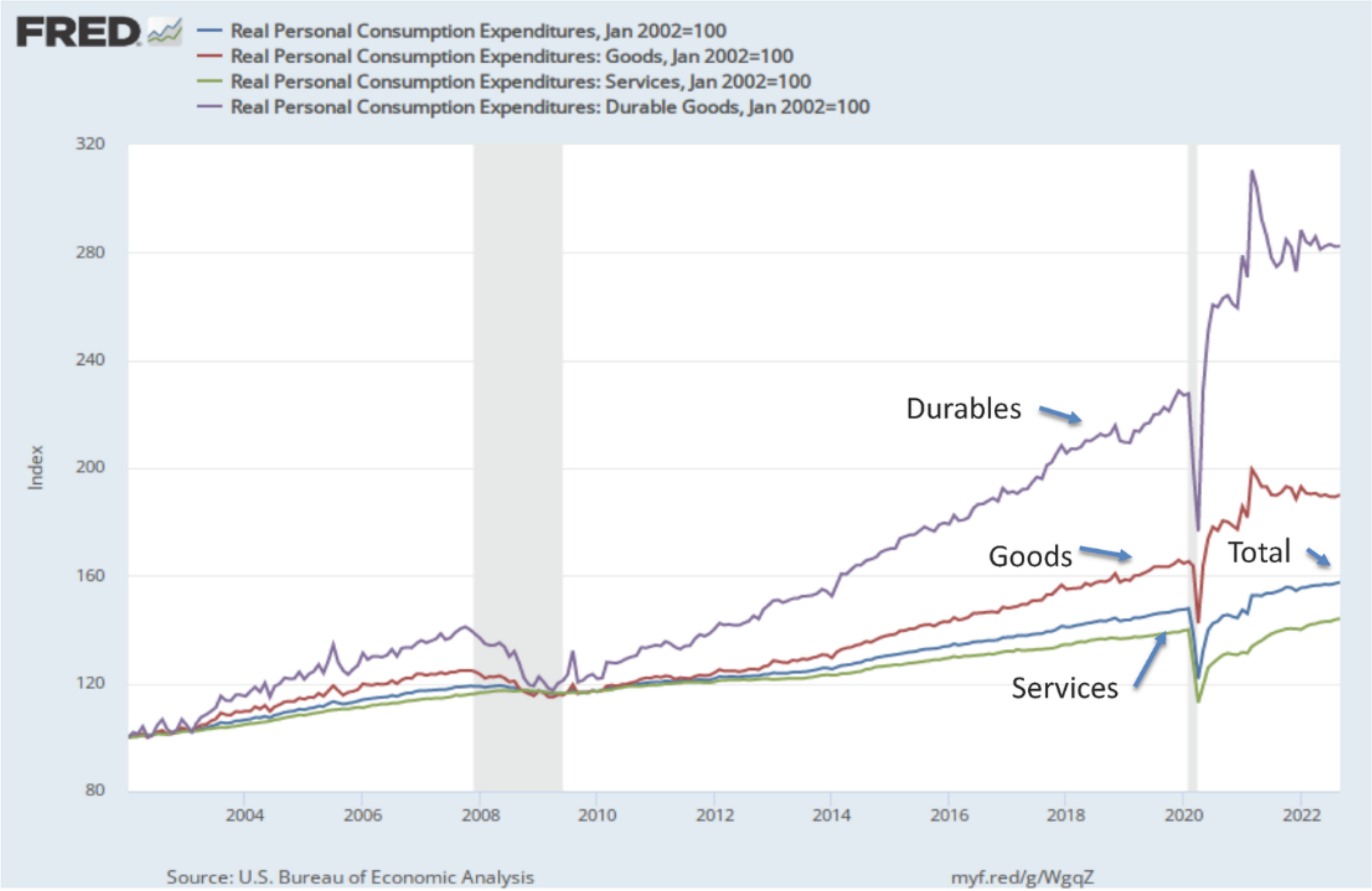


Healthy household balance sheets

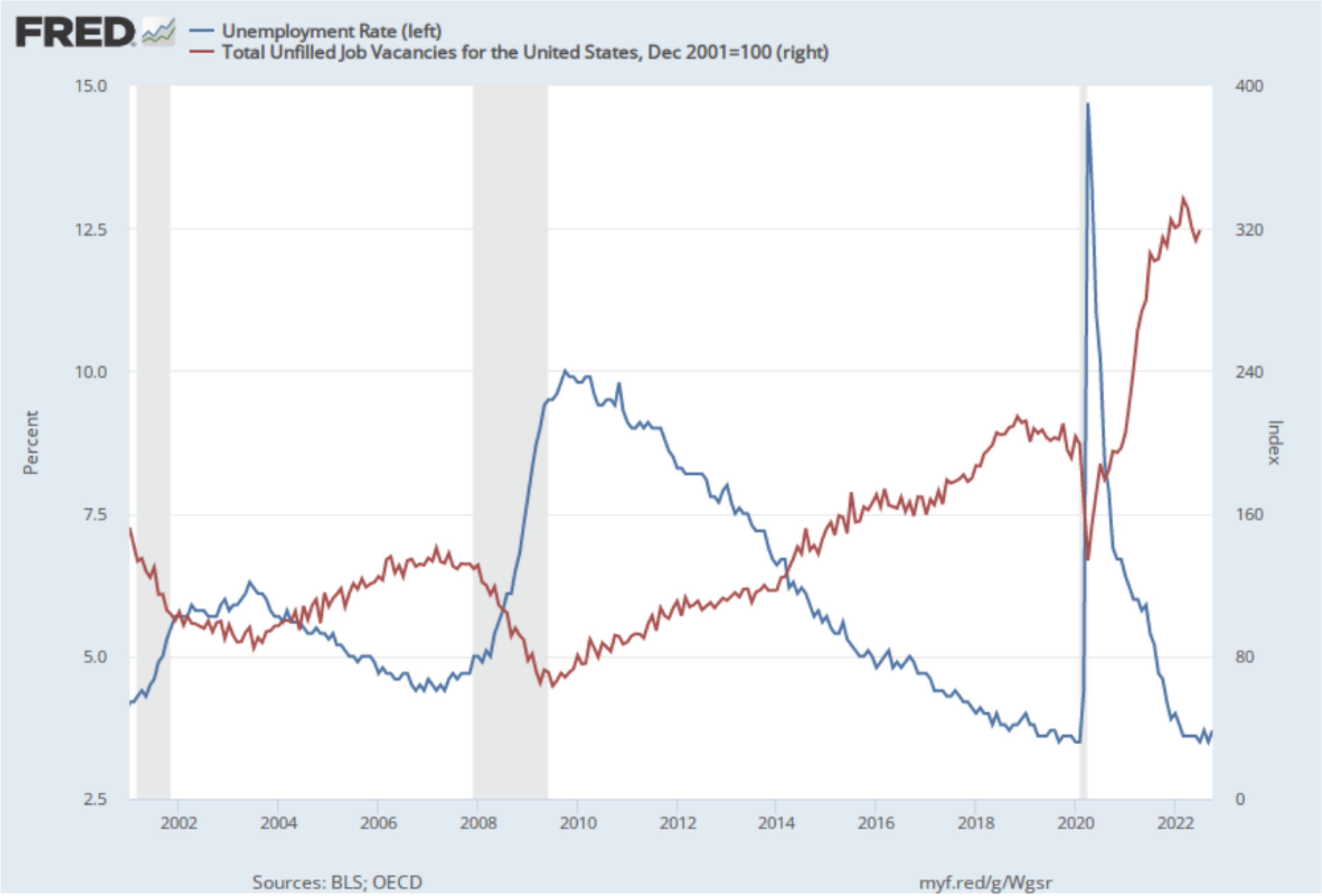




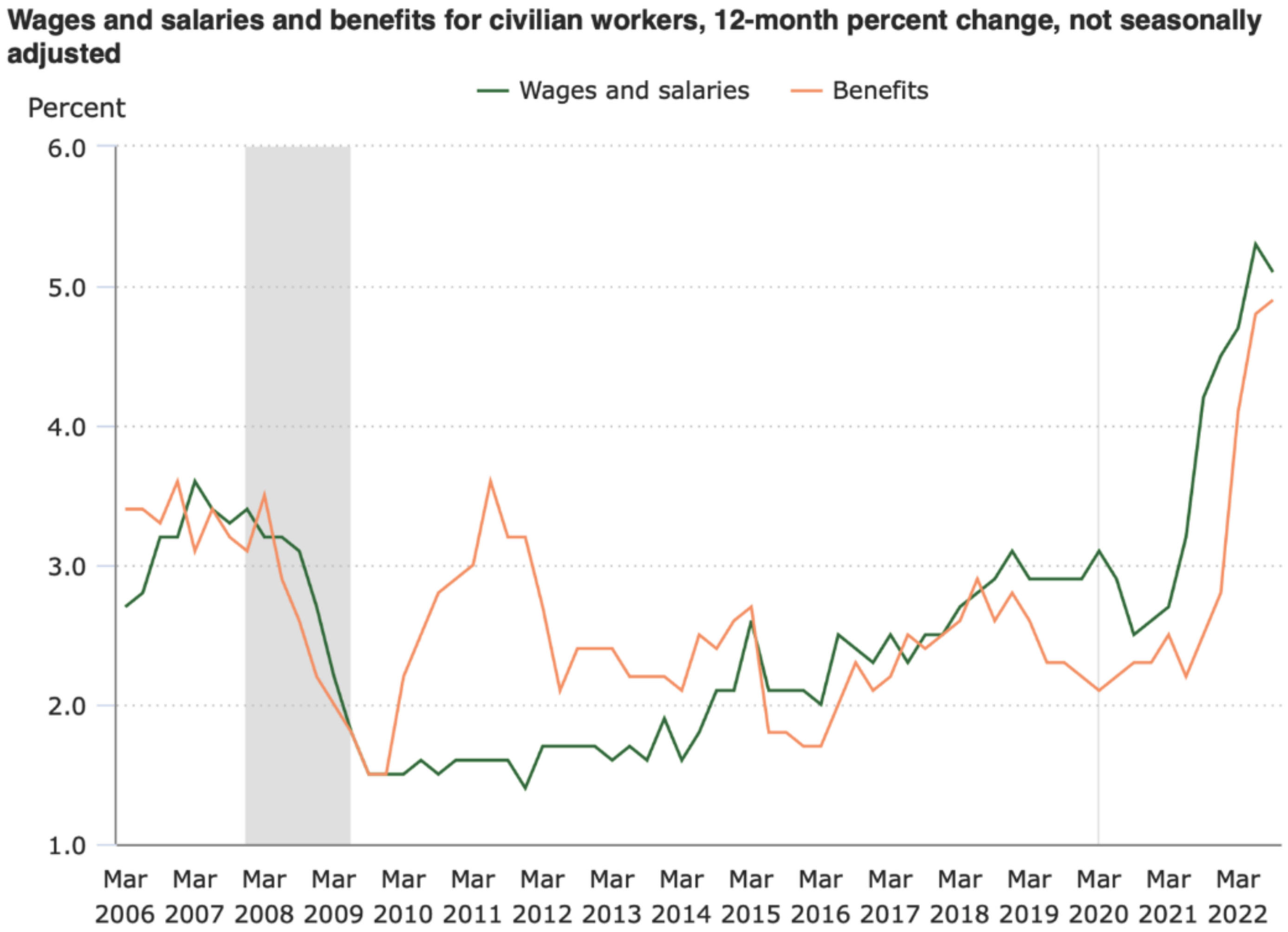
