

Wilshire

Wilshire Quarterly Market Update

First Quarter 2023

Today's Agenda

- How the bank liquidity turmoil impacts our 2023 outlook
- Has the Fed gone too far, too fast in its fight against inflation?
- Are the stock and bond markets telling a different story about the odds of a recession?
- How investors can revisit asset allocation strategies to meet today's elevated levels of uncertainty

Wilshire Advisors

Since 1972, Wilshire has been dedicated to improving investment outcomes for institutional investors and financial intermediaries worldwide.

- Institutional advisory and OCIO
- Discretionary and advisory solutions for financial intermediaries
- Full spectrum across traditional and alternative solutions
- Multi-asset analytics

500⁺
clients

\$83 Billion
in assets under management¹

\$1.3 Trillion
in assets under advisement¹

¹ As of 12/31/2022. Assets under advisement includes assets under management.

Wilshire

Wilshire Monday Market Flash

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For timely market insight, listen to our **weekly 10-minute market update** brought to you by Josh Emanuel, Chief Investment Officer for Wilshire.

Visit [wilshire.com](https://www.wilshire.com) to access the four most recent Wilshire Monday Market Flash updates.

Wilshire

The Week Ahead: 9/27/2021 – 10/1/2021

Economic Data Releases:

- Monday: Durable Goods
- Tuesday: Wholesale Inventories
- Wednesday: Pending Home Sales
- Friday: Personal Income & Spending, PCE Deflator

Wilshire

Market Performance as of 9/24/2021

U.S. Equity	WTD	MTD	YTD	1M	3M	6M	12M	5Y	International Equity (USD)	WTD	MTD	YTD	1M	3M	6M	12M	5Y
S&P 500	0.52	1.45	5.58	2.25	4.25	1.25	1.25	1.25	EMEA	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
NASDAQ	0.52	1.45	5.58	2.25	4.25	1.25	1.25	1.25	EMEA	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
U.S. Bonds	0.52	1.45	5.58	2.25	4.25	1.25	1.25	1.25	EMEA	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Commodities	0.52	1.45	5.58	2.25	4.25	1.25	1.25	1.25	EMEA	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Real Estate	0.52	1.45	5.58	2.25	4.25	1.25	1.25	1.25	EMEA	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25



Presenters



Josh Emanuel, CFA

Chief Investment Officer

20+ years of industry experience

As CIO, leads Wilshire's investment activities, including:

- investment strategy
- manager research
- quantitative alpha research
- portfolio management



Steve Foresti

Senior Advisor, Investments

30+ years of industry experience

Guides and supports Wilshire's investment and research efforts, including

- strategic asset allocation research
- capital market forecasts
- thought leadership

Market Performance Summary

Global Equities as of 3/31/2023

U.S. Equity	MTD (%)	QTD (%)	YTD (%)	1Y (%)
FT Wilshire 5000 Index SM	2.77	7.29	7.29	(8.62)
Standard & Poor's 500	3.67	7.50	7.50	(7.73)
Wilshire 4500 Completion Index SM	(2.59)	5.77	5.77	(12.95)
MSCI USA Minimum Volatility	3.37	1.30	1.30	(4.42)

Source: Bloomberg. Indexes are total return.

U.S. Equity by Size/Style	MTD (%)	QTD (%)	YTD (%)	1Y (%)
Wilshire US Large-Cap Index SM	3.48	7.64	7.64	(8.42)
Wilshire US Large-Cap Growth Index SM	6.83	15.68	15.68	(11.44)
Wilshire US Large-Cap Value Index SM	0.05	0.06	0.06	(4.79)
Wilshire US Small-Cap Index SM	(4.48)	3.55	3.55	(10.28)
Wilshire US Small-Cap Growth Index SM	(3.41)	6.35	6.35	(8.75)
Wilshire US Small-Cap Value Index SM	(5.48)	1.03	1.03	(11.70)
Wilshire US Micro-Cap Index SM	(3.31)	3.37	3.37	(15.96)

Source: Bloomberg. Indexes are total return.

Source: Morningstar

Non-U.S. Equity	MTD (%)	QTD (%)	YTD (%)	1Y (%)
MSCI ACWI	3.08	7.30	7.30	(7.44)
MSCI ACWI ex USA	2.45	6.87	6.87	(5.07)
MSCI ACWI ex USA Minimum Volatility	3.70	3.75	3.75	(7.58)
MSCI EAFE	2.48	8.47	8.47	(1.38)
MSCI Emerging Markets	3.03	3.96	3.96	(10.70)
MSCI ACWI ex USA Small Cap	0.23	4.70	4.70	(10.37)

Source: Bloomberg. Indexes are total return.

Non-U.S. Equity (local currency)	MTD (%)	QTD (%)	YTD (%)	1Y (%)
MSCI ACWI	2.45	7.02	7.02	(5.61)
MSCI ACWI ex USA	0.87	6.18	6.18	(0.14)
MSCI ACWI ex USA Minimum Volatility	2.37	3.34	3.34	(3.03)
MSCI EAFE	0.50	7.49	7.49	3.84
MSCI Emerging Markets	2.16	3.78	3.78	(6.65)
MSCI ACWI ex USA Small Cap	(1.23)	4.34	4.34	(4.19)

Source: Bloomberg. Indexes are total return.

Fixed Income Markets as of 3/31/2023

U.S. Fixed Income	MTD (%)	QTD (%)	YTD (%)	1Y (%)
Bloomberg U.S. Aggregate	2.54	2.96	2.96	(4.78)
Bloomberg Long Term Treasury	4.74	6.17	6.17	(16.00)
Bloomberg Long Term Corporate	4.32	5.45	5.45	(11.46)
Bloomberg U.S. TIPS	2.89	3.34	3.34	(6.06)
Bloomberg U.S. Credit	2.74	3.45	3.45	(5.31)
Bloomberg U.S. Corporate High Yield	1.07	3.57	3.57	(3.34)
S&P/LSTA Leveraged Loan	(0.03)	3.25	3.25	2.54

Source: Bloomberg. Indexes are total return.

Market Rates	Mar 31	Dec 31	Sept 30	June 30
10-Year Treasury	3.47	3.88	3.83	3.02
10-Year Breakeven Inflation	2.32	2.30	2.15	2.34

Source: Bloomberg. Indexes are total return.

Global Fixed Income	MTD (%)	QTD (%)	YTD (%)	1Y (%)
Bloomberg Global Aggregate	3.16	3.01	3.01	(8.07)
Bloomberg Global Aggregate (Hdg)	2.22	2.90	2.90	(3.86)
Bloomberg EM LC Gov't Universal	2.57	2.81	2.81	(4.04)
Bloomberg EM LC Gov't Universal (Hdg)	1.27	1.98	1.98	2.37

Source: Bloomberg. Indexes are total return.

Real Assets	MTD (%)	QTD (%)	YTD (%)	1Y (%)
Wilshire US Real Estate Securities Index SM	(2.55)	3.44	3.44	(21.20)
Wilshire Global Real Estate Securities Index SM	(2.83)	2.35	2.35	(20.78)
FTSE Global Core Infrastructure 50/50	3.03	0.74	0.74	(7.06)
Alerian Midstream Energy	(0.11)	0.77	0.77	(1.19)
Bloomberg Commodity	(0.21)	(5.36)	(5.36)	(12.49)
Gold	7.79	7.96	7.96	1.64
Bitcoin	22.67	71.27	71.27	(37.96)

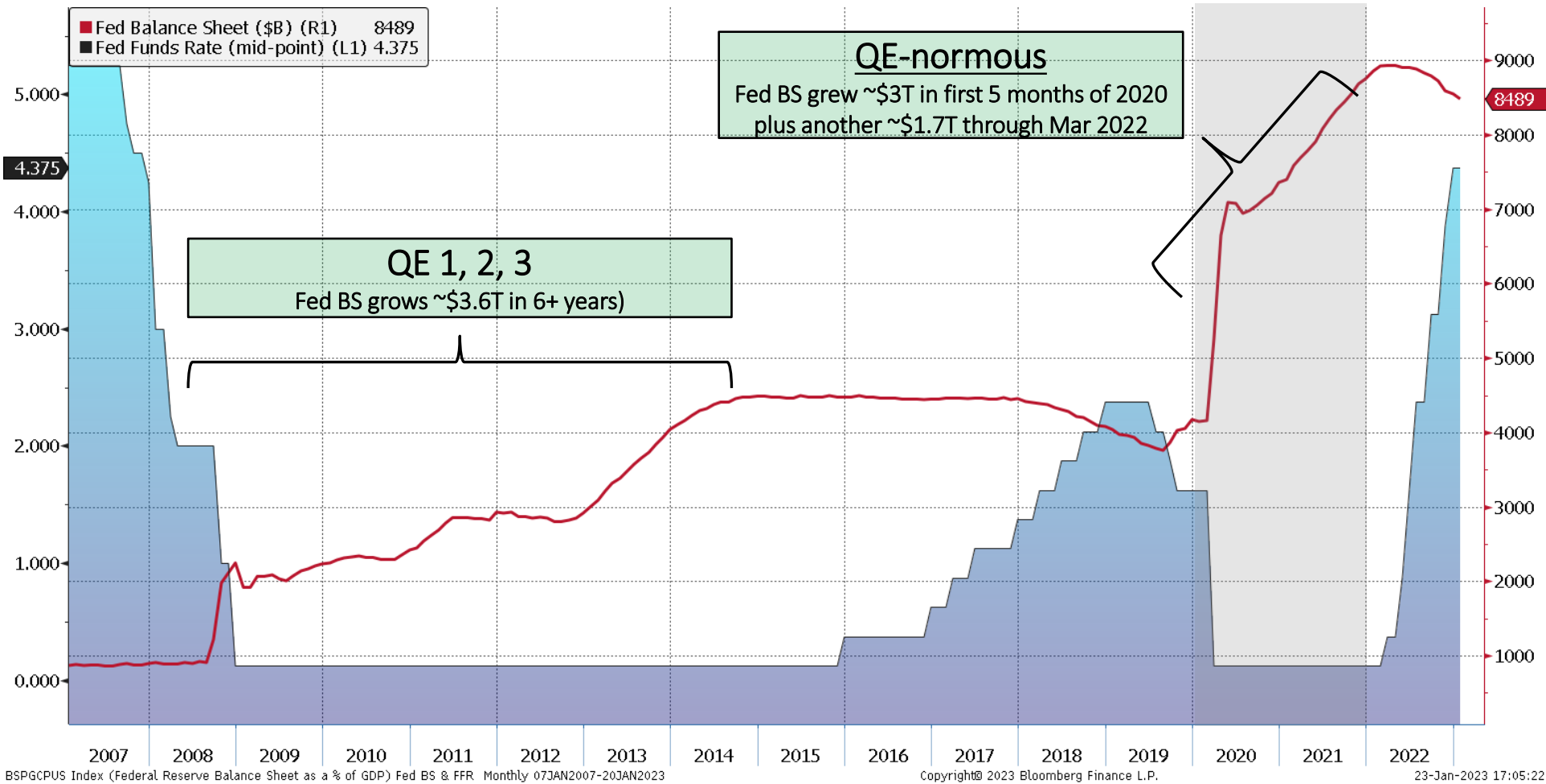
Source: Bloomberg. Indexes are total return.

Alternatives	MTD (%)	QTD (%)	YTD (%)	1Y (%)
Wilshire Liquid Alternative Index SM	0.10	1.20	1.20	(2.68)
Wilshire Liquid Alternative Equity Hedge Index SM	0.98	2.45	2.45	(1.70)
Wilshire Liquid Alternative Event Driven Index SM	(0.44)	0.42	0.42	(1.83)
Wilshire Liquid Alternative Global Macro Index SM	(3.72)	(2.62)	(2.62)	(0.18)
Wilshire Liquid Alternative Multi-Strategy Index SM	(0.43)	1.14	1.14	(3.41)
Wilshire Liquid Alternative Relative Value Index SM	0.80	1.53	1.53	(3.63)

Source: Bloomberg. Indexes are total return.

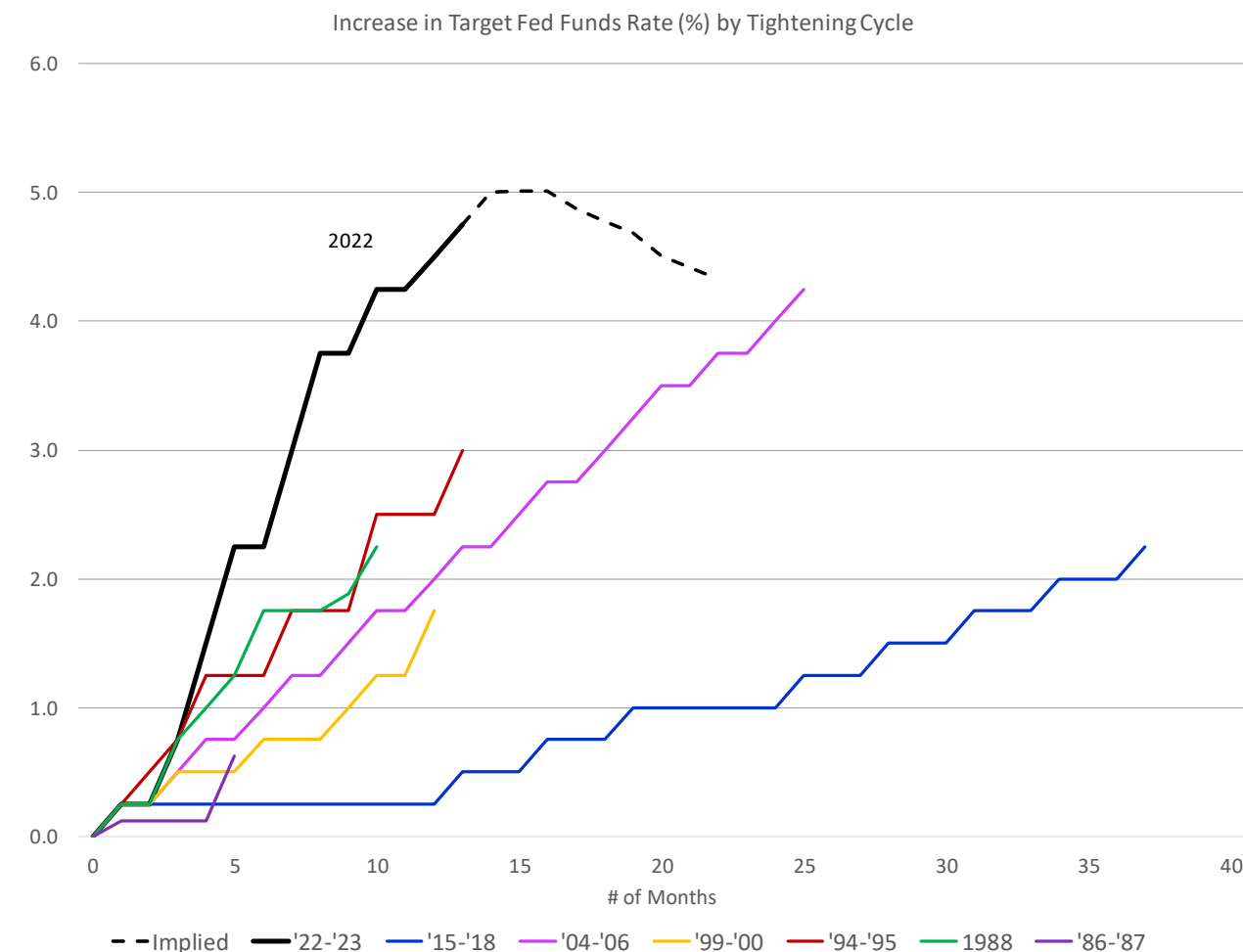
Update on the Fed's Tightening Cycle

The Fed: Zero Rates & QE to \$8T and Beyond...



Data Source: Bloomberg

The Shift to Tightening: Most Aggressive in Modern Era: Will “Bring Some Pain”



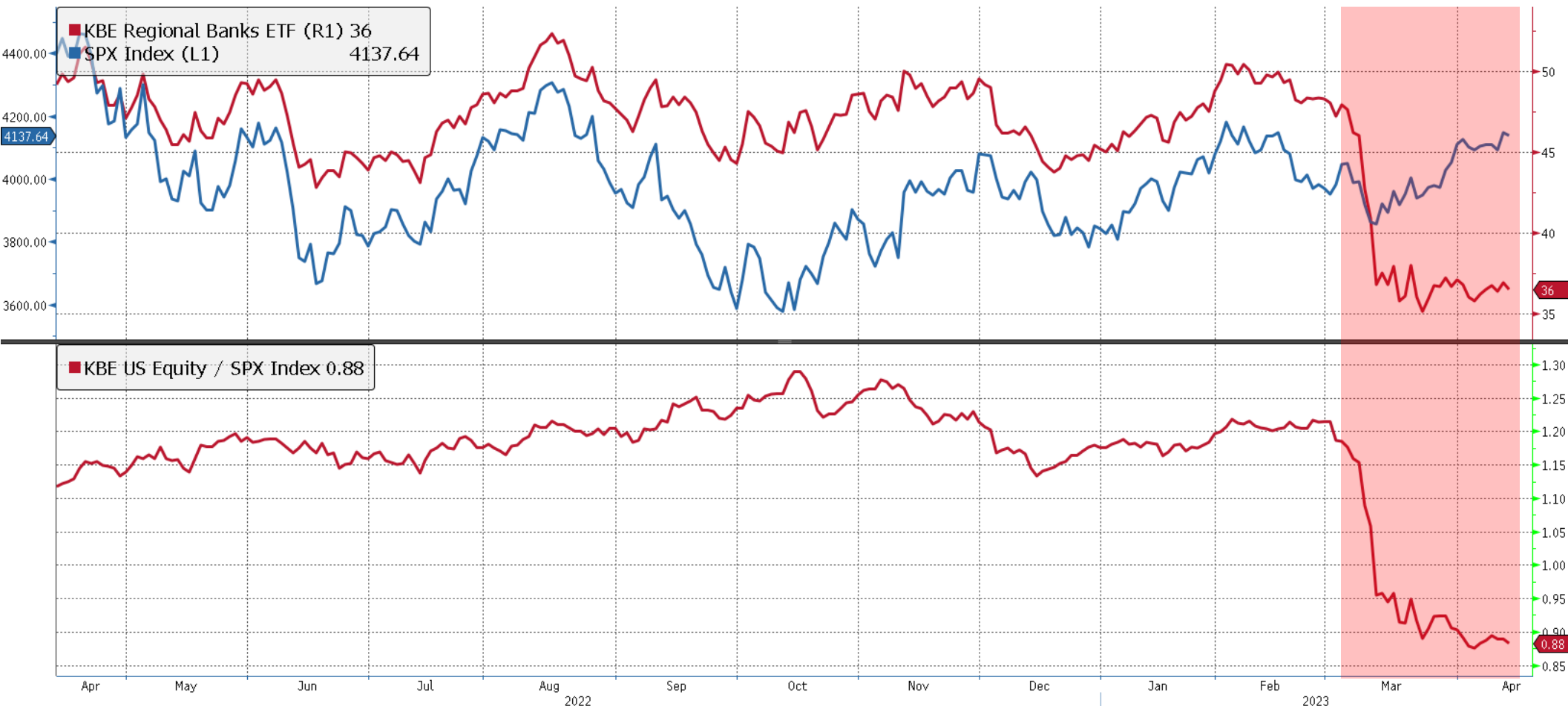
Data Source: Bloomberg

“While *higher interest rates, slower growth, and softer labor market conditions* will bring down inflation, *they will also bring some pain* to households and businesses. *These are the unfortunate costs of reducing inflation.* But a failure to restore price stability would mean far greater pain.”



