

Capital Markets Outlook and Opportunities Q1 2023

Latest insights as of 12/31/22

Review and outlook

Macroeconomic

Global equity

Global fixed income

Multi-asset

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This capital markets review and outlook is designed to help you stay up to date on the economic influences affecting portfolios as well as specific challenges and opportunities across global asset classes.

As always, please reach out to your Columbia Threadneedle Investments regional consultant with any questions.



Tip: Click or tap on the tabs at the top of every page to jump to the beginning of each section.

REVIEW Q4 2022

In Q4, global stocks were up 10%, and global bonds up 5%. A weaker U.S. dollar, -8%, had a major impact, and within equity developed int'l stocks led, up 16%; U.S. stocks lagged, up 8%. Within fixed income, global EM bonds led, up 7%; U.S. Treasuries lagged, up 1%. YTD global stocks were down 18% and bonds down 16%.

OUTLOOK

Since November, the N.Y. Fed probability of recession model has been above levels that have preceded a recession by 6-18 months and has been trending sharply higher.

Commodity inflation may have peaked, but the labor market remains tight.

Higher benchmark (10-year U.S. Treasury) bond yields continue to provide a “cushion” if rates increase and larger gains should rates decline. There is opportunity for selective use of fixed income spreads, which are currently around their average levels.

U.S. equity P/Es on expected earnings are a bit above their historical average. Adjusted for current bond yields, P/Es on current earnings are above equilibrium.

Consensus 2023 earnings growth, while dropping, is still modestly positive despite the probability of recession. Earnings have consistently declined around recessions.

Quality-Value factors lead equities during recessions. The best performing factors are: FCF to EV, EBITDA Margin, ROE, and Forward E/P.

Longer term, if we see a return to 2% inflation (the Fed’s target and the historical average), 10-year U.S. Treasury bond yields could be 2.5-3% and the SP 500 P/E could be mid-teens, based on historical relationships.