Household Spending
real consumption expenditures



Tight labor markets (but weakening a bit)



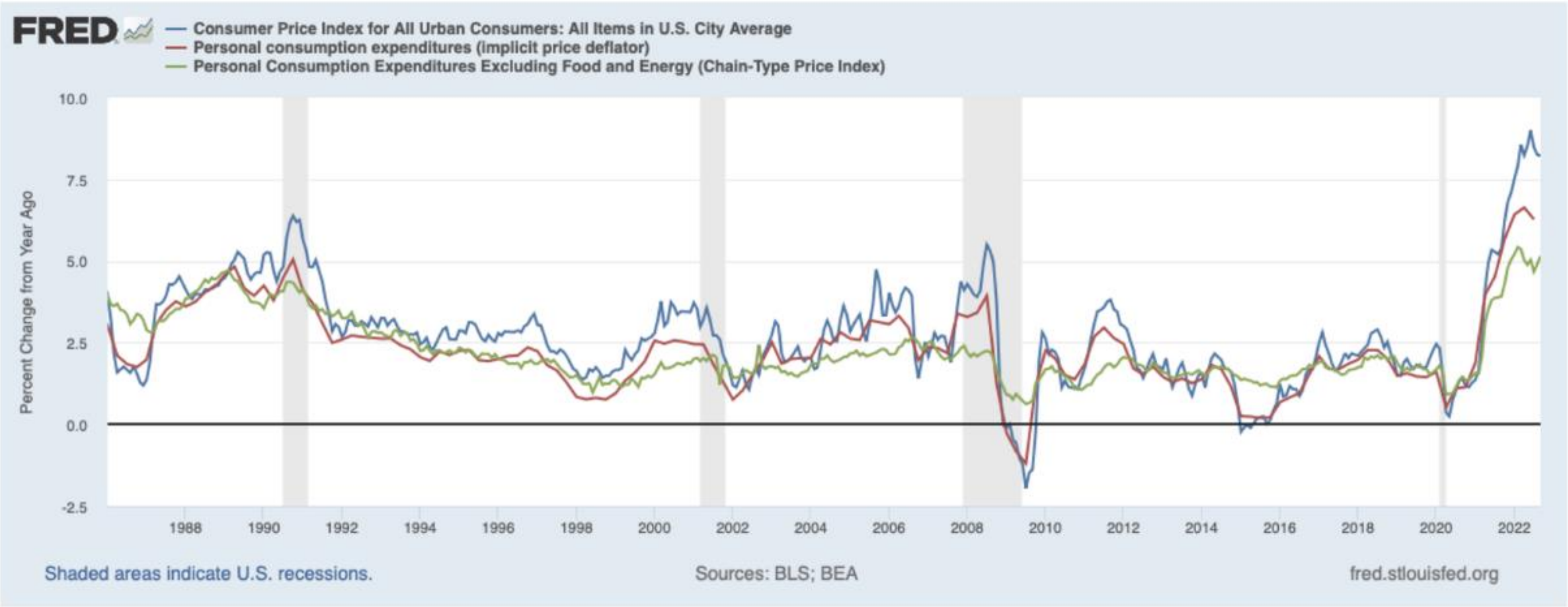
Upward pressure on wages



Hover over chart to view data.
Note: Shaded area represents recession, as determined by the National Bureau of Economic Research.
Source: U.S. Bureau of Labor Statistics.