Jerome Powell
August 2022,
Jackson Hole

Regional Banks Under Stress



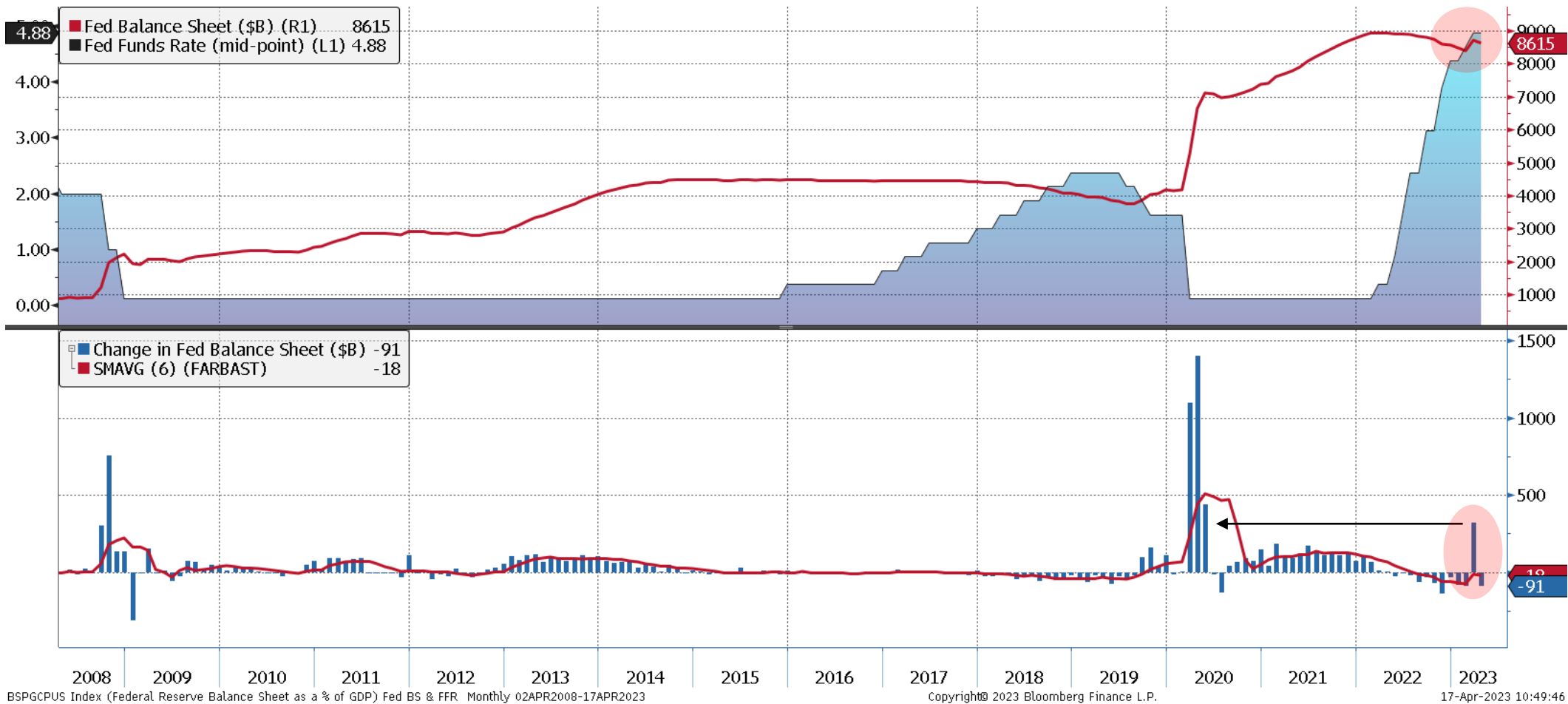
KBE US Equity (SPDR S&P Bank ETF) Banks v SPX Daily 12APR2022-14APR2023

Data Source: Bloomberg

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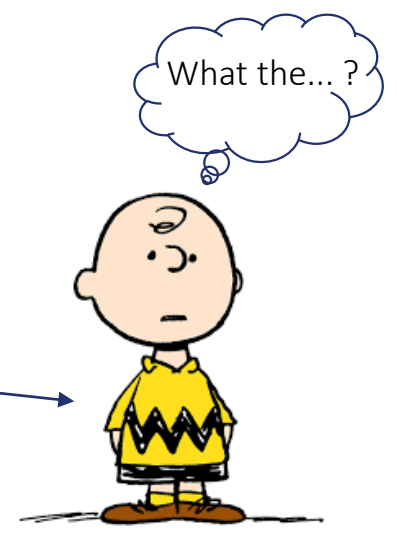
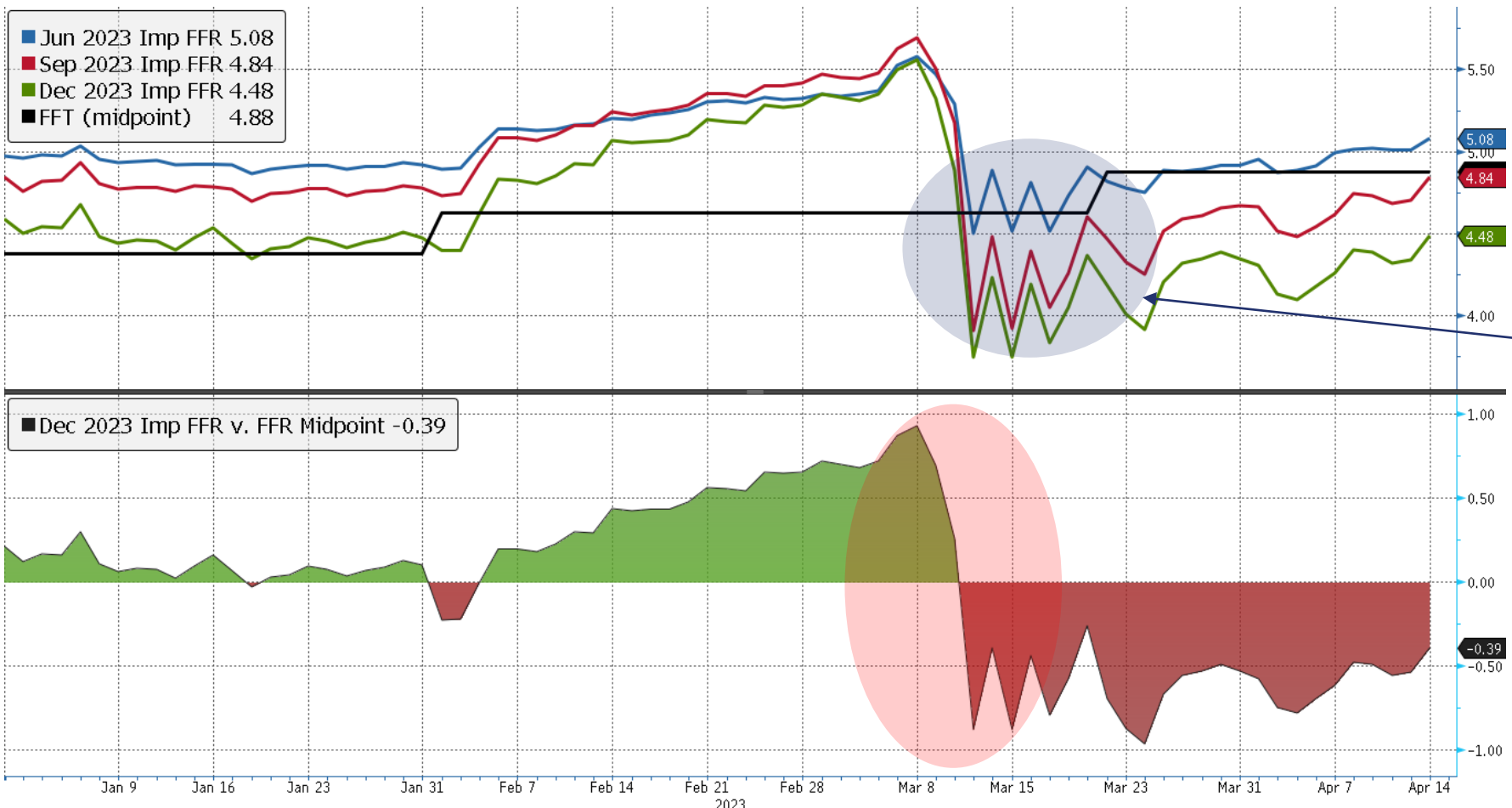
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Fed Response: BTFP & “Dovish Hike” (End of QT... and on to QE-ternity?)



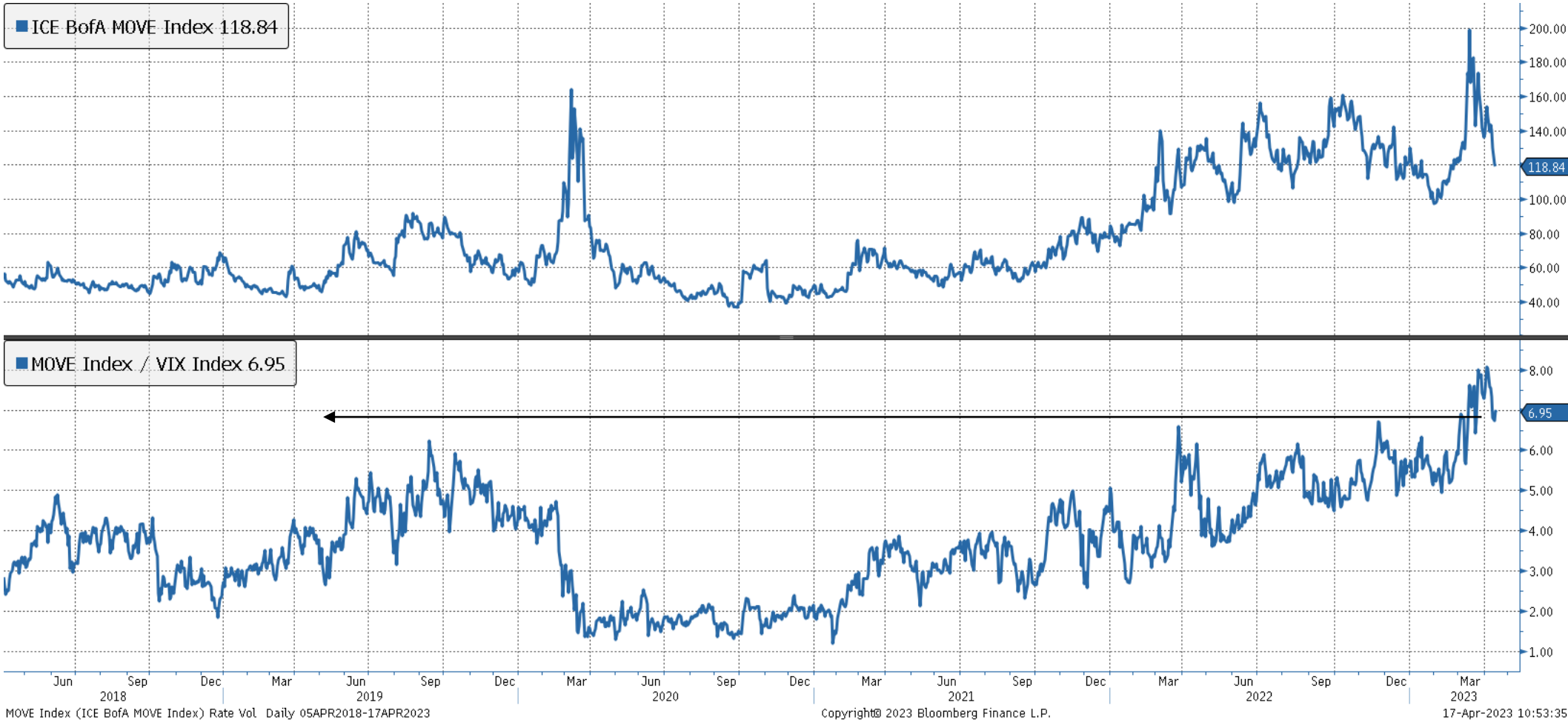
Data Source: Bloomberg

Fed Funds Discounting Goes into “Charlie Brown” Mode



US0AFR JUN2023 Index (WIRP Implied Overnight Rate fo) FFR Implied Daily 30DEC2022-14APR2023
Copyright© 2023 Bloomberg Finance L.P. 17-Apr-2023 10:51:24
Data Source: Bloomberg

Extreme Interest Rate Volatility



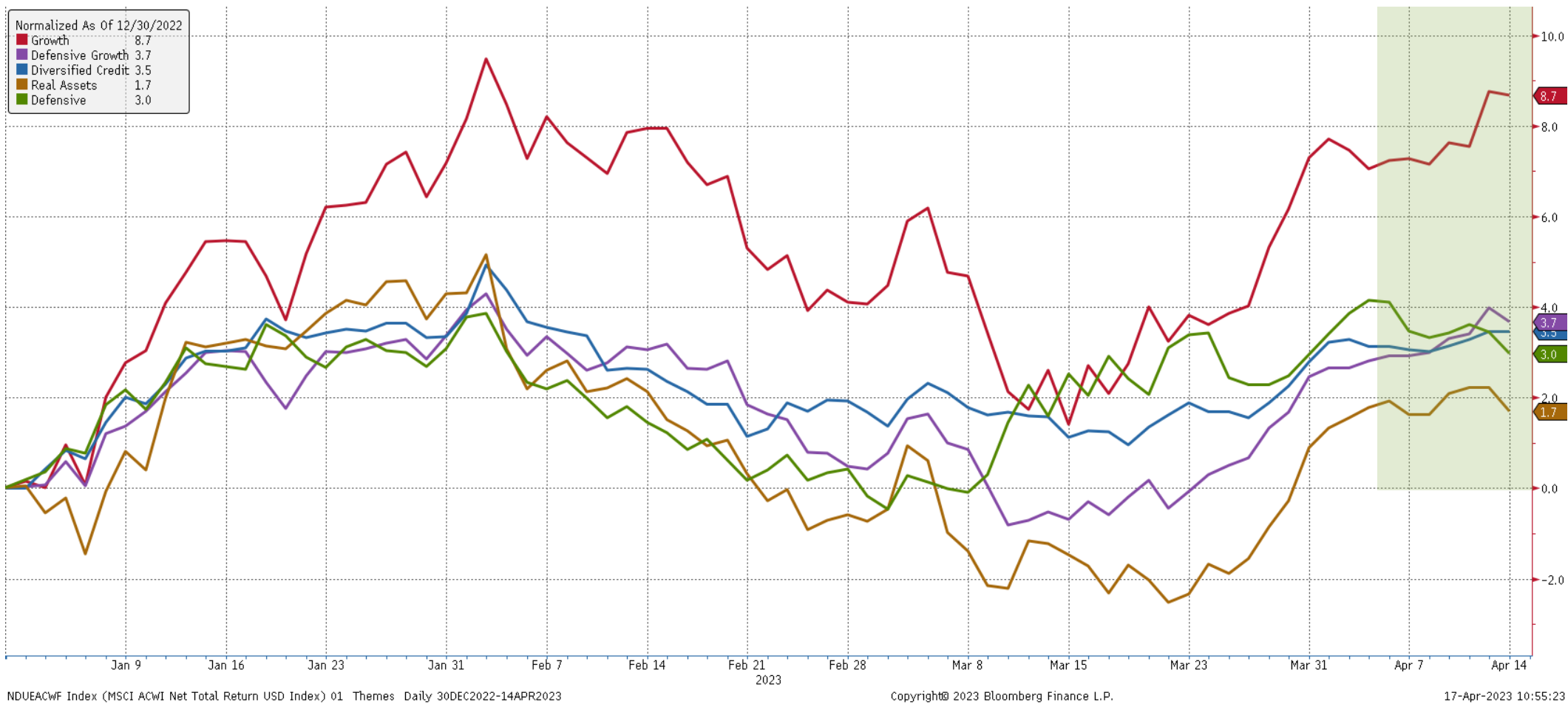
Data Source: Bloomberg

Credit Spreads Jumped (but Back Near YE Levels)