But real wages (adjusted for inflation) are falling

Inflation: the Skunk at the Garden Party



CPI for All Urban Consumers (CPI-U) rose 0.4 percent in October on a seasonally adjusted basis, the same increase as in September. Over the last 12 months, CPI-U) increased 7.7 percent before seasonal adjustment.

CPI-U less food and energy rose 0.3 percent in October, after rising 0.6 percent in September

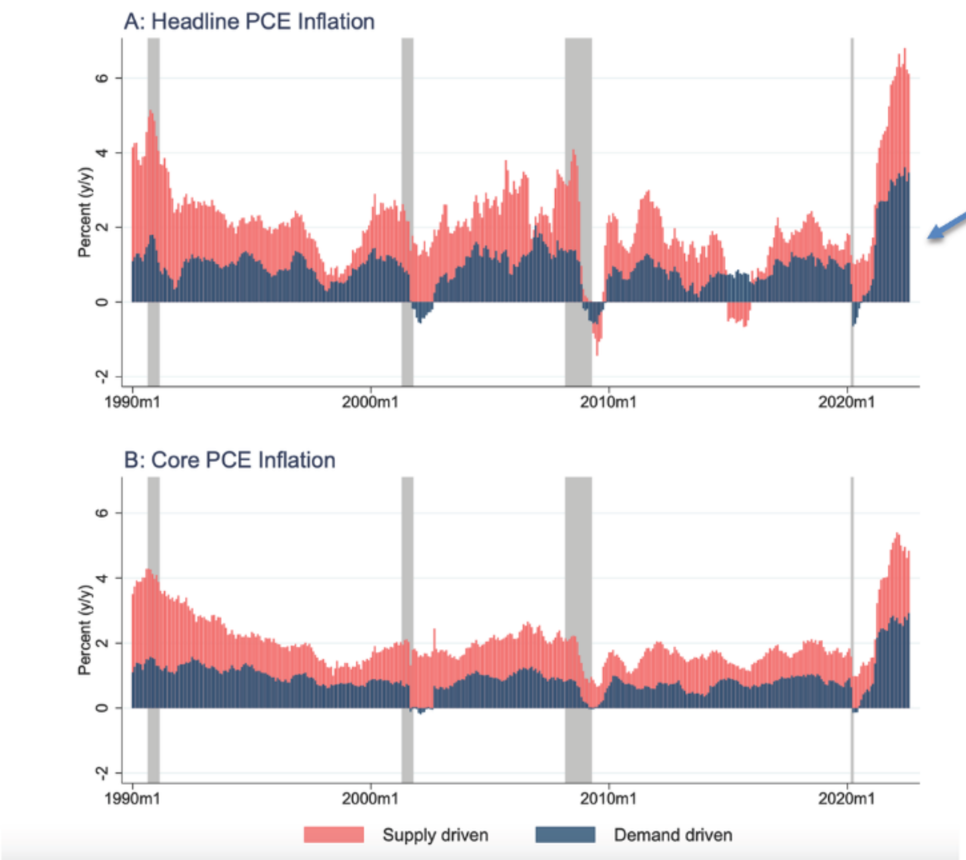
What's driving inflation?

- Team transitory (Krugman…) emphasizes transitory supply side issues:

- Team persistent (Summers): emphasizes demand pressures
  - Fiscal and monetary policy were extremely accommodative during peak Covid episodes.
  - Fed was behind the curve in raising interest rates

- Key danger: high expected inflation becomes self-fulfilling through a wage-price spiral.
  - The Fed falls further behind the curve. Eventually back to the 1970s and Paul Volcker.

Demand or Supply?



Note: rapid rise In demand-driven inflation

Panel A shows the contributions to the 12-month change in headline PCE inflation and panel B shows the contributions to the 12-month change in core PCE inflation. **Source, Decomposing Supply and Demand Driven Inflation,** Adam Hale Shapiro Federal Reserve Bank of San Francisco.

Inflation has probably peaked but still high

- On Nov. 10 2022 the Labor Department said that the CPI increased 7.7% in October from the same month a year ago, down from 8.2% in September and June's 9.1% rate, which was the highest in four decades.

- The core CPI—which excludes volatile energy and food prices—climbed 6.3% in October from a year earlier, down from 6.6% in September, which was the biggest increase since August 1982.

The Fed is committed to fighting inflation

- The Fed is letting its portfolios of securities run down (tapering)
  - Won't renew purchases of securities of Treasuries as they run off.
  - They will also sell MBSs if they don't run off fast enough: refinancing will decline as rates rise.

- The Fed is also raising the federal funds rate -
  - the short-term interest rate in the inter- bank interest rate.

- How high should the Fed raise the federal funds rate?

To understand the current debate it's critical to distinguish between real and nominal interest rates

- Nominal Interest Rate: i
  - If you invest one dollar, i is the % dollar rate of return.

- The real interest rate, r, is the return on the investment after you take inflation into account.

$$r = i - \pi.$$

- π can refer to expected inflation, π^e or actual (after the fact) inflation, π^a.

- The ex-post (after the fact) real interest rate is $i - \pi^a$.

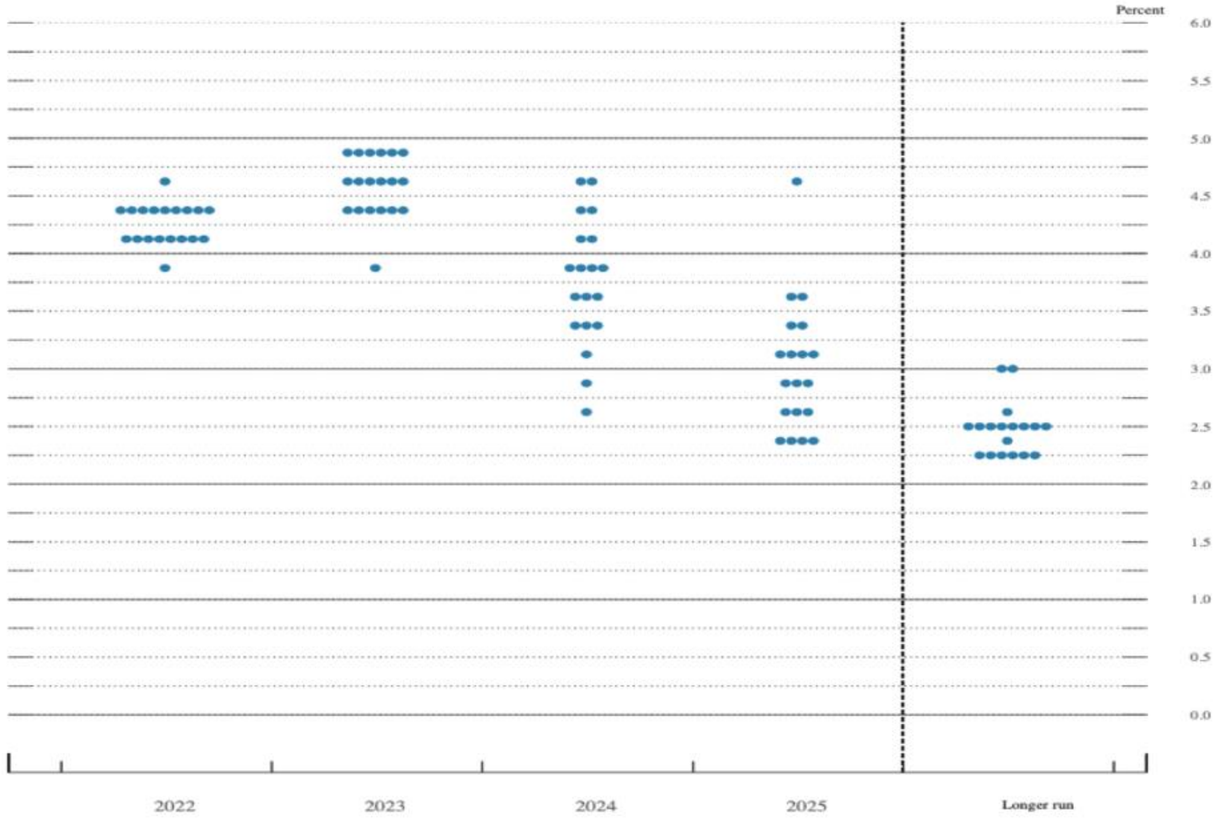
- The ex-ante real interest rate is $i - \pi^e$.

Which interest rate matters?

- To lower inflation the Fed has to slow down economic activity.
- To do that, it has to raise the expected real interest rate.
- Why?
  - Because it's the real interest rate, not the nominal interest rate, that matters for consumer and business decisions.

Where does the Fed think policy rates are going (September 20, 2022)?

Figure 2. FOMC participants' assessments of appropriate monetary policy: Midpoint of target range or target level for the federal funds rate



And they think that we will have a `soft landing',
i.e. no recession or a very minor one.

Figure 1. Medians, central tendencies, and ranges of economic projections, 2022–25 and over the longer run

Fed projections as of Sept 2022 Medians, central tendencies, and ranges of economic projections, 2022-24 and over the longer run.

How high do interest rates have to go?