Data Source: Bloomberg

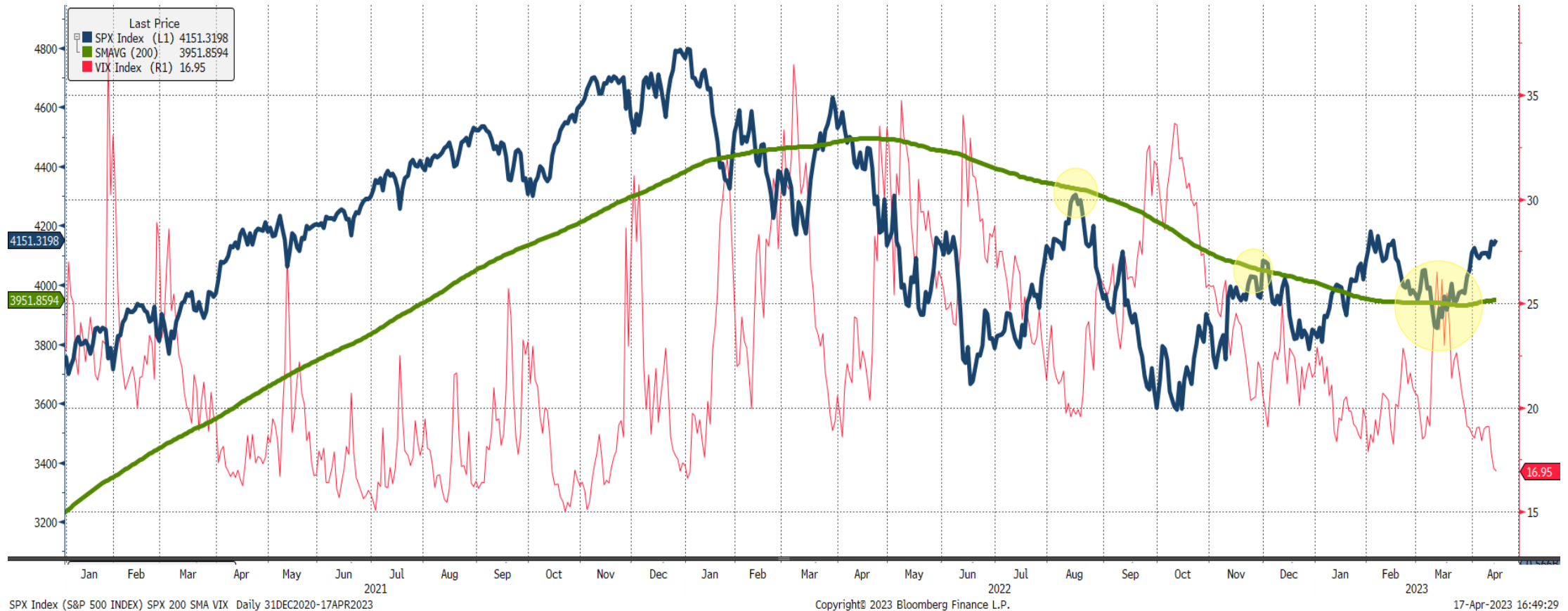
Markets Showing Resilience



Data Source: Bloomberg

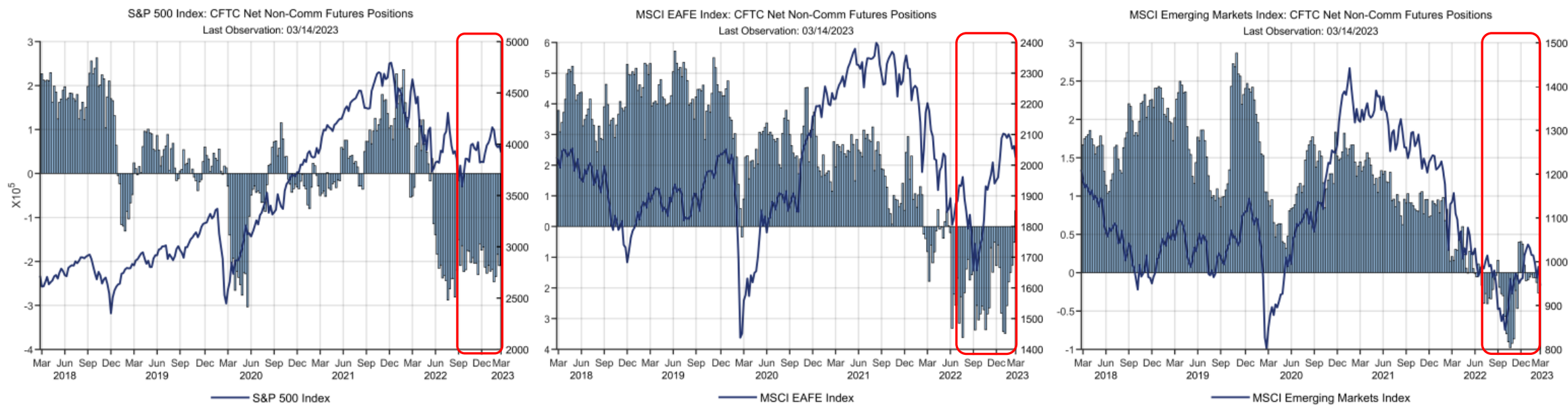
Economic & Market Outlook

Equities Exhibit Technical Strength in the Face of Fundamental Uncertainty



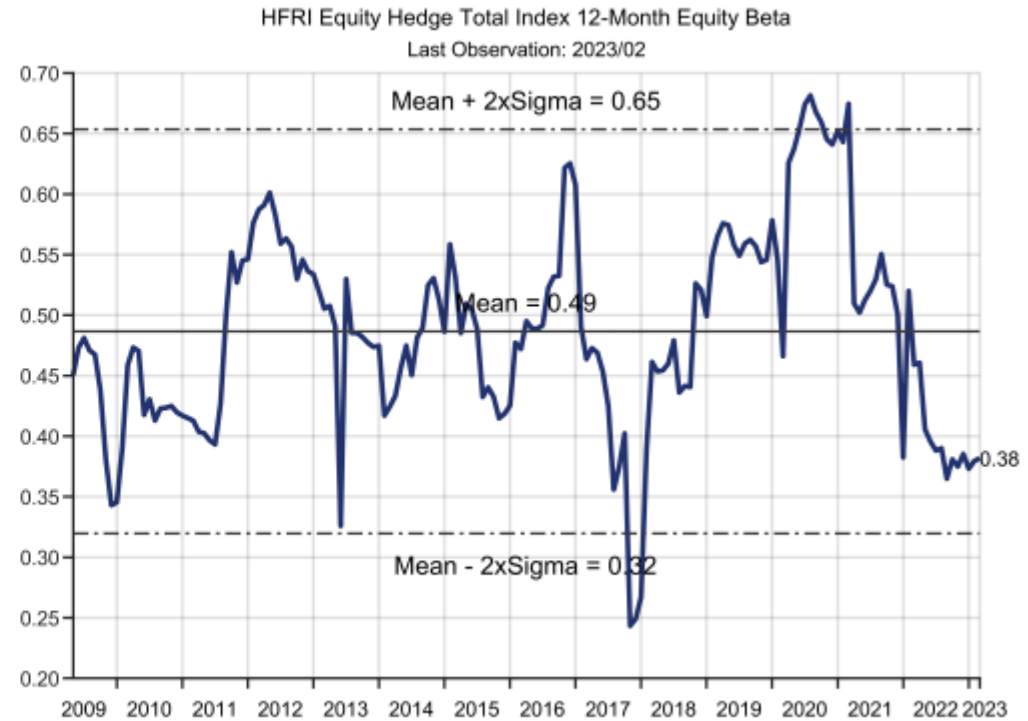
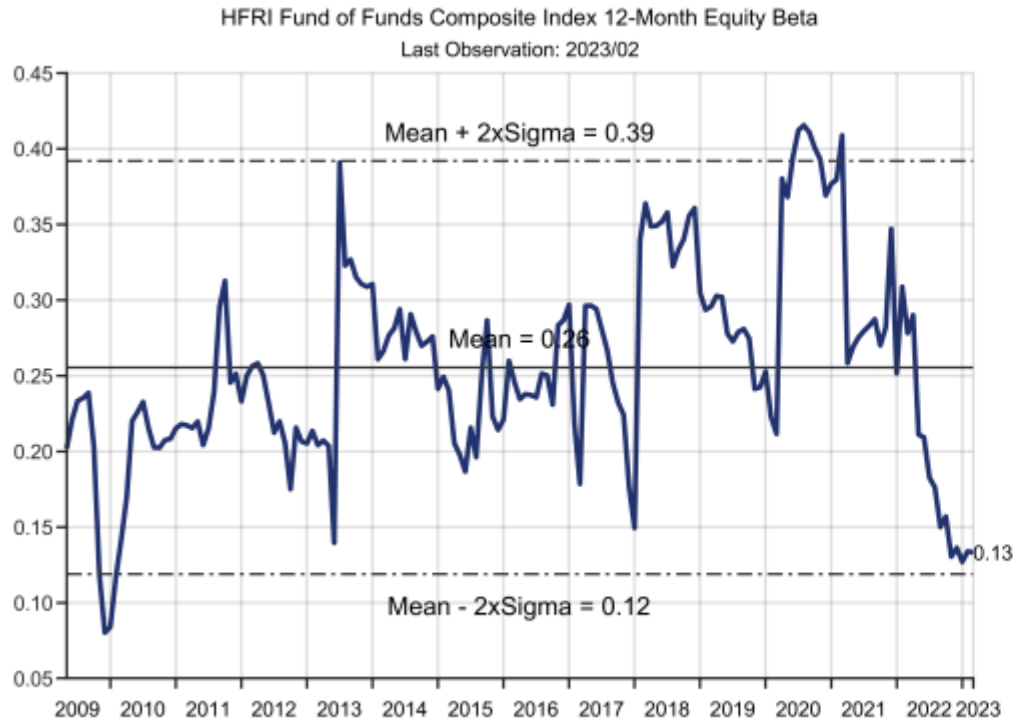
Data Source: Bloomberg

End of Quarter Speculative Equity Positioning Was Negative Across the Board



Data Source: Bloomberg

Hedge Funds are Underweight Equity Risk



Data Source: Bloomberg

Buyback Activity is Helping to Support Equities

YTD Repurchase Authorizations (\$bn)



Data Source: Goldman Sachs Investment Research

Factor Performance Indicates a Less Optimistic Sentiment

Long vs Short Quality



Source: Bloomberg (GSPUQUAL Index), Macrobond

Levels of Interbank Stress Remain Normal

ICE LIBOR USD 3 Month - SOFR USD 3M OIS

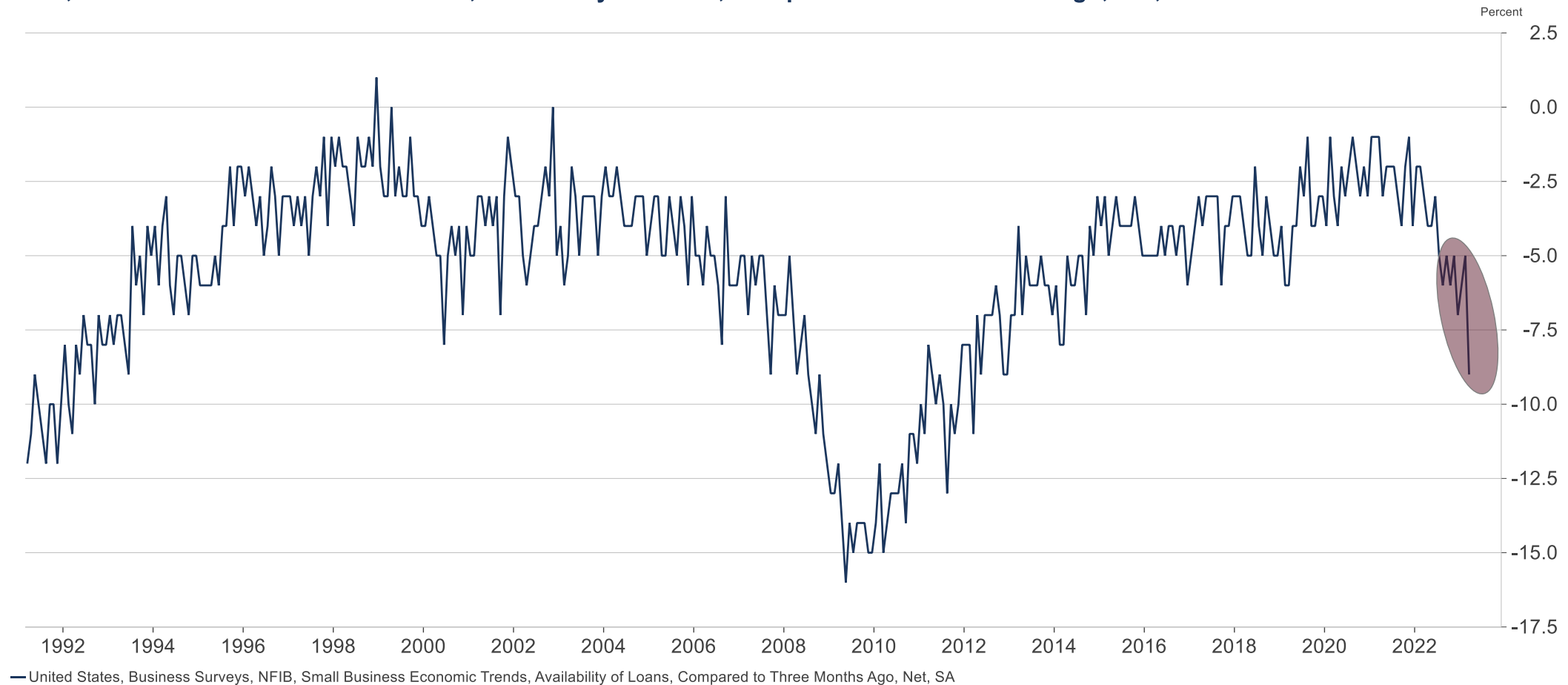


Data Source: Bloomberg data

Source: , Macrobond

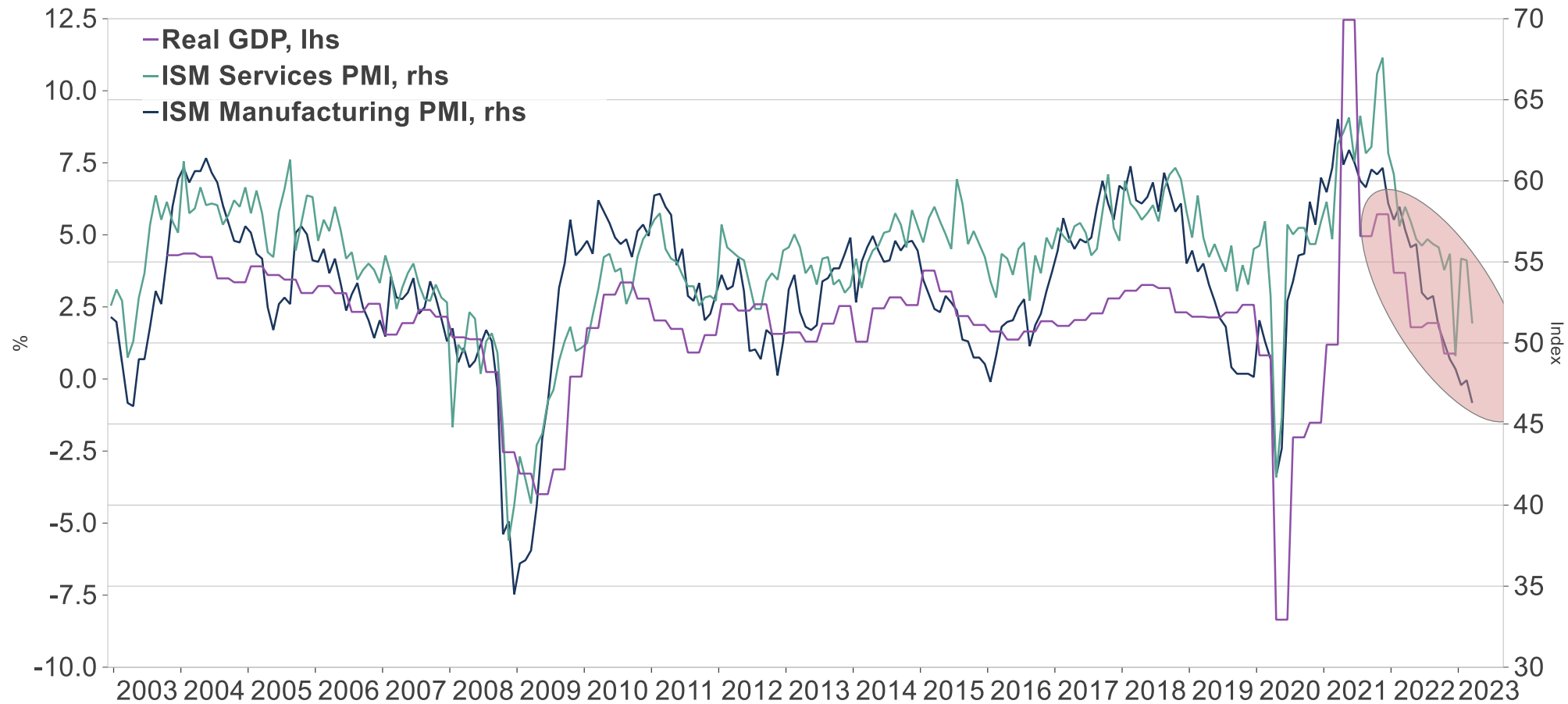
But Small Business are Starting to Signal Funding Challenges...

NFIB, Small Business Economic Trends, Availability of Loans, Compared to Three Months Ago, Net, SA



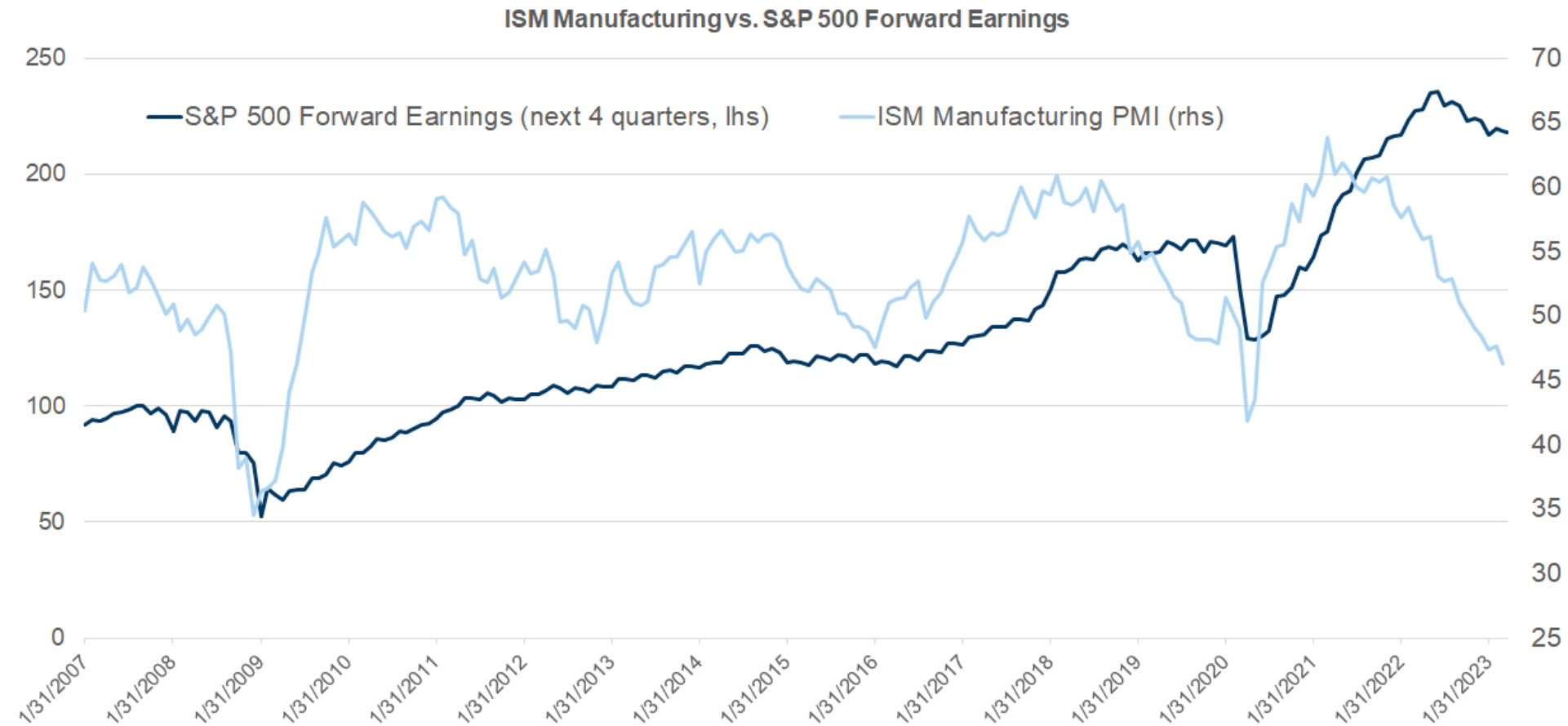
Source: National Federation of Independent Business, Macrobond

ISM PMIs Signal Deteriorating Growth Conditions



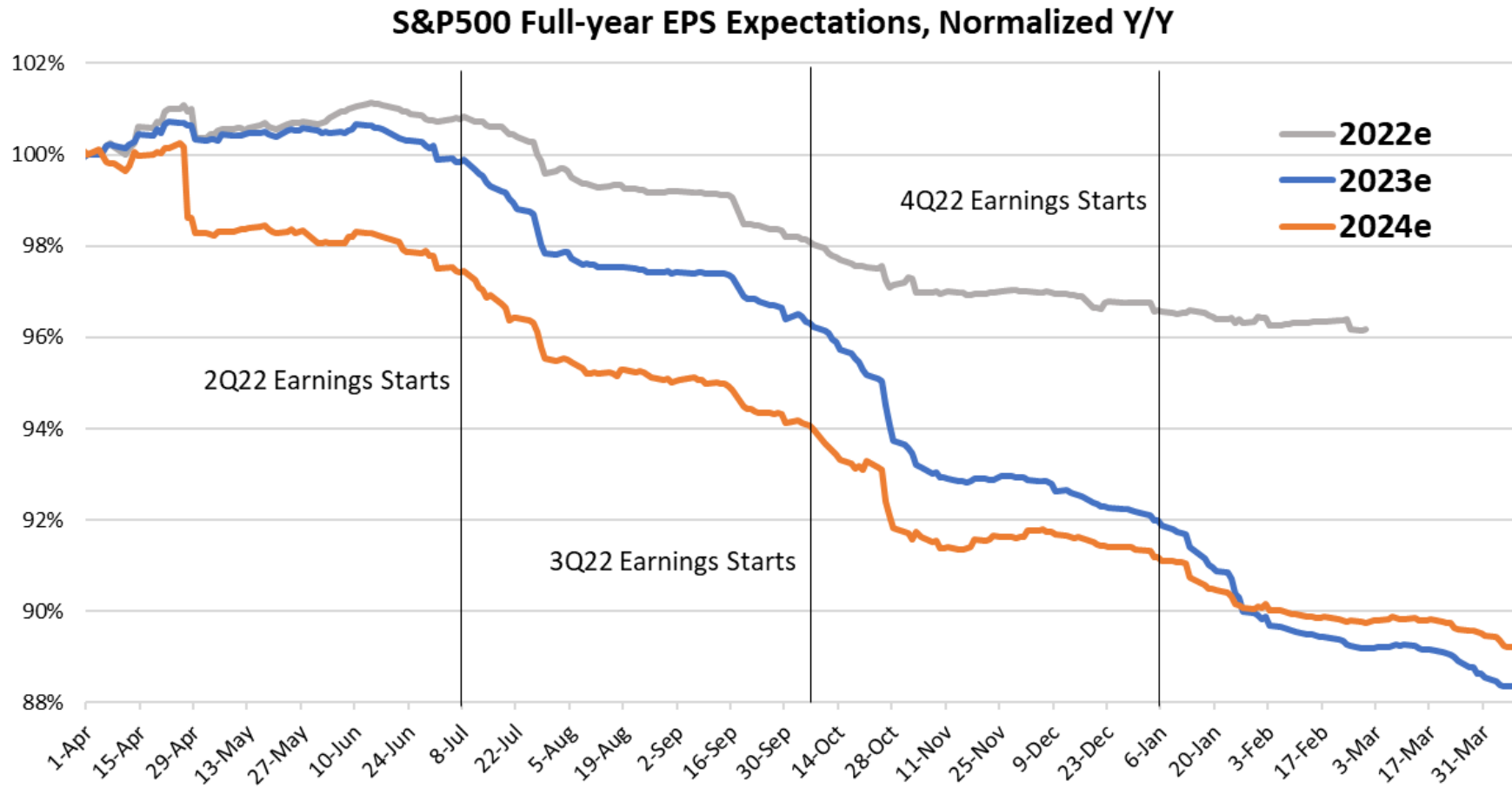
Source: Institute for Supply Management (ISM), U.S. Bureau of Economic Analysis (BEA), Macrobond

Declines in ISM Manufacturing Historically Coincide with Deteriorating EPS



Data Source: Bloomberg

U.S. Earnings Outlook



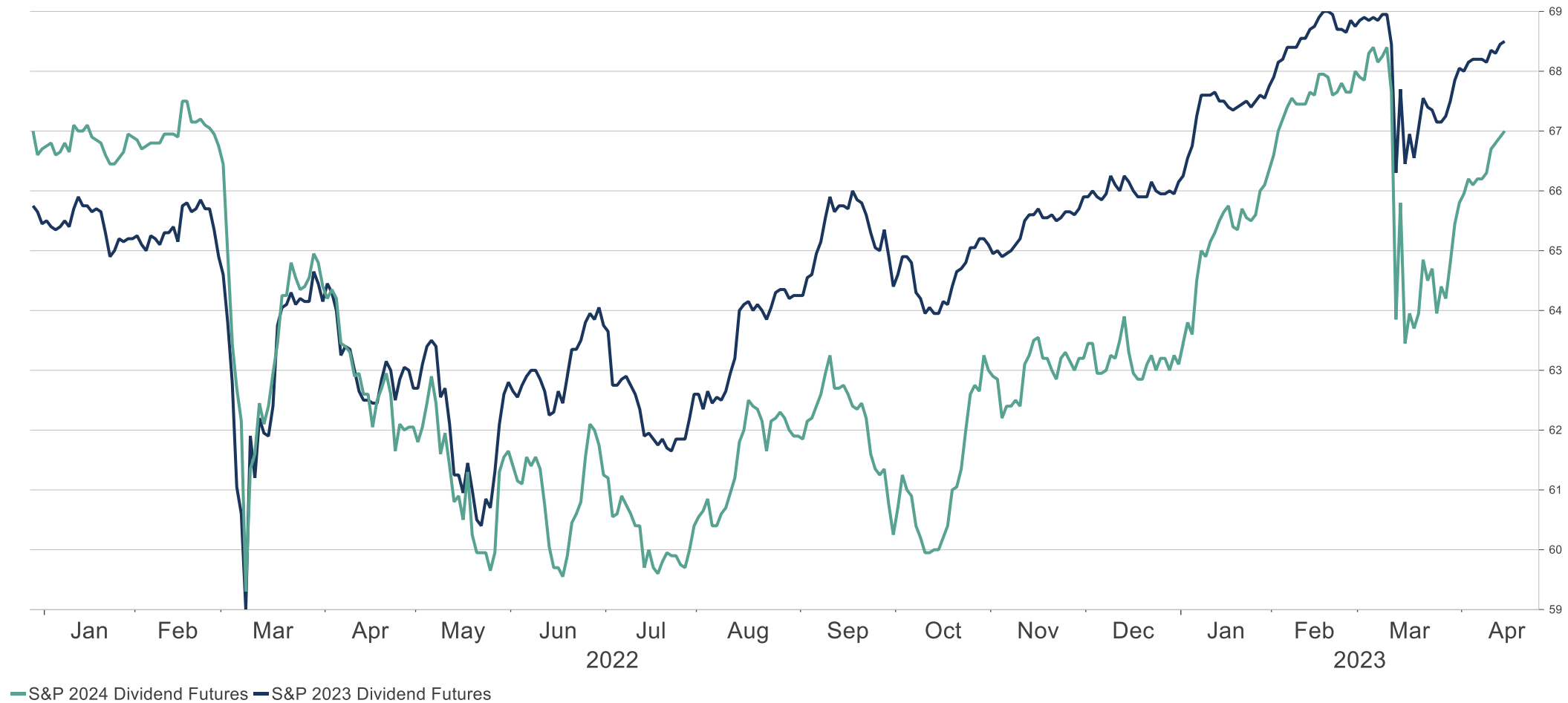
Data Source: Morgan Stanley Thematic Strategy, Factset

Price Movements Required to Get to Equilibrium Equity Valuations Based on EPS & Rates

		US 10 Year Treasury Yield (%)												
		2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00
US Equity 2023 EPS (\$)	250	20%	15%	10%	5%	0%	-4%	-7%	-11%	-14%	-17%	-20%	-22%	-25%
	245	18%	12%	7%	3%	-2%	-6%	-9%	-13%	-16%	-19%	-21%	-24%	-26%
	240	16%	10%	5%	1%	-4%	-7%	-11%	-14%	-17%	-20%	-23%	-25%	-28%
	235	13%	8%	3%	-2%	-6%	-9%	-13%	-16%	-19%	-22%	-25%	-27%	-29%
	230	11%	6%	1%	-4%	-8%	-11%	-15%	-18%	-21%	-24%	-26%	-29%	-31%
	225	8%	3%	-1%	-6%	-10%	-13%	-17%	-20%	-23%	-25%	-28%	-30%	-32%
	220	6%	1%	-4%	-8%	-12%	-15%	-18%	-21%	-24%	-27%	-29%	-32%	-34%
	215	4%	-1%	-6%	-10%	-14%	-17%	-20%	-23%	-26%	-29%	-31%	-33%	-35%
	210	1%	-4%	-8%	-12%	-16%	-19%	-22%	-25%	-28%	-30%	-33%	-35%	-37%
	205	-1%	-6%	-10%	-14%	-18%	-21%	-24%	-27%	-29%	-32%	-34%	-36%	-38%
	200	-4%	-8%	-12%	-16%	-20%	-23%	-26%	-29%	-31%	-34%	-36%	-38%	-40%
	195	-6%	-11%	-15%	-18%	-22%	-25%	-28%	-30%	-33%	-35%	-37%	-39%	-41%
	190	-8%	-13%	-17%	-20%	-24%	-27%	-30%	-32%	-35%	-37%	-39%	-41%	-43%
	185	-11%	-15%	-19%	-22%	-26%	-29%	-31%	-34%	-36%	-39%	-41%	-42%	-44%
	180	-13%	-17%	-21%	-25%	-28%	-31%	-33%	-36%	-38%	-40%	-42%	-44%	-46%

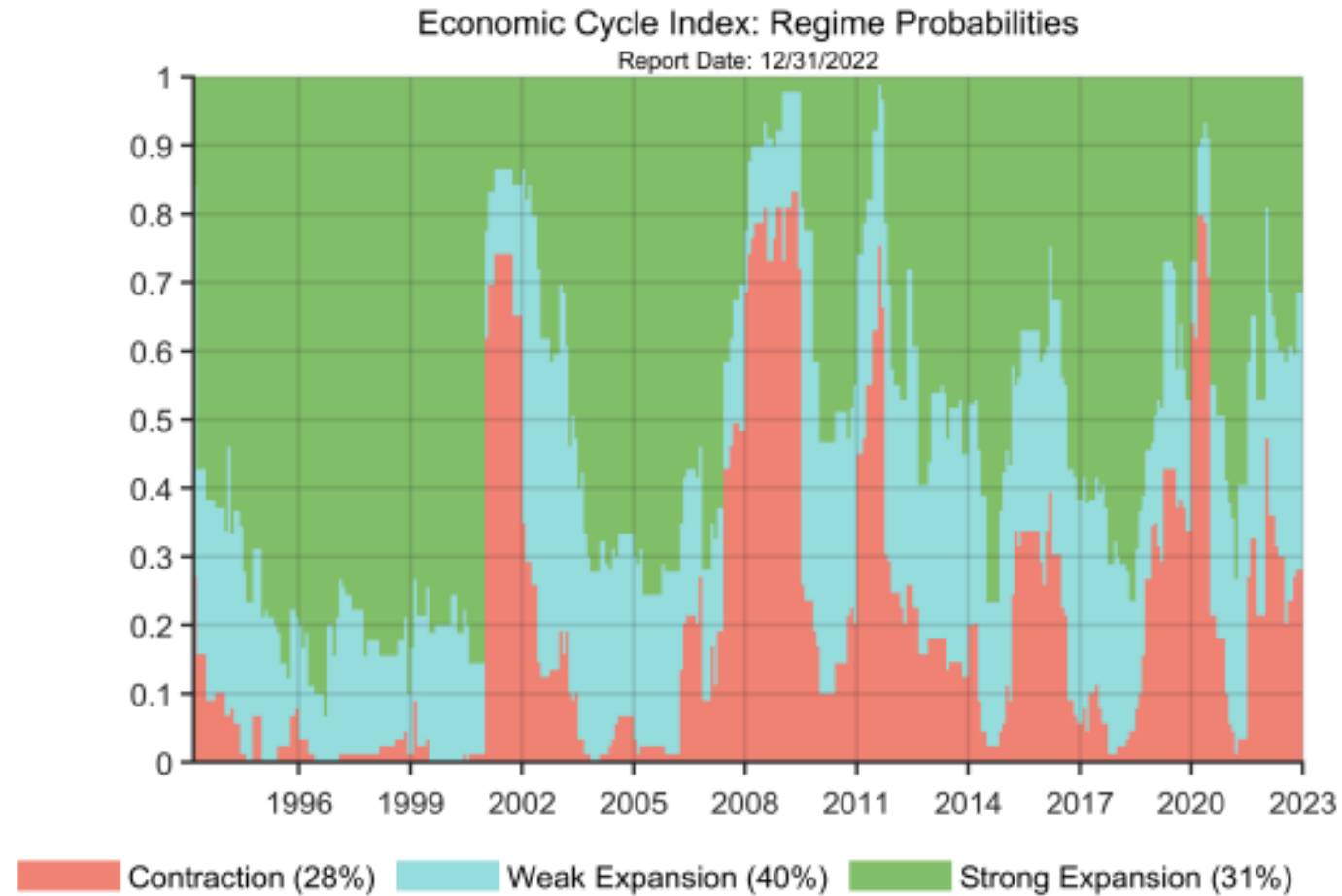
Source: Wilshire Advisors, Bloomberg Data