- If short-term interest rose to 5% and inflation stays at 7%, the real interest rate would still be negative (-2%)!!
- In that scenario, the cost of capital is negative.
- How does that slow down the economy enough to reduce inflationary pressures?
- That's why many market participants (not the majority) are betting that Federal Funds rate will exceed 6%
  - If inflation fell to around 4% we have a real rate of 2%

A real-time race

- The Fed is raising rates

- The rate of inflation is falling

- So real rates are rising.

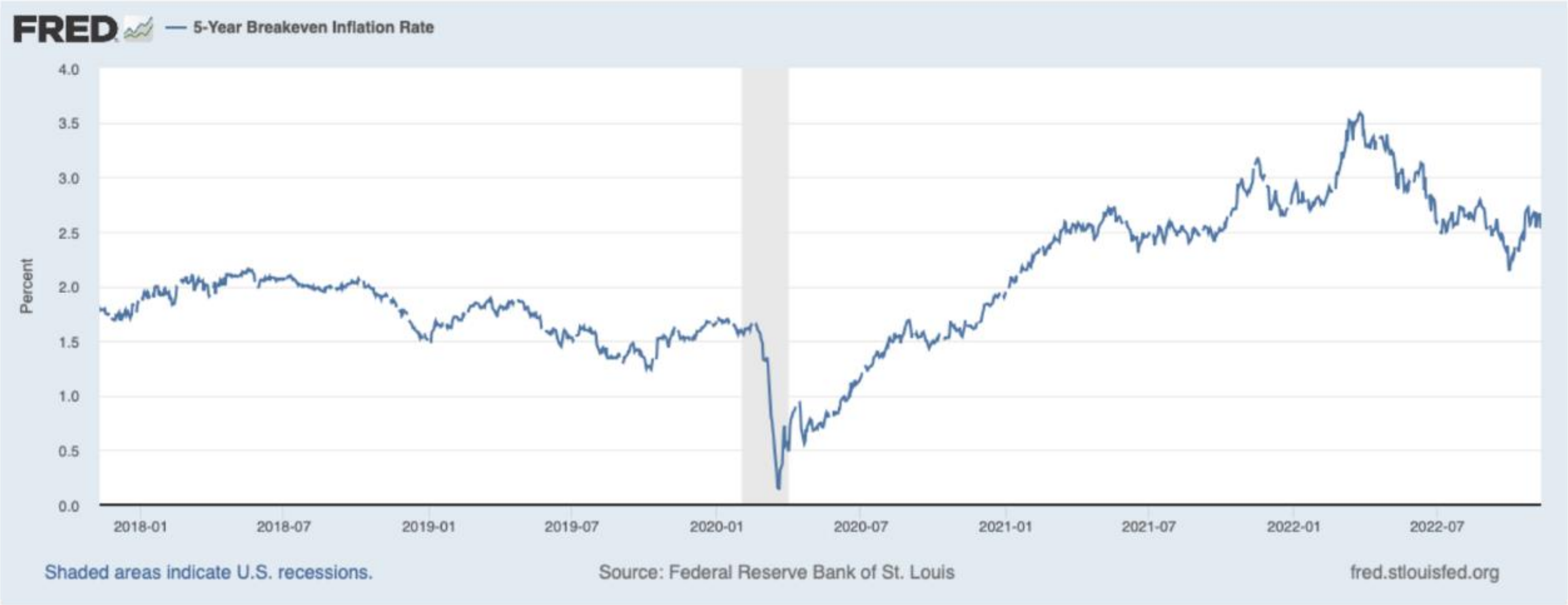
- So it's a race between the speed at which interest rates are rising and inflation is falling
  - How high will the real interest rate go till the Fed gets close enough' to its target of 2%
  - How much will the growth rate of GDP change during the race?

Does the market think the Fed will succeed in lowering the inflation rate?

- If you focus on standard measures, financial markets seem optimistic.

- Near-term inflation expectations have surged, but longer-term ones have returned to the levels seen in 2005-2008.

Inflation expectations backed out from financial markets



Break-even inflation is the difference between the nominal yield on a fixed-rate investment and the real yield on an inflation-linked investment of similar maturity and credit quality.

Caution: we need to look beyond `central tendency' measures of inflation

- Focus on measures of disagreement.

- Skewness: a measure of the asymmetry of a distribution.

- A distribution is asymmetrical when its left and right side aren't mirror images.

- A positively skewed (or right-skewed) distribution is one in which most values are clustered around the left tail of the distribution while the right tail of the distribution is longer.

Central Bankers could have spotted trouble in 2021

- Consider the distribution of one-year ahead inflation expectations in the University of Michigan Surveys of Consumers household expectations.

- In the first half of 2021, skewness started rising.
  - A rising share of households started expecting that inflation would be higher, even as the median changed little.

- Then, it was the standard deviation that rose decisively as more and more households joined the group of pessimists.

- By 2022, the shift of the distribution to the right was such that the median was rising quickly as well.