Derivatives Markets Indicate Confidence in Dividends



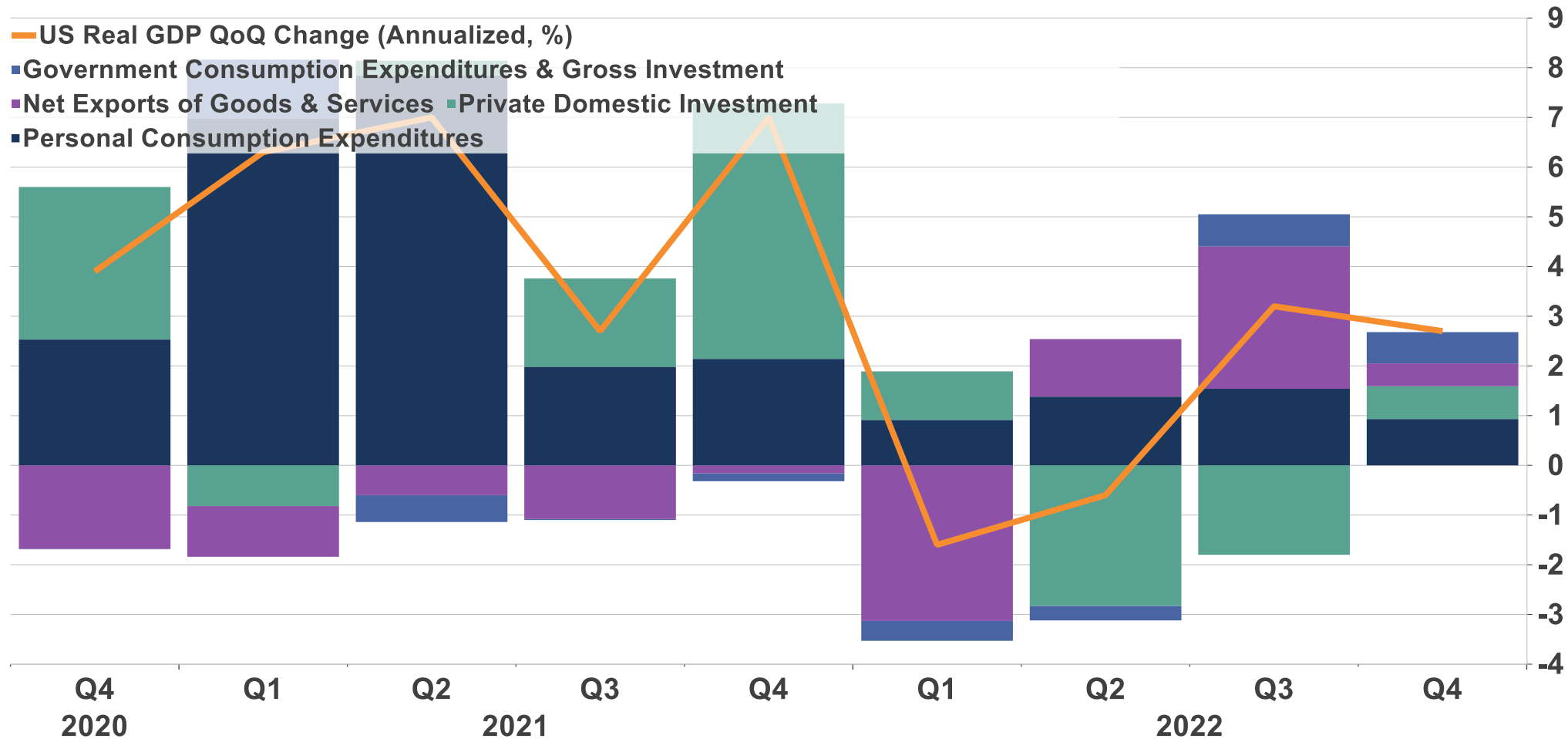
Source: Bloomberg, Macrobond

U.S. Economy Continues to Signal a Weak Expansion



Data Source: Wilshire

The U.S. Economy Continued to Expand on Resilient Personal Consumption

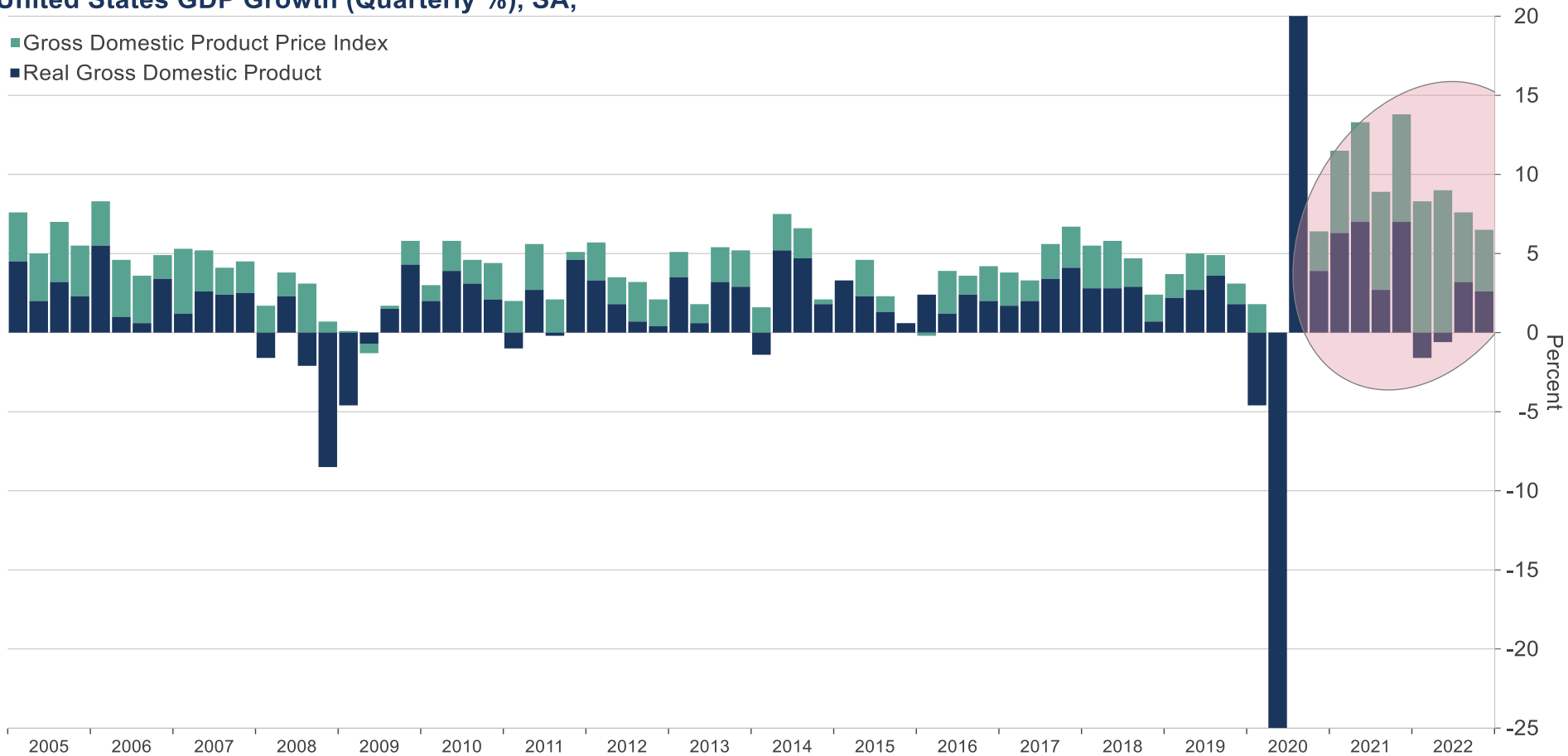


Data Source: U.S. Bureau of Economic Analysis (BEA), Macrobond

GDP Growth Outlook: Nominal & Real Growth Continue to Slow

United States GDP Growth (Quarterly %), SA,

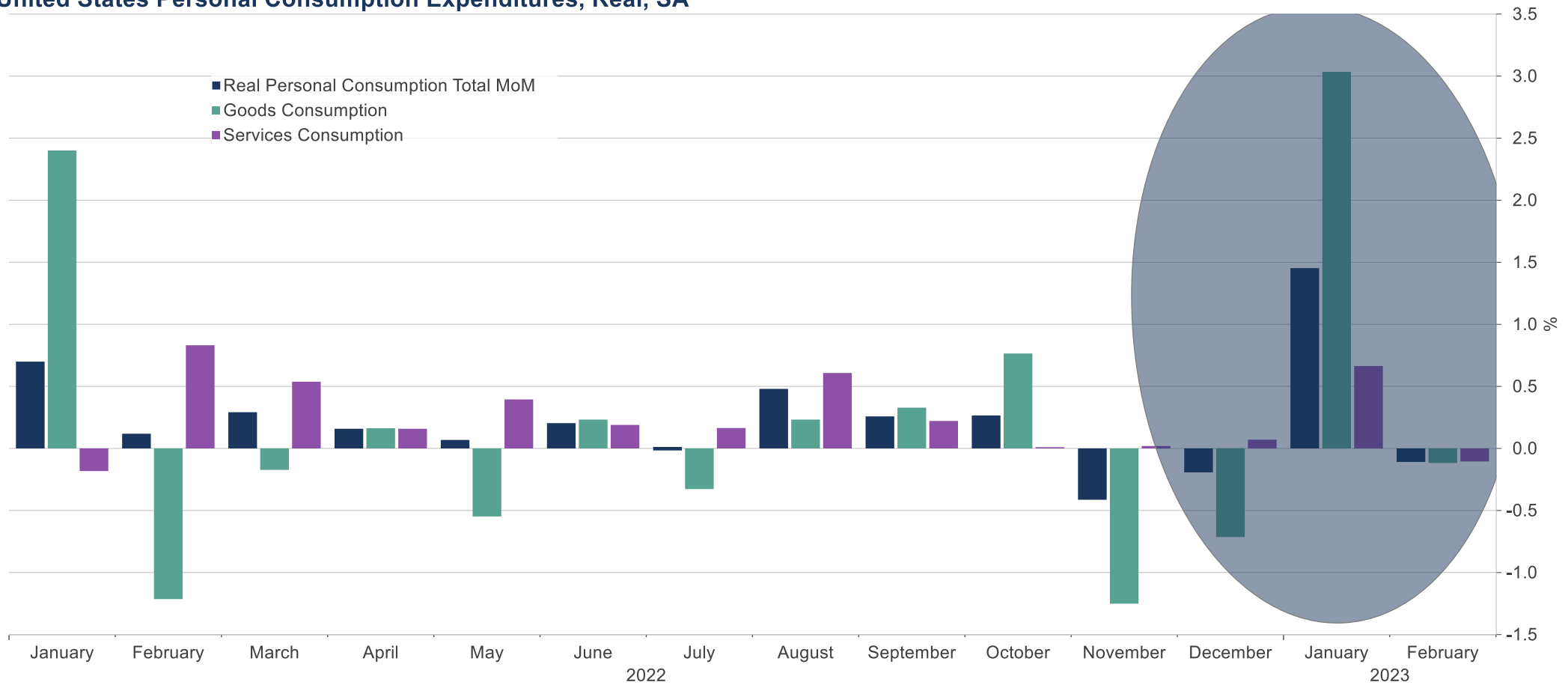
- Gross Domestic Product Price Index
- Real Gross Domestic Product



Source: U.S. Bureau of Economic Analysis (BEA), Macrobond

U.S. Personal Consumption is Strong on a YTD Basis

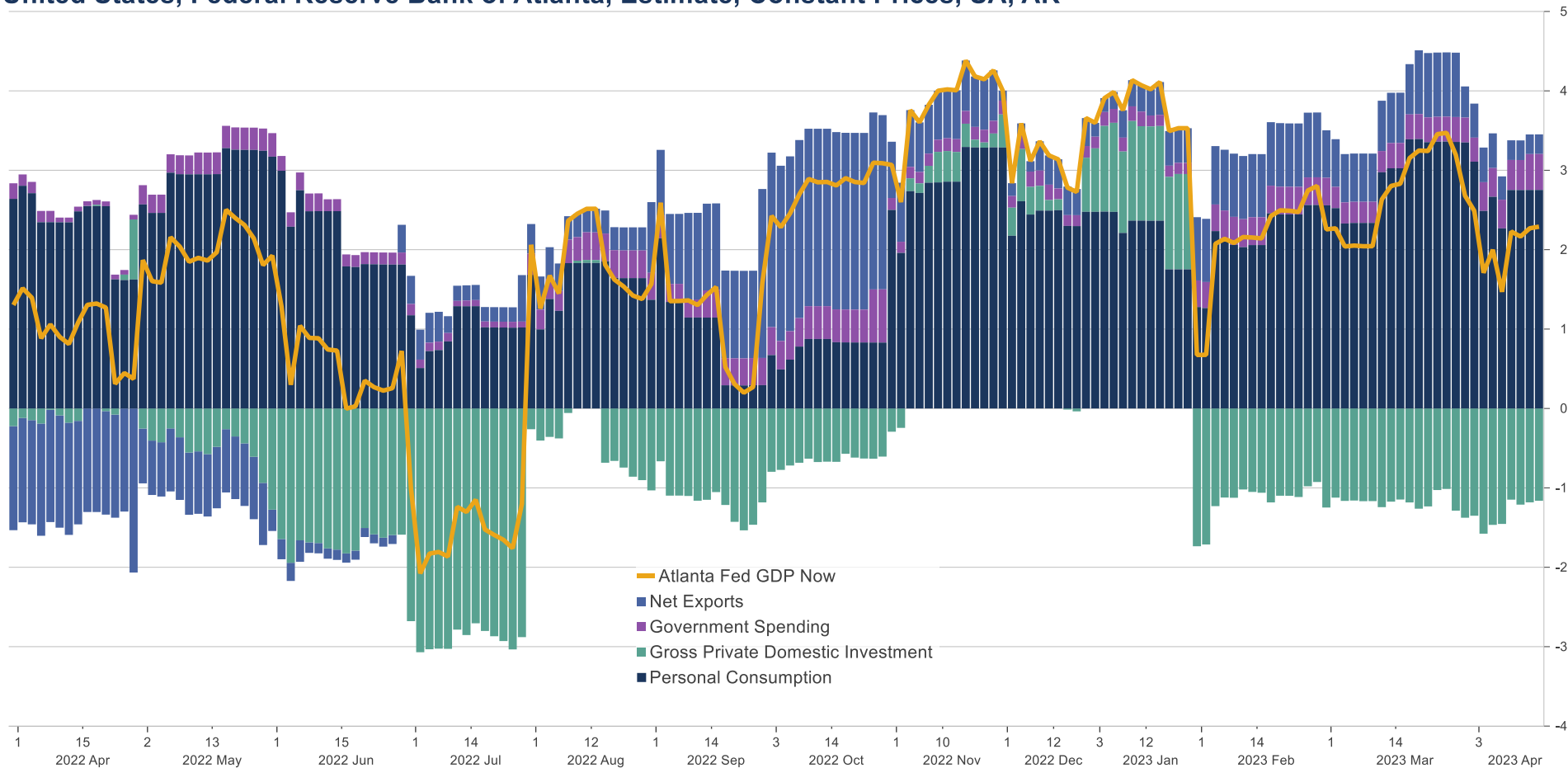
United States Personal Consumption Expenditures, Real, SA



Source: U.S. Bureau of Economic Analysis (BEA), Macrobond

GDP Growth Outlook: Atlanta Fed GDPNow is More than 2% for Q1

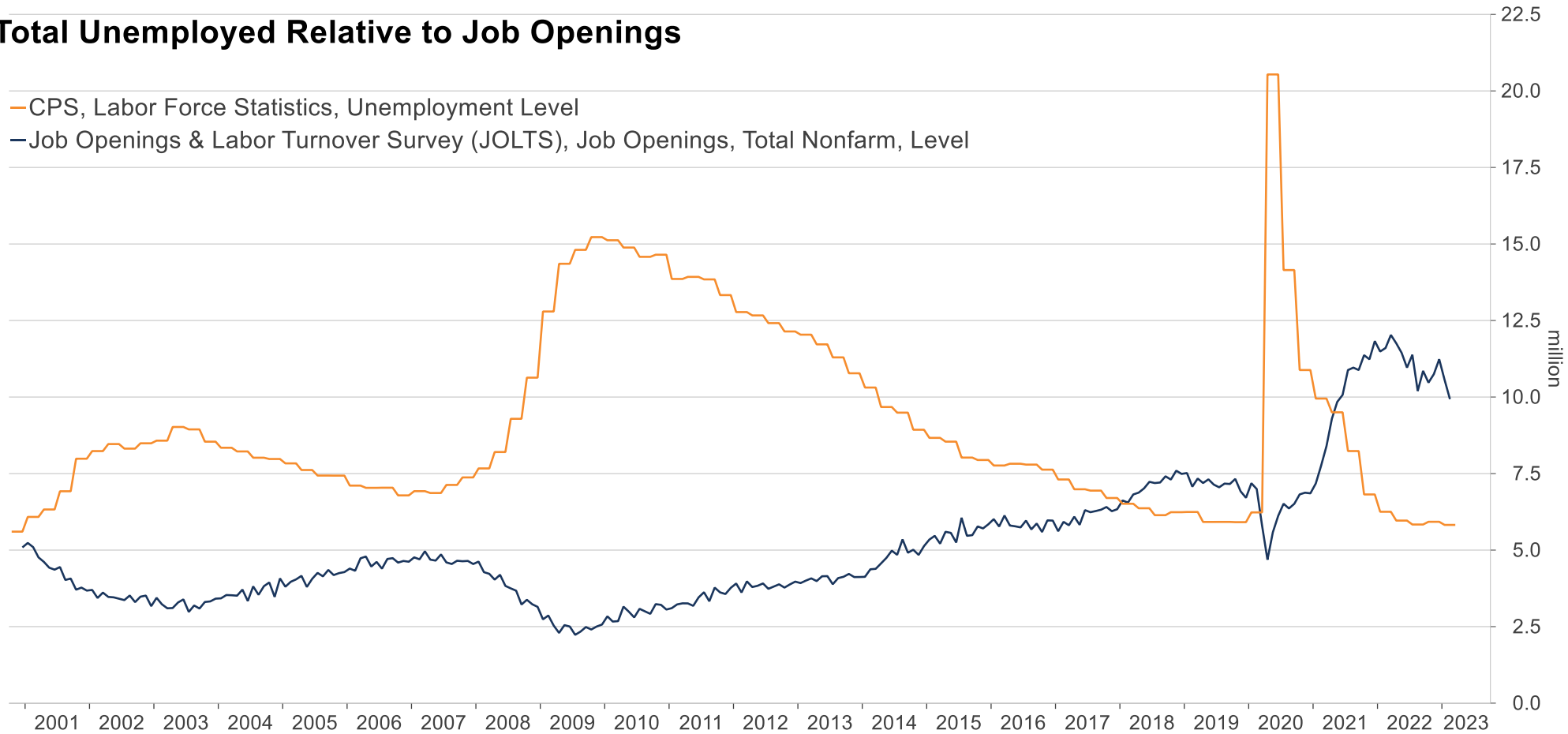
United States, Federal Reserve Bank of Atlanta, Estimate, Constant Prices, SA, AR



Source: Federal Reserve Bank of Atlanta, Macrobond

Labor Market Conditions are Very Strong, but Signs of Weakness are Growing

Total Unemployed Relative to Job Openings

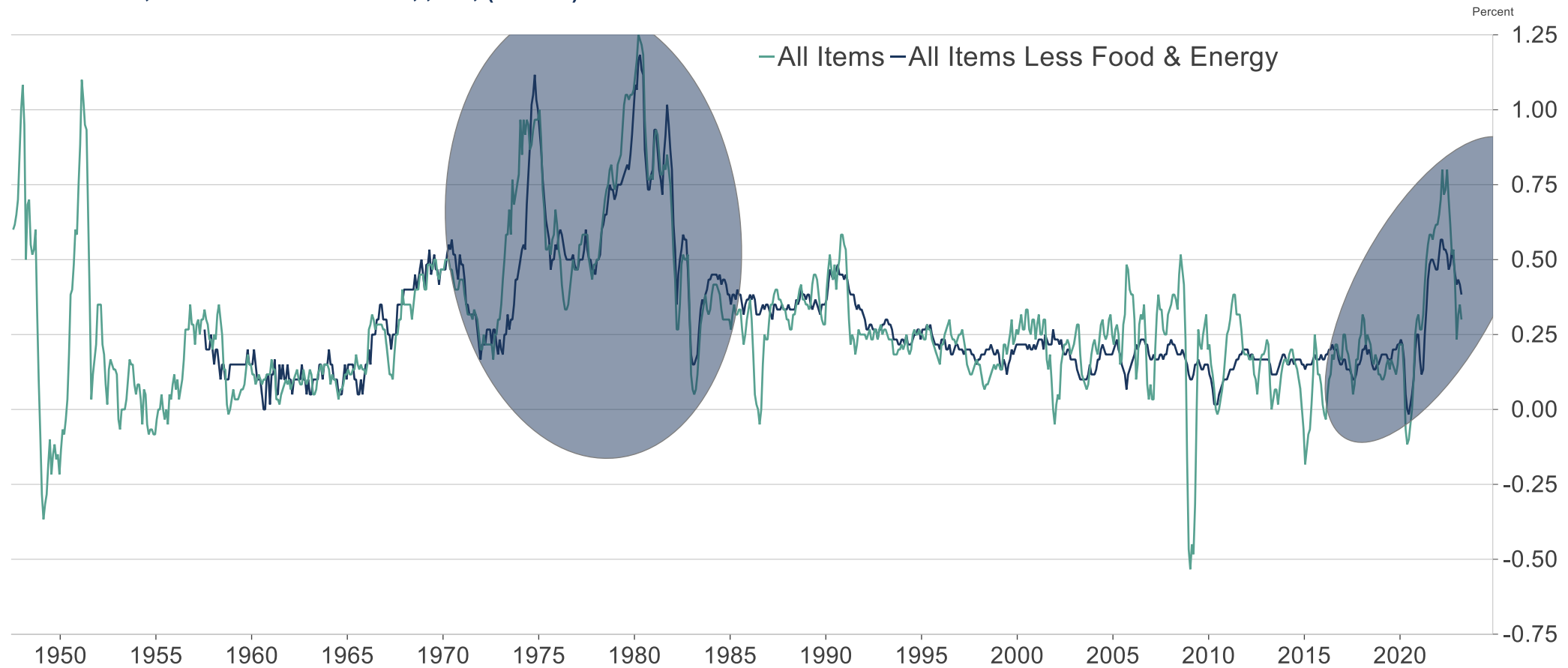


Source: U.S. Bureau of Labor Statistics (BLS), Macrobond

Source: U.S. BLS, Macrobond

CPI Continues to Trend Lower, but...