Evolving expectations

- Three stage movement in distribution of expectations isn't unique to 2021–22.
- End of 1960s - similar phenomenon before inflation of 1970's
- Between 1980 and 1985, as inflation sharply came down, again it was first skewness, then standard deviation, and finally the median that moved as the distribution shifted to its new anchor.
- Common feature of these three episodes: surveys of professionals lagged those of households, and turned out to be the more sluggish and less informative source of data.

The danger of unanchored expectations

- Once central banks allowed inflation to rise, those realizations themselves fed into households anticipating higher expected future inflation.

- A temporary inflation shock becomes persistent if the expectations anchor moves with it (wage-price spirals).

- Similar cause for concern if we look at options-based data on how much market participants are willing to pay to insure themselves against an “inflation disaster,” a scenario where inflation is persistently higher.
  - See Reis (2022)

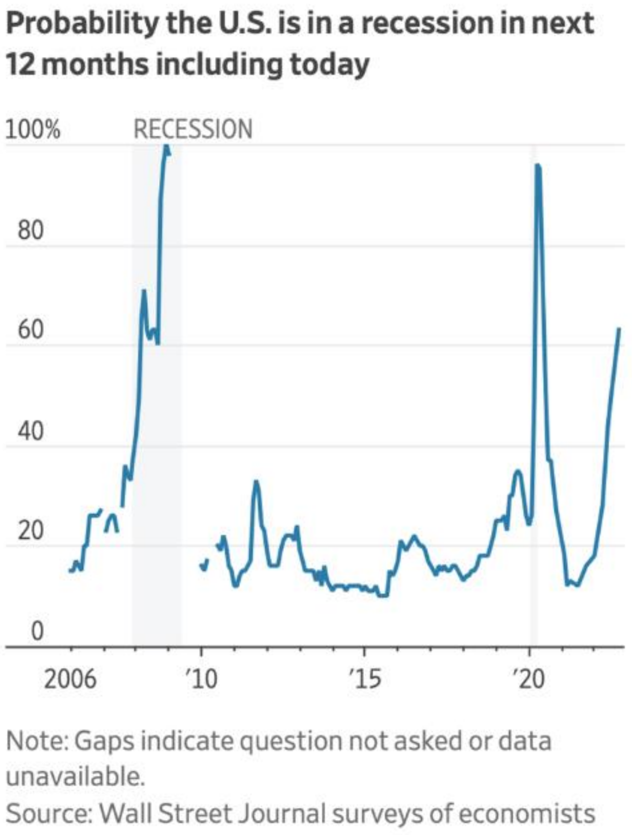
So how can we make sense of the Fed's optimism?

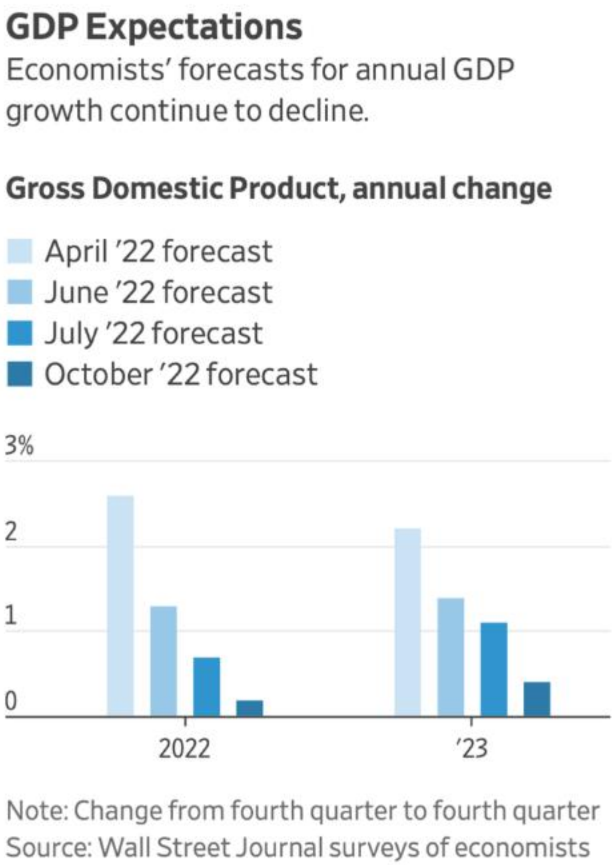
- The Fed thinks that actual and expected inflation will come down despite relatively modest rate hikes.
- According to their estimates, about 50% of the current surge in inflation is due to transitory supply shocks
  - Supply chain issues, shocks to food prices (Ukraine), energy costs.
  - Recent data is inconsistent with this scenario
- But if they are right, the math could work out and we get a soft landing.
- If they are wrong, rates will have to go higher and we'll have a hard landing, i.e. a sizeable recession.

Forecasts (Oct 2022)

- IMF projects U.S. real GDP growth in 2022 and 2023: 1.6% and 1.0%
- Consistent with increasing pessimism of private sector forecasts
- NABE Survey Panel
  - More than five out of 10 panelists indicate that the U.S. economy has a more-than-even likelihood of entering a recession in the next 12 months. Eleven percent believe the U.S. economy is already in a recession.
- On November 13, the IMF cut its global growth forecast for 2023 to 2.7% from a previous forecast of 2.9%.

Forecasts (Oct 2022)





Flash Point : liquidity

- There's substantial uncertainty about how liquidity conditions will evolve as quantitative tightening continues.

- Significant shifts in market structure that have occurred since the global financial crisis may play a role in the provision of market liquidity.

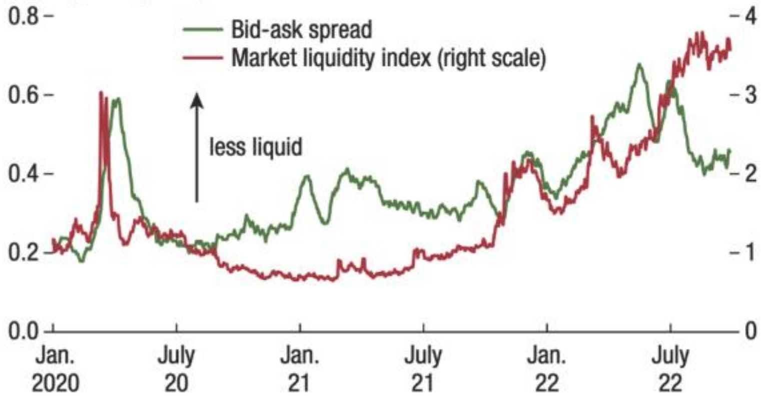
- Regulatory reforms have led banks to reduce the capital allocated to the balance-sheet-intensive business of market making.

- As a result, liquidity seems to disappear at times, particularly during volatile market conditions

Flash Points: liquidity Treasury markets

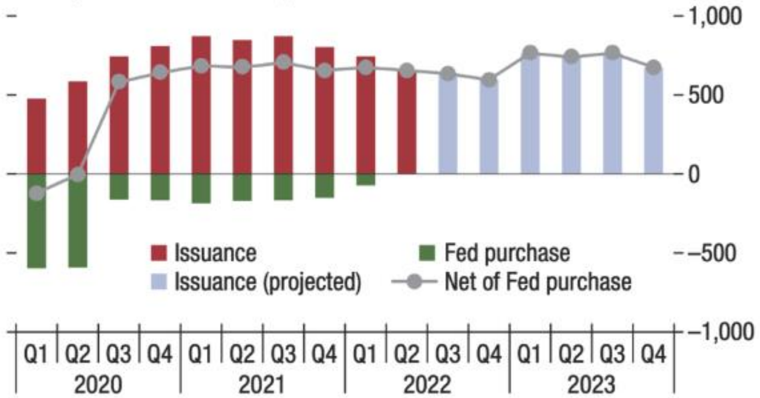
The US Treasury bid-ask spread is elevated and market liquidity conditions have worsened.

1. US Treasury Bid-Ask Spread and Market Liquidity Index (Basis points)



Markets need to keep absorbing sizable Treasury issuances as central banks reduce their purchases.

2. US Treasury Supply: Ten-Year-Equivalent Amount (Billions of US dollars)



Bid-ask spreads have widened significantly, market depth has declined sharply, and liquidity premiums have increased.

As central banks continue to tighten aggressively and remove liquidity (including by shrinking their balance sheets) and with market volatility rising across asset classes amid heightened uncertainty about the economic and policy outlook, investors have pulled back from risk taking in recent weeks.

The Debt Limit

- The federal debt ceiling was raised in December of 2021 by $2.5 trillion to $31.381 trillion, which is expected to last until the early part of July 2023.
- If the new Congress doesn't agree to raise the ceiling, there will be turmoil in financial markets, exacerbated by liquidity issues.
- A perceived threat of a default on US government obligations will have serious negative economic implications, as yields on US gov't debt dramatically rise.
- An actual default would roil global financial markets and create chaos.
- A Moody's Analytics report released in September 2021 estimated that a default could have similar macro consequences to the Great Recession: a 4 percent Gross Domestic Product (GDP) decline, nearly 6 million lost jobs, and an unemployment rate of 9 percent. In addition, Moody's predicted a $15 trillion loss in household wealth, with stocks dropping by as much as one-third at the depths of a selloff.

Conclusion

- The Fed thinks we're headed for a soft landing with nominal interest rates peaking under 5%.
- This scenario strikes me as implausible.
- My bet: interest rates will have to go higher and growth will be smaller than the Fed is currently projecting.
- The ongoing downgrades in private/public sector forecasts are consistent with this view.
- Buckle up for battles over national-debt ceiling.

Q&A

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THANK YOU FOR JOINING

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