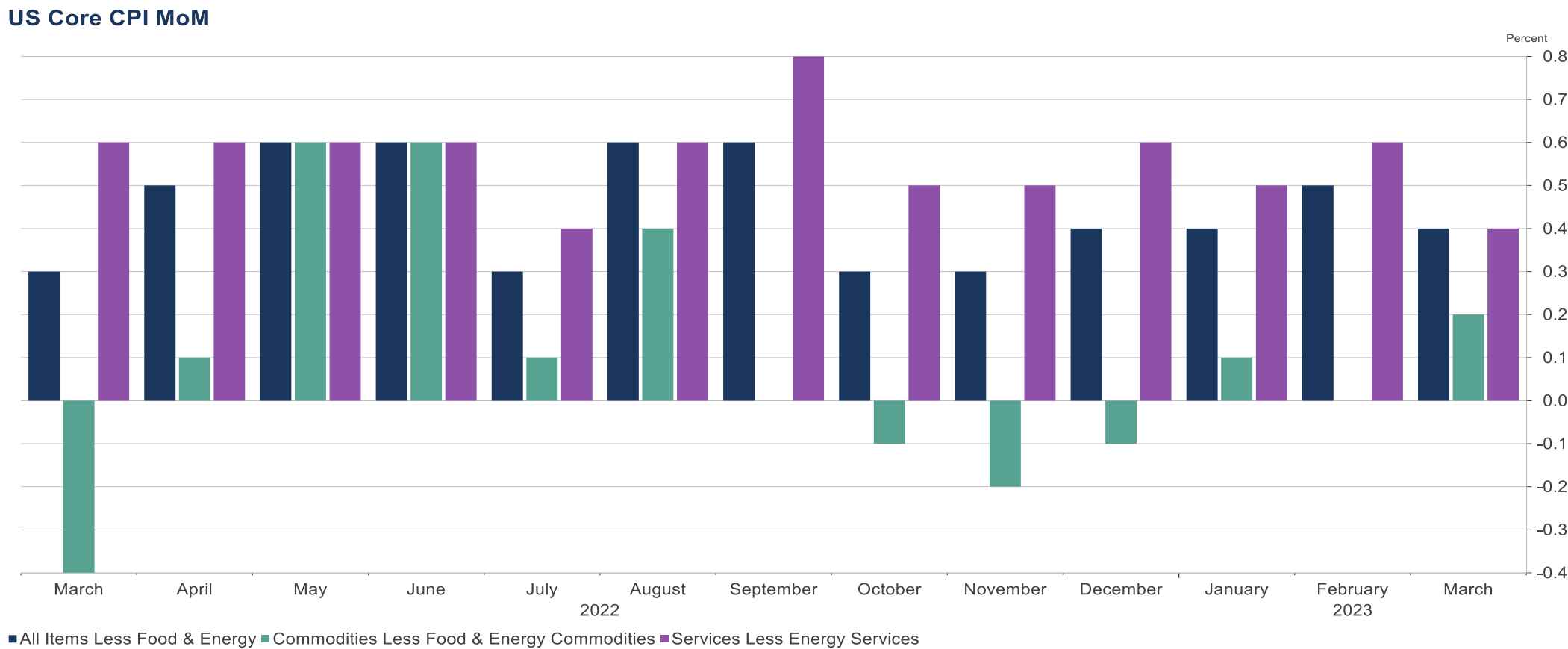
United States, Consumer Price Index, , SA, (6M MA)



Source: U.S. Bureau of Labor Statistics (BLS), Macrobond

Data Source: Bloomberg

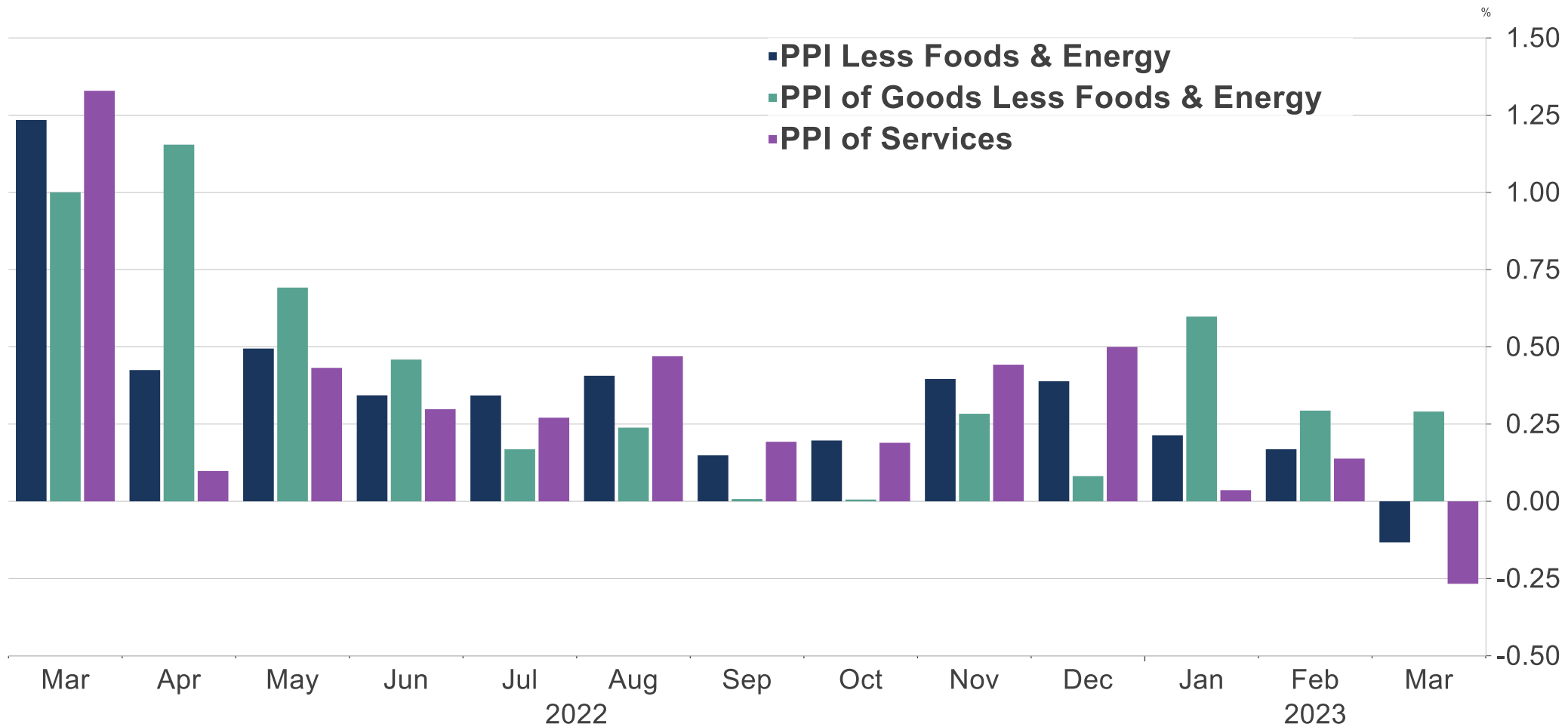
Core CPI is Still Elevated Relative to Target Inflation



Source: U.S. Bureau of Labor Statistics (BLS), Macrobond

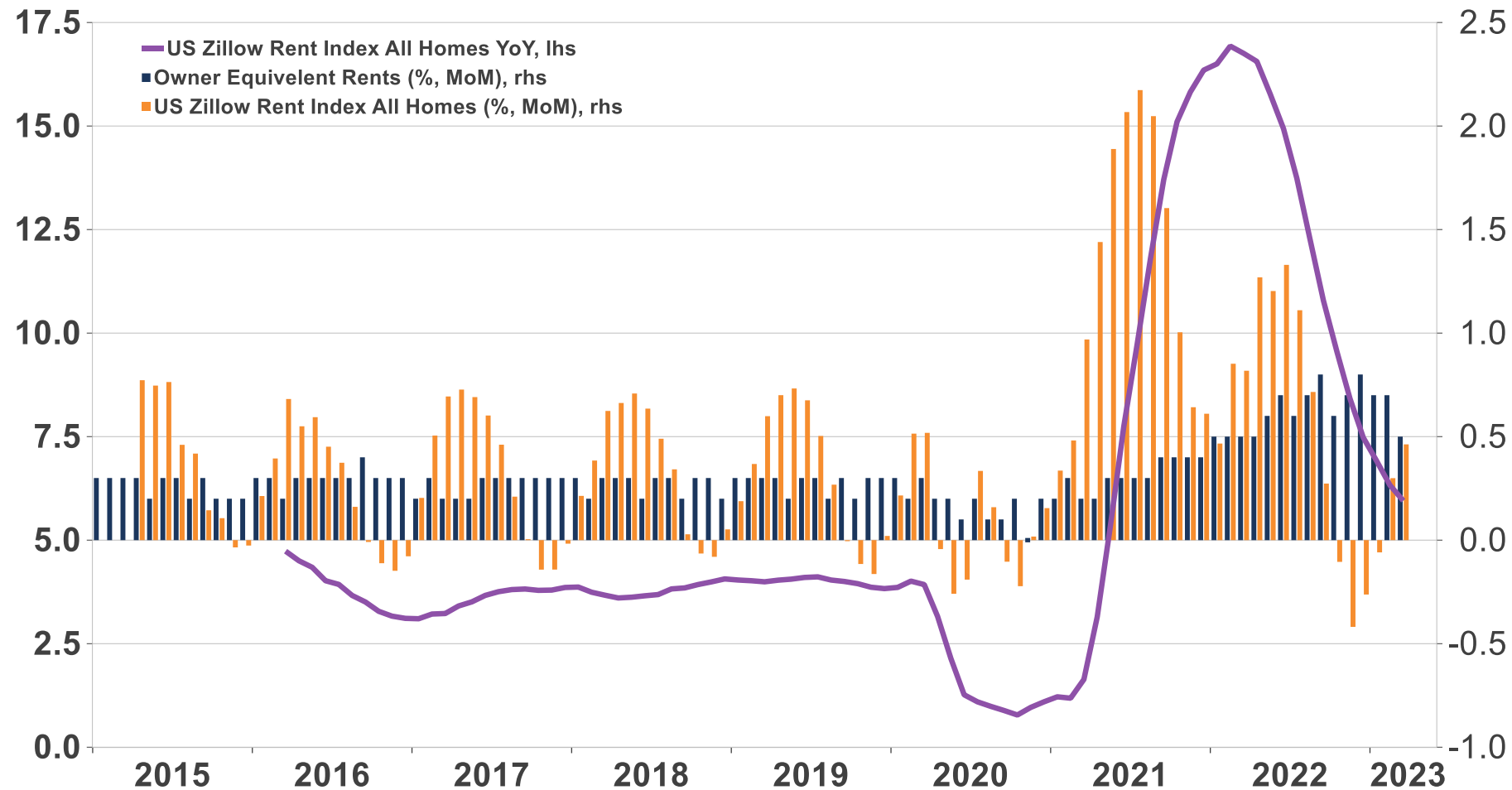
Data Source: Bloomberg

Fortunately, PPI Indicates More Softening Ahead for CPI



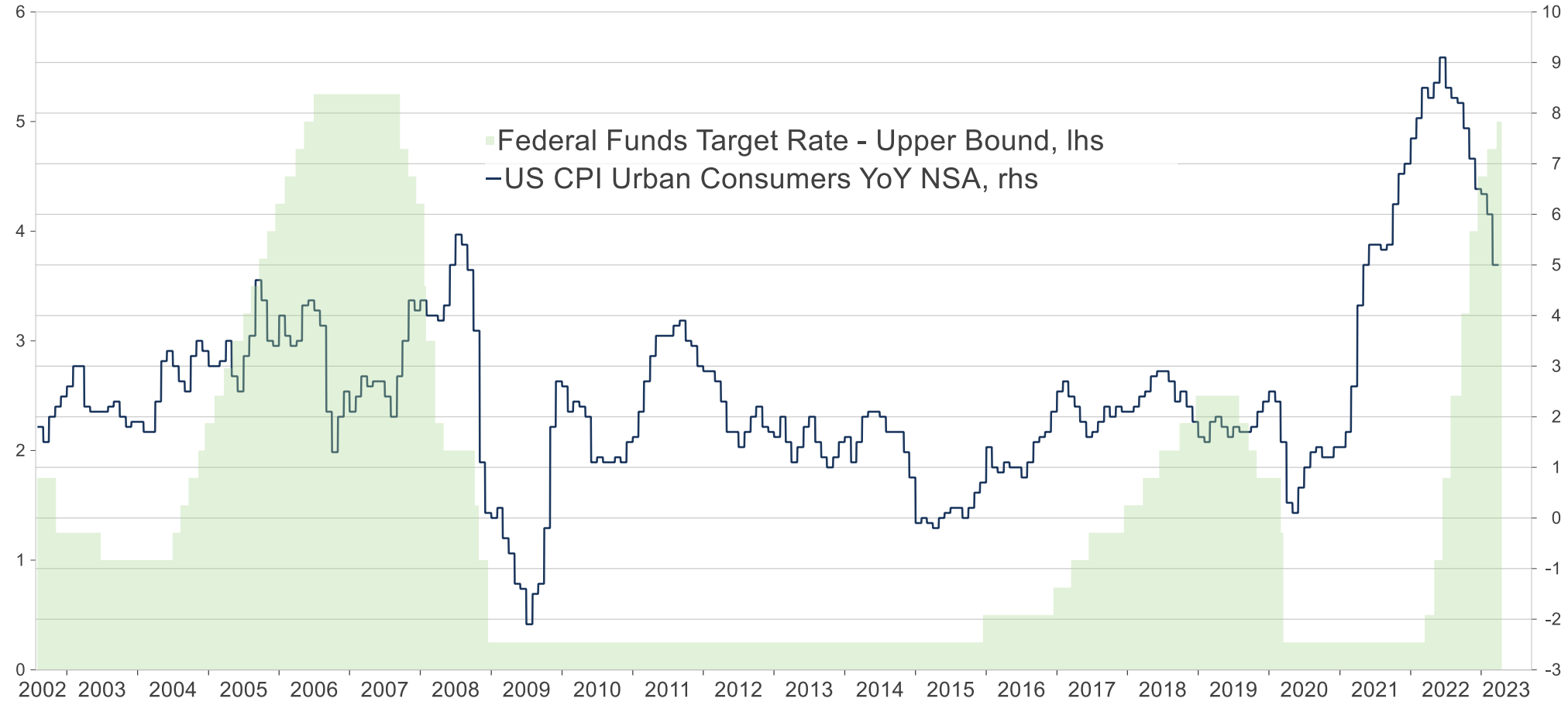
Data Source: Bloomberg

And Owner Equivalent Rents May Be Starting to Follow Rent Inflation Lower...



Data Source: Bloomberg, Macrobond

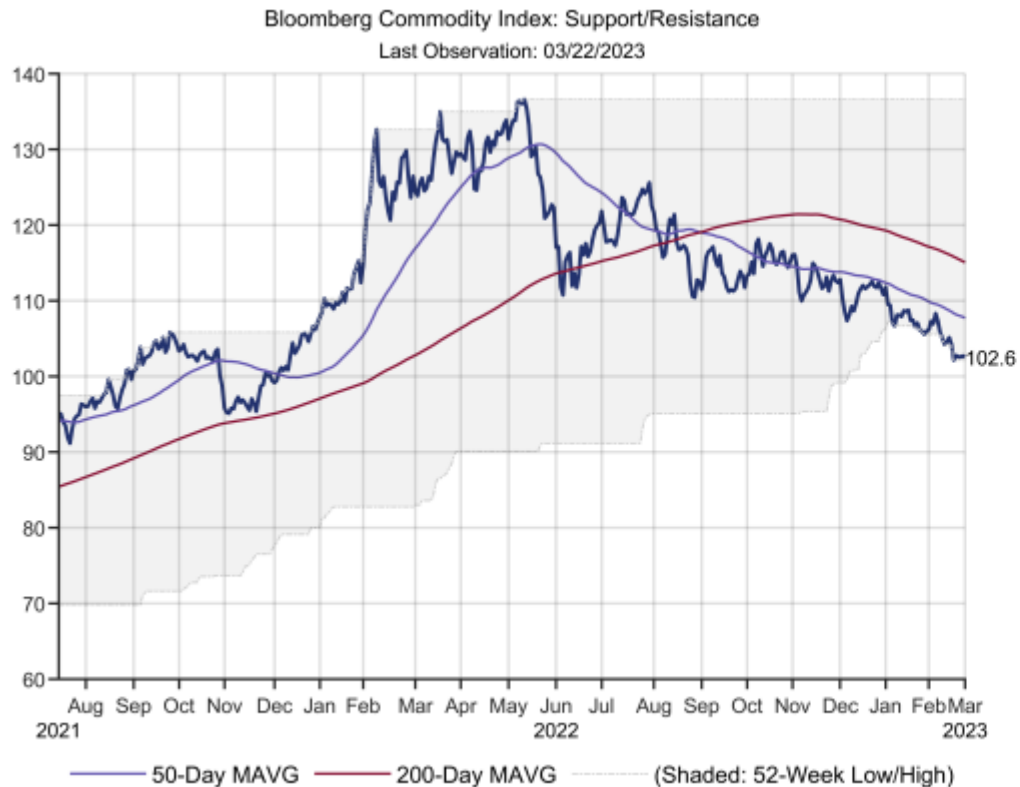
Time to Pause? Fed Needs to Look Around the Corner... Things are Starting to Break



Data Source: Bloomberg, Macrobond

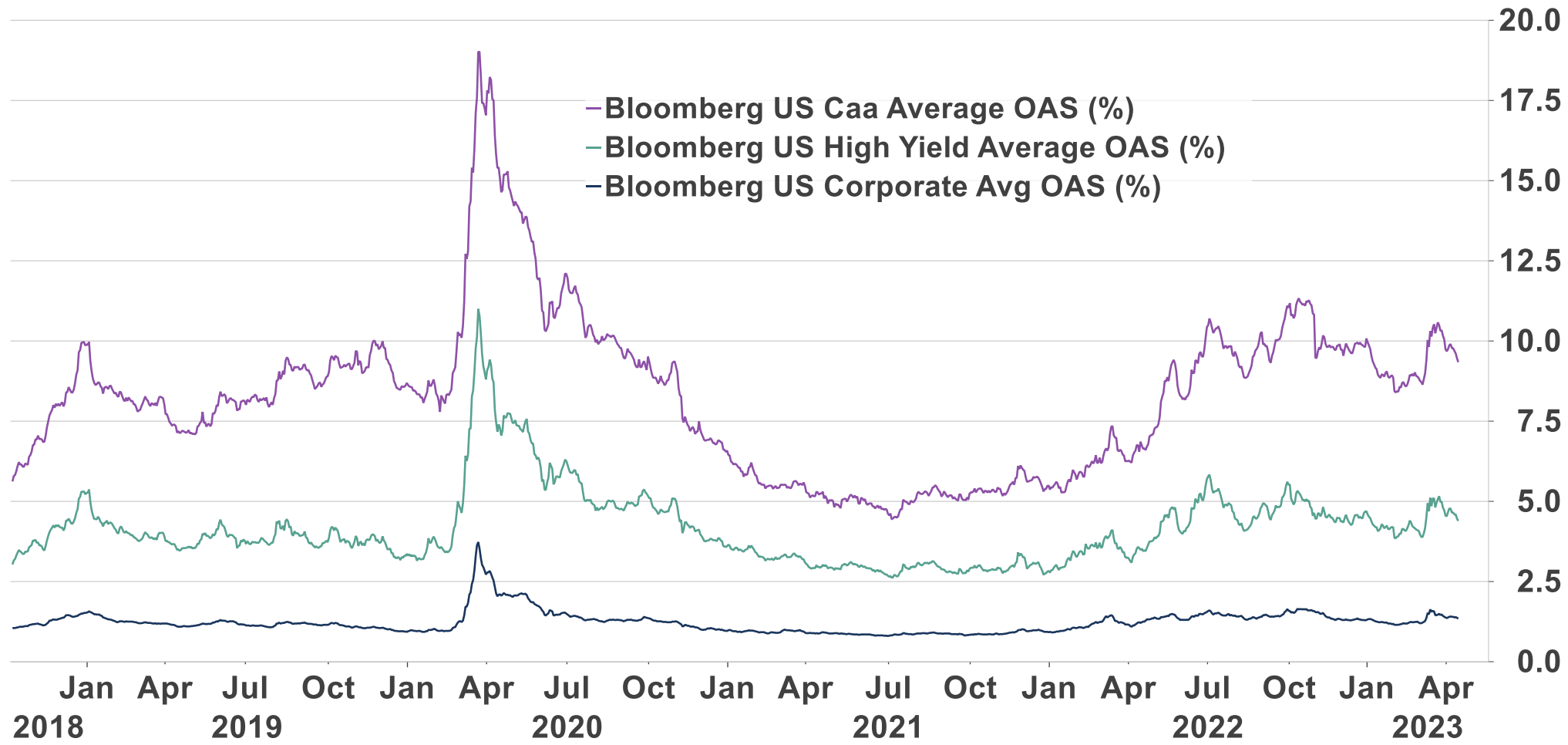
Source: Bloomberg, Macrobond

Markets are Starting to Price in this Risk... BCOM Deteriorating, Gold Improving



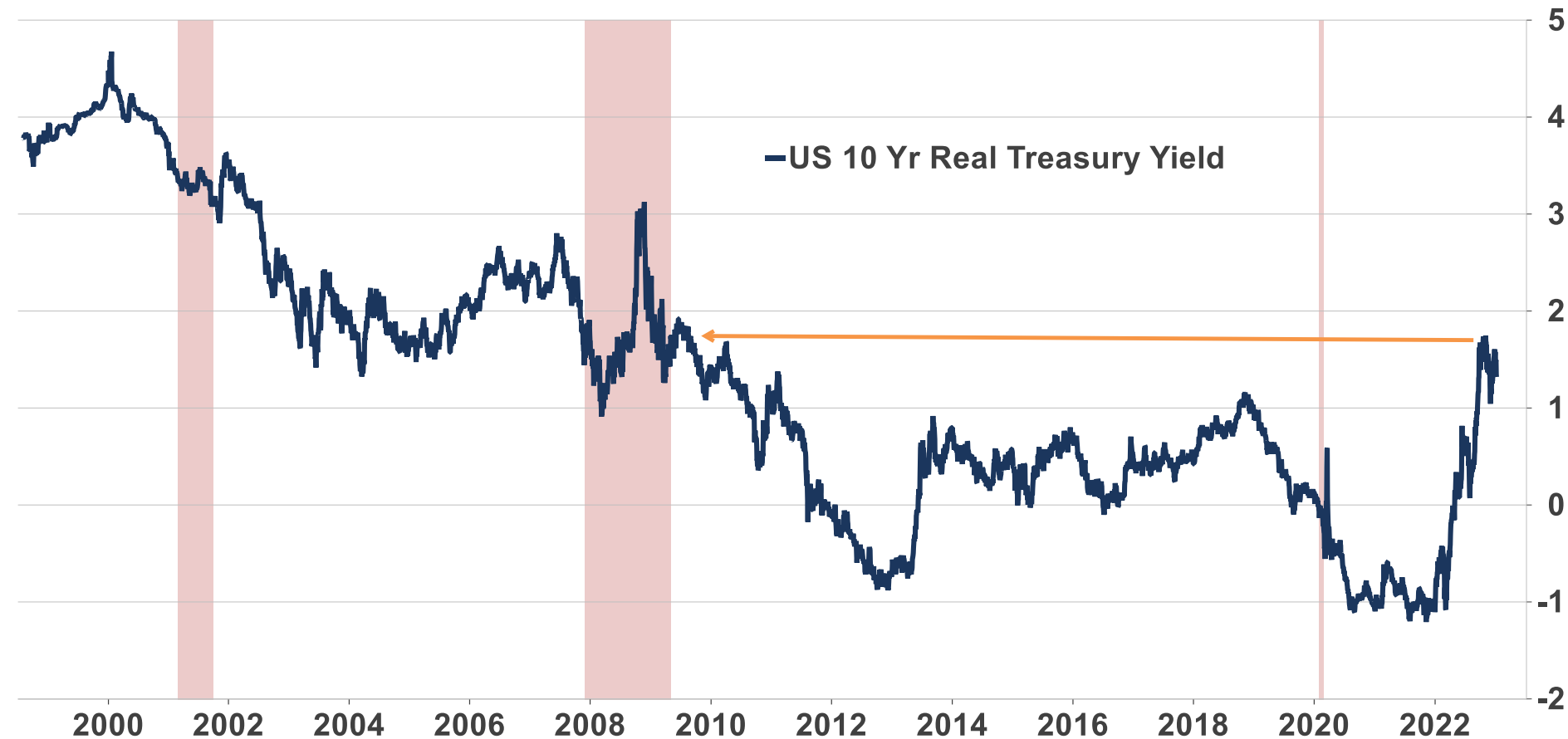
Source: Bloomberg

Credit Spreads Elevated; Valuations Compelling but Risk is High



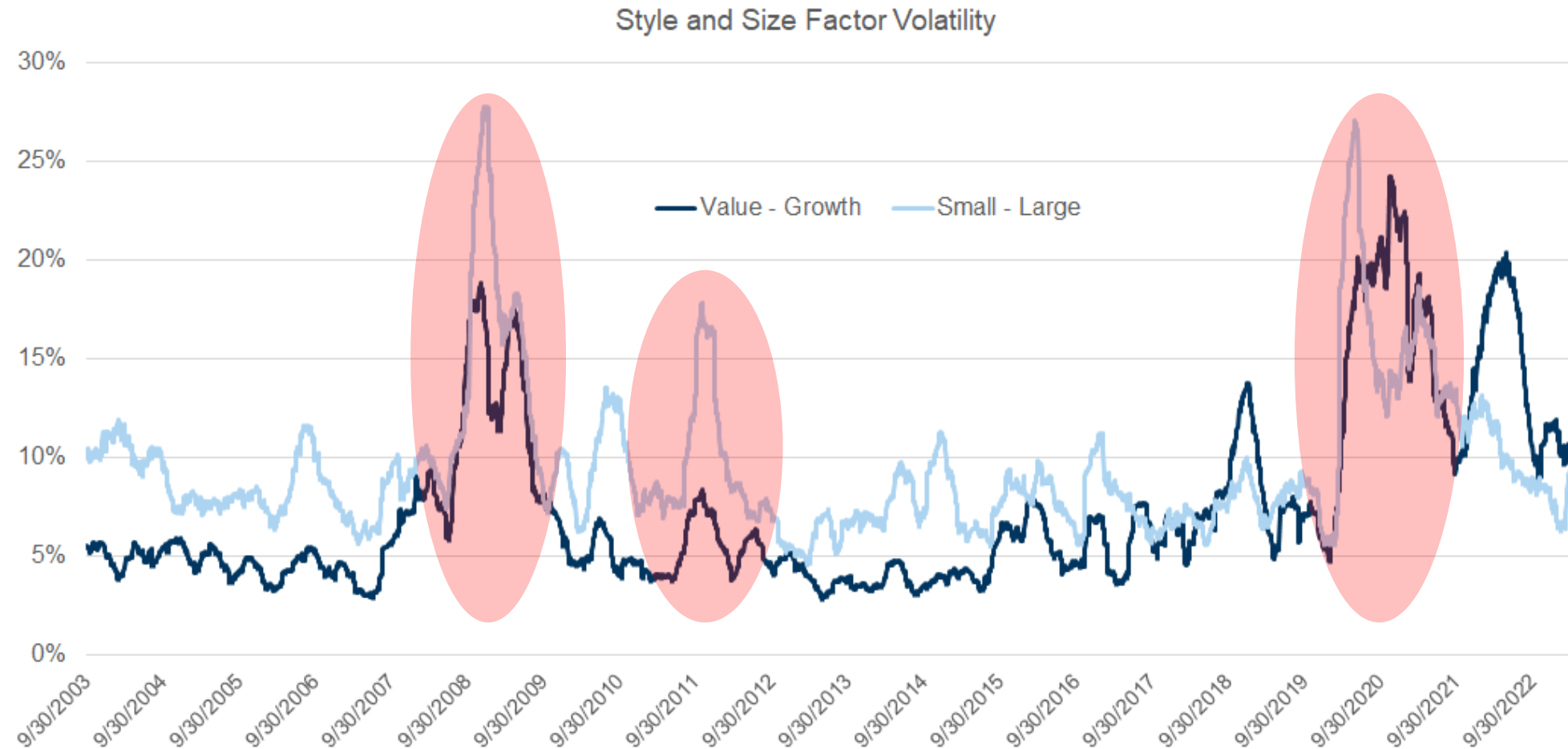
Source: Bloomberg

Fortunately, High Quality Bonds Offer Better Valuations and Diversification Properties



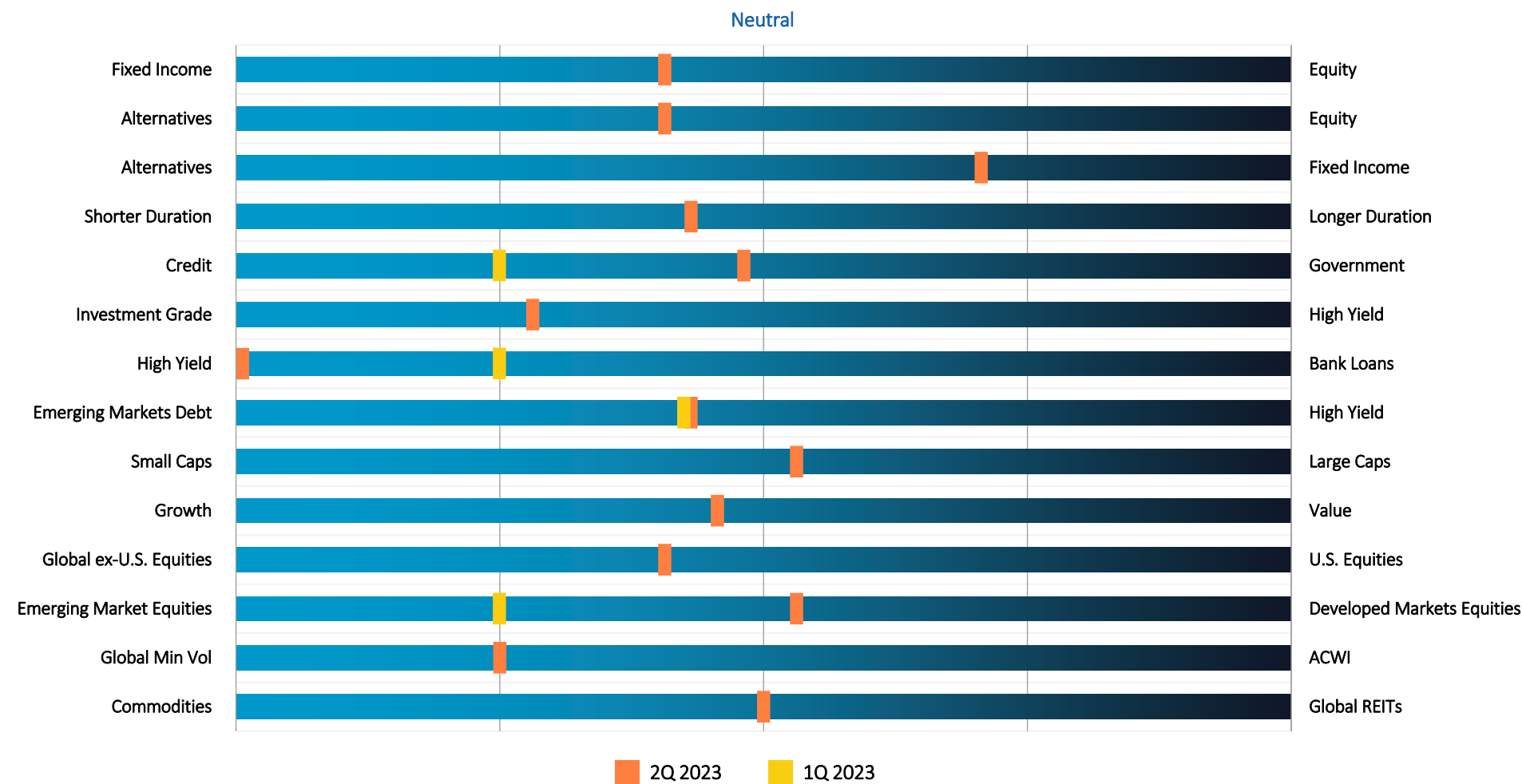
Source: Bloomberg

Factor Volatility has Fallen from COVID Highs, but Risk Remains Elevated



Data Source: Bloomberg data

Wilshire Investment Strategy Views



Market Forecasts

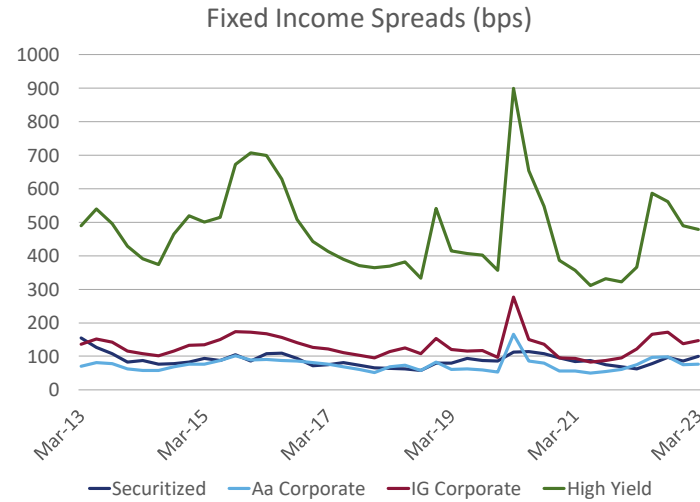
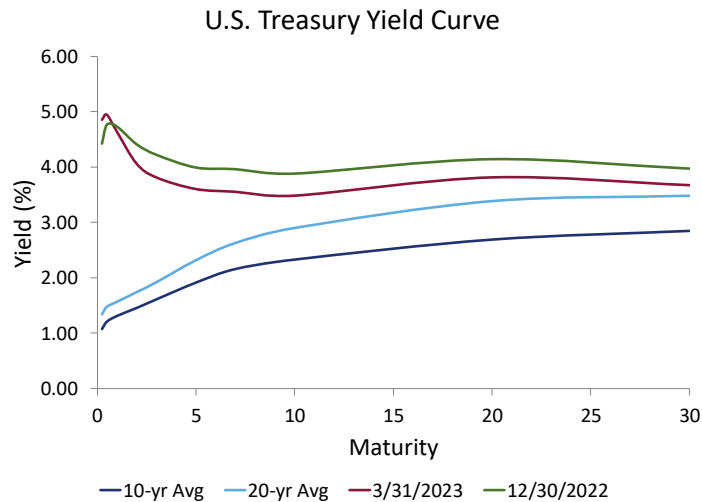
Summary Changes

- Yield curve up in the short end, but down and relatively flat at 1-year and beyond
 - Curve movements resulted in lower forecasts for government bond fixed income segments
 - Modest changes in spreads for investment grade and high yield bonds, resulting in lower forward-looking assumptions
- Yields on public real asset securities are generally up; little change in breakeven inflation from last quarter-end
- Equity assumptions are down, mainly on higher current valuations
- Equity risk premium continues to fall

Asset Class Assumption	Total Return (%)			Risk (%)
	Dec 2022	Change	Mar 2023	
Inflation	2.25	0.00	2.25	1.75
Cash Equivalents	4.00	-0.35	3.65	0.75
Treasuries	4.30	-0.30	4.00	5.00
Core Bonds	4.90	-0.30	4.60	4.70
LT Core Bonds	4.90	-0.30	4.60	9.85
High Yield Bonds	6.55	-0.30	6.25	10.00
Private Credit	8.85	-0.30	8.55	12.75
Global RE Securities	5.80	0.10	5.90	16.45
Private Real Estate	6.20	0.05	6.25	13.90
U.S. Stocks	6.50	-0.35	6.15	17.00
Dev. ex-U.S. Stocks	7.25	-0.35	6.90	18.00
Emerging Market Stocks	7.50	-0.35	7.15	26.00
Private Equity	9.90	-0.30	9.60	29.65
Global 60/40 (ACWI/U.S. Core)	6.50	-0.35	6.15	10.80

Implied Risk Premia	Relative Return (%)		
	Dec 2022	Change	Mar 2023
Cash - Inflation	1.75	-0.35	1.40
Treasury - Cash	0.30	0.05	0.35
Core - Treasury	0.60	0.00	0.60
Long-Term Core - Core	0.00	0.00	0.00
High Yield - Core	1.65	0.00	1.65
Global RESI - Core	0.90	0.40	1.30
U.S. Stocks - Core	1.60	-0.05	1.55
Private Equity - U.S. Stocks	3.40	0.05	3.45
Implied Real Return (ACA - CPI)			
U.S. Stocks	4.25	-0.35	3.90
U.S. Bonds	2.65	-0.30	2.35
Cash Equivalents	1.75	-0.35	1.40

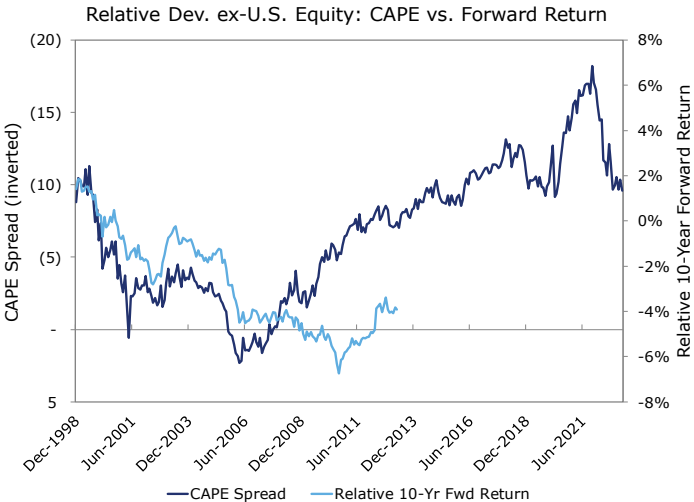
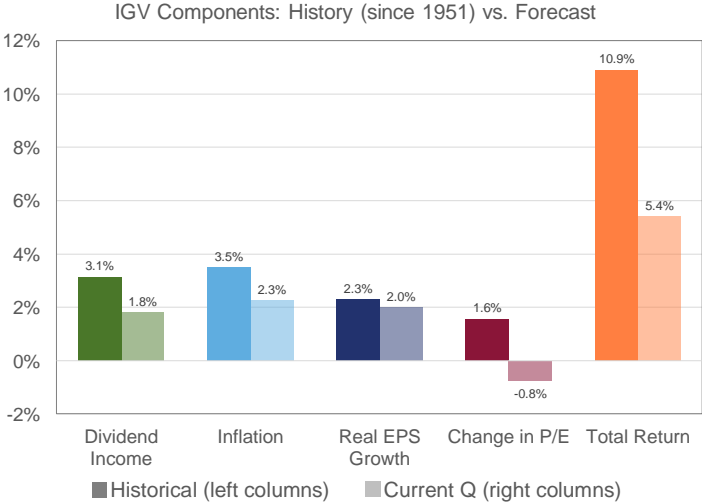
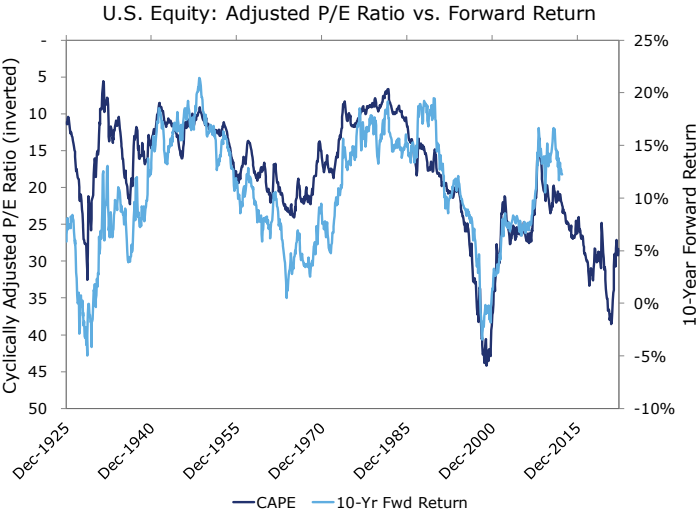
Fixed Income



Inflation & Fixed Income		Dec 2022	Change	Mar 2023
Inflation	10-Year Treasury Yield	3.88	(0.41)	3.47
	10-Year Real Yield	<u>1.58</u>	<u>(0.43)</u>	<u>1.15</u>
	Breakeven Inflation	2.30	0.02	2.32
	Inflation Forecast	2.25	0.00	2.25
Cash	91-Day T-Bill Yield	4.42	0.43	4.85
	T-Bill Yield in 10 Yrs	3.85	(0.45)	3.40
	Cash Forecast	4.00	(0.35)	3.65
Treasury	U.S. Treasury Idx Yield	4.18	(0.35)	3.83
	Treasury Idx Yield in 10 Yrs	4.45	(0.15)	4.30
	Treasury Idx Forecast	4.30	(0.30)	4.00
	U.S. LT Treasury Idx Yield	4.08	(0.31)	3.77
	LT Treasury Idx Yield in 10 Yrs	4.15	(0.29)	3.86
	LT Treasury Idx Forecast	4.05	(0.30)	3.75
Spread	U.S. Corporate Idx OAS	1.38	0.09	1.46
	Corporate Idx OAS in 10 Yrs	1.54	(0.01)	1.53
	Corporate Idx Forecast	5.45	(0.30)	5.15
	U.S. Core Bond Forecast	4.90	(0.30)	4.60
	U.S. LT Core Bond Forecast	4.90	(0.30)	4.60
	U.S. High Yield Idx OAS	4.89	(0.11)	4.78
	High Yield Idx OAS in 10 Yrs	5.40	(0.05)	5.36
	High Yield Bond Forecast	6.55	(0.30)	6.25

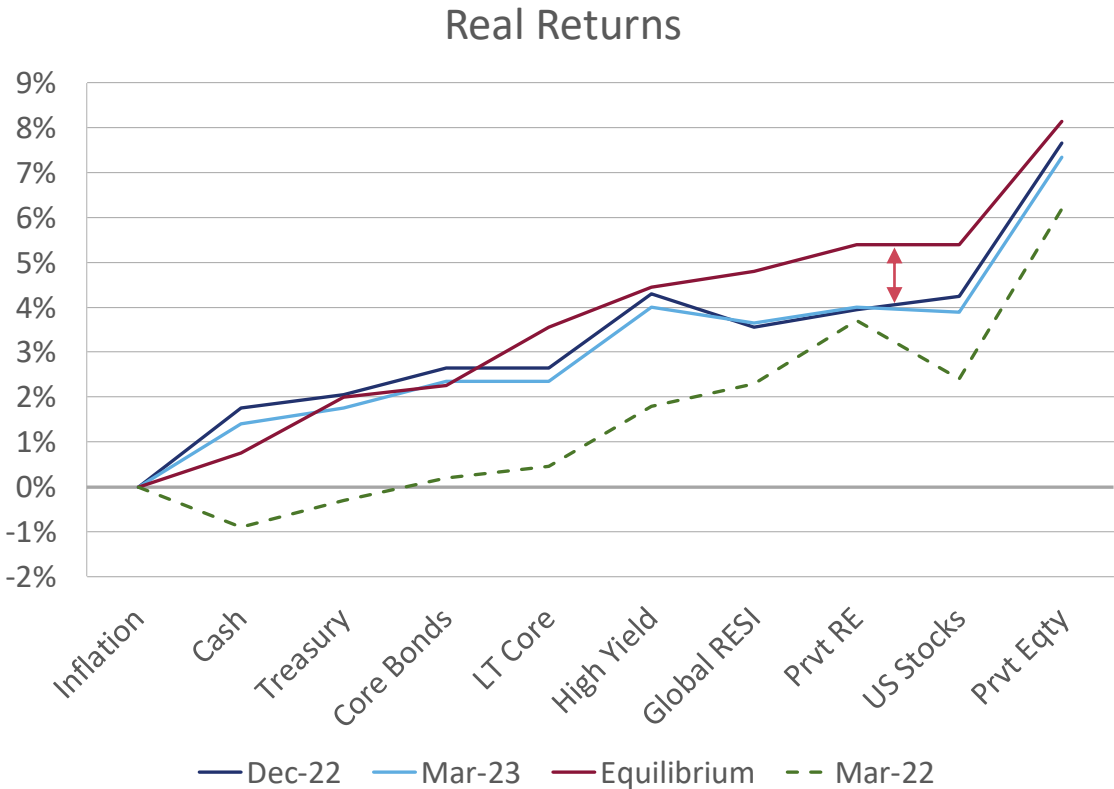
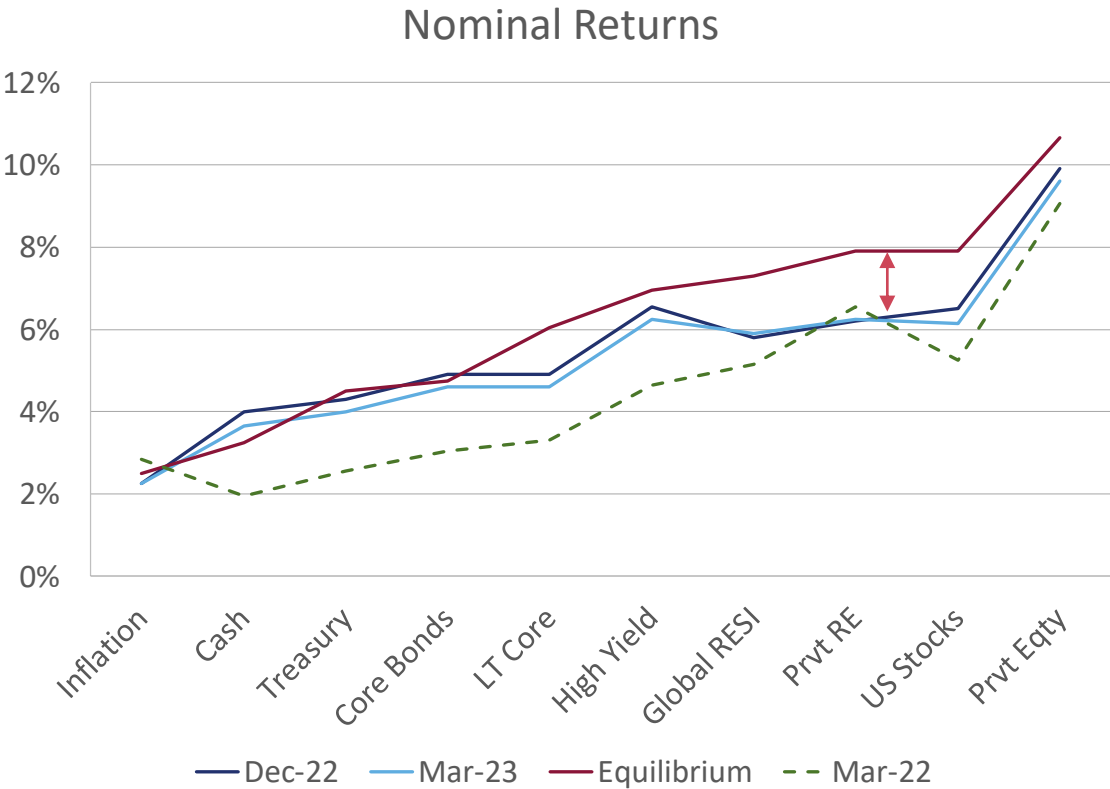
Equity Markets

Equity: Public & Private		Dec 2022	Change	Mar 2023
Equity	DDM	6.85	(0.10)	6.75
	IGV	5.95	(0.60)	5.35
	CAPE	6.95	0.05	7.00
U.S. Equity Forecast		6.50	(0.35)	6.15
Dev-ex-US Equity Forecast		7.25	(0.35)	6.90
EM Equity Forecast		7.50	(0.35)	7.15
Private	Cost of Debt (Public)	5.65	(0.25)	5.40
	Cost of Debt (Private)	7.95	(0.35)	7.60
	Private Market Basket Forecast	9.90	(0.30)	9.60

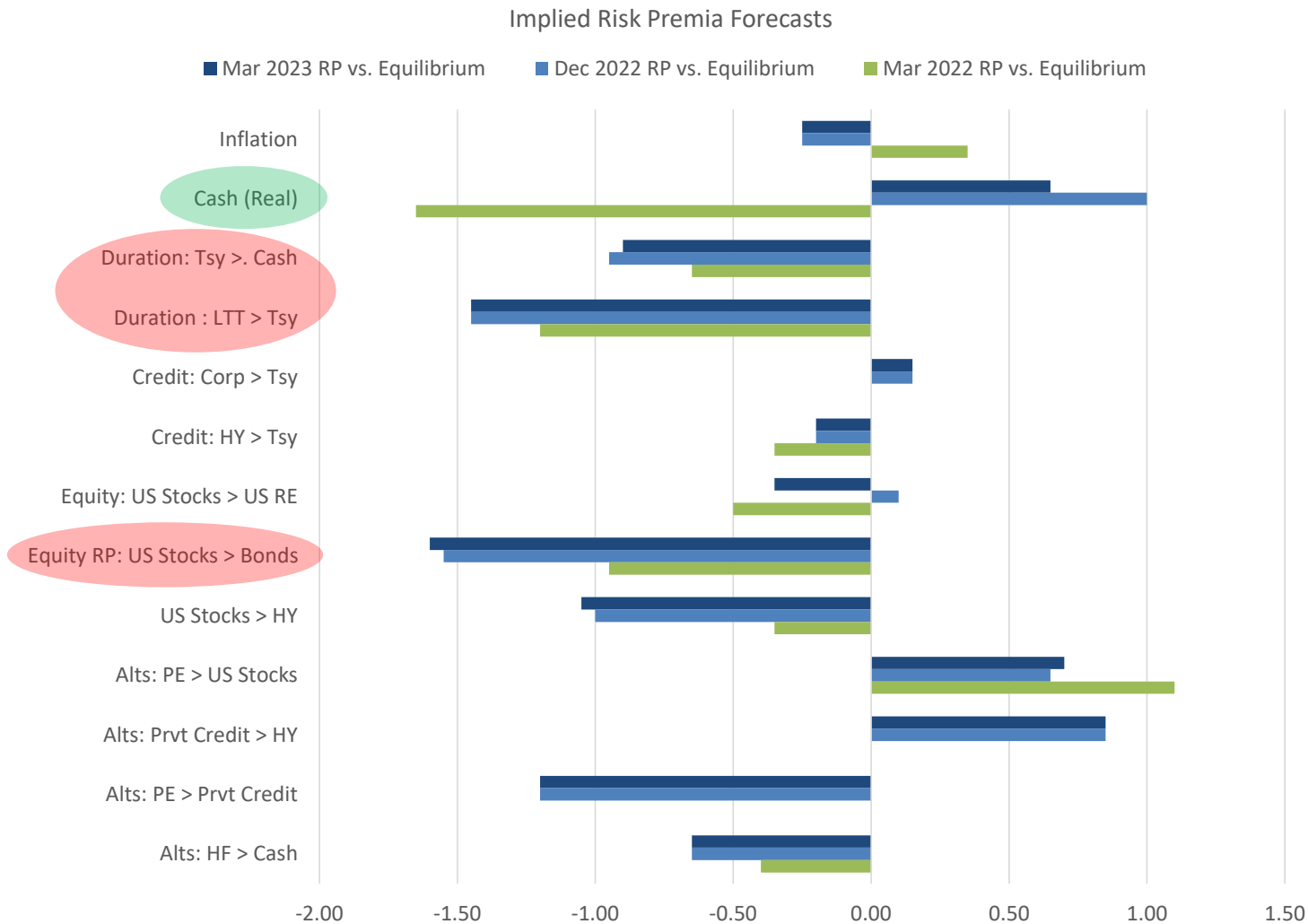


Equilibrium Assumptions

Current versus Equilibrium Asset Class Assumptions



Implied Risk Premia vs. Equilibrium Assumptions



Question & Answer

Thank you for joining us!

Please use the Q&A panel to submit questions.



The screenshot shows a user interface for asking questions. At the top, there are three tabs: 'Ask a question' (highlighted in green), 'Rate this', and 'Details'. Below the tabs is a section titled 'Ask a question' containing a text input field with the placeholder 'Type your question here...'. At the bottom of this section is a link that says 'Not hearing audio? Click here for help'. To the right of the input field is a grey button labeled 'Send question'. Two red arrows originate from the text 'Please use the Q&A panel to submit questions.'; one arrow points to the 'Ask a question' link, and the other points to the 'Send question' button.

To find out more about our solutions or speak to one of our experts, we're ready to connect you to the right team and answer any of your questions.

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