Review: Asset class performance Q4 2022 and YTD

Review and outlook

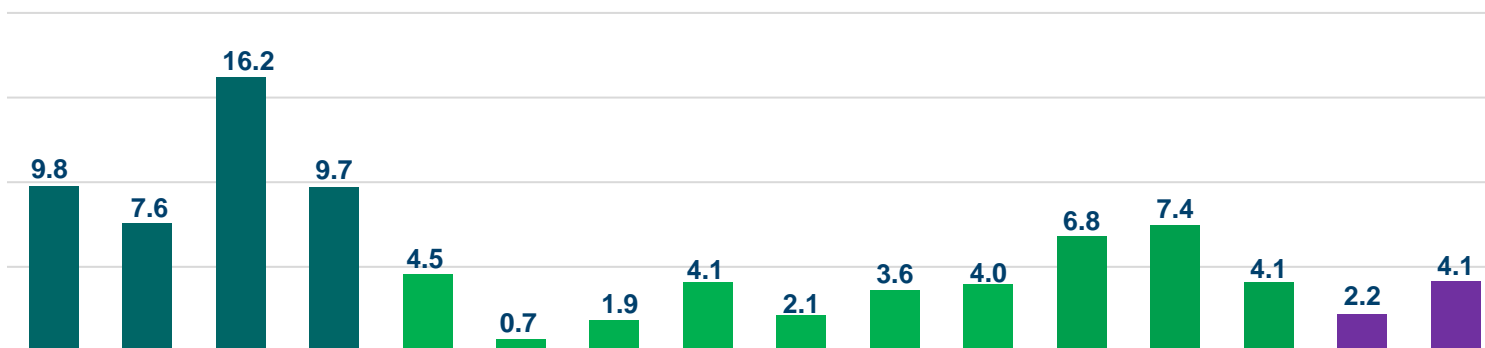
Macroeconomic

Global equity

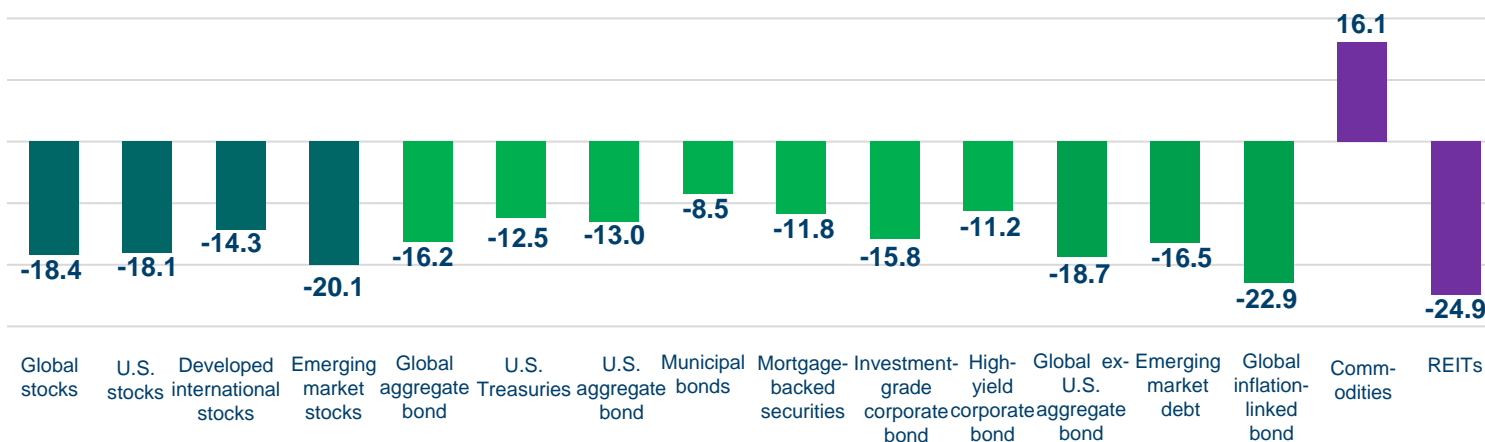
Global fixed income

Multi-asset

► Q4 2022 asset class returns (09/30/22–12/30/22, %)

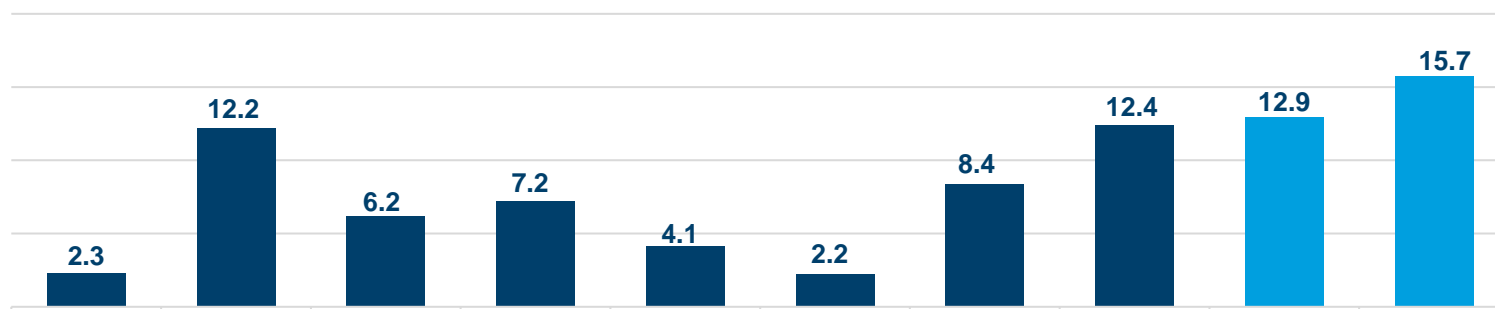


► YTD asset class returns (12/31/21–12/30/22, %)

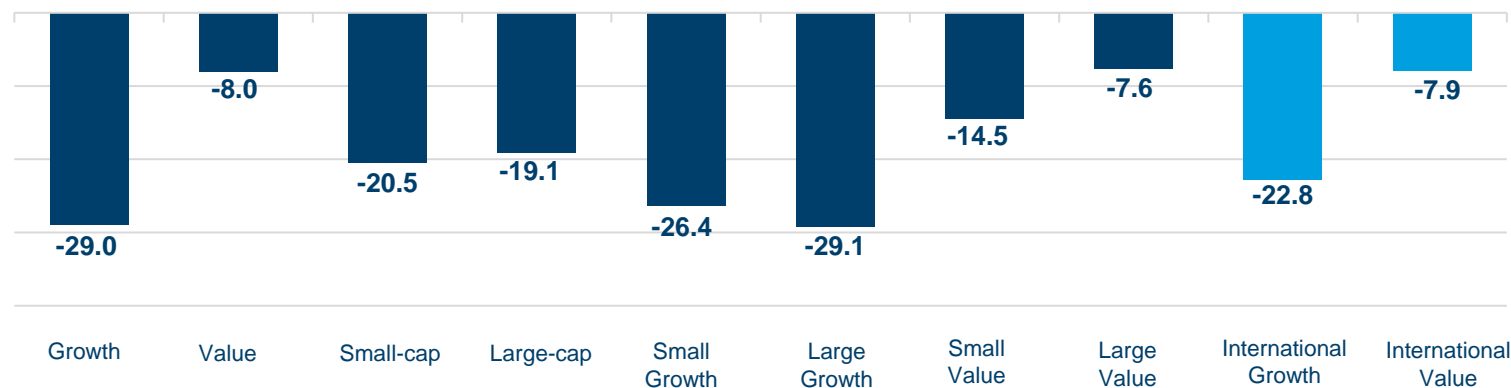


Past performance does not guarantee future results. It is not possible to invest directly in an index. Source: Columbia Management Investment Advisers, LLC. See disclosure for full index descriptions.

► Q4 2022 style returns (09/30/22–12/30/22, %)



► YTD asset class returns (12/31/21–12/30/22, %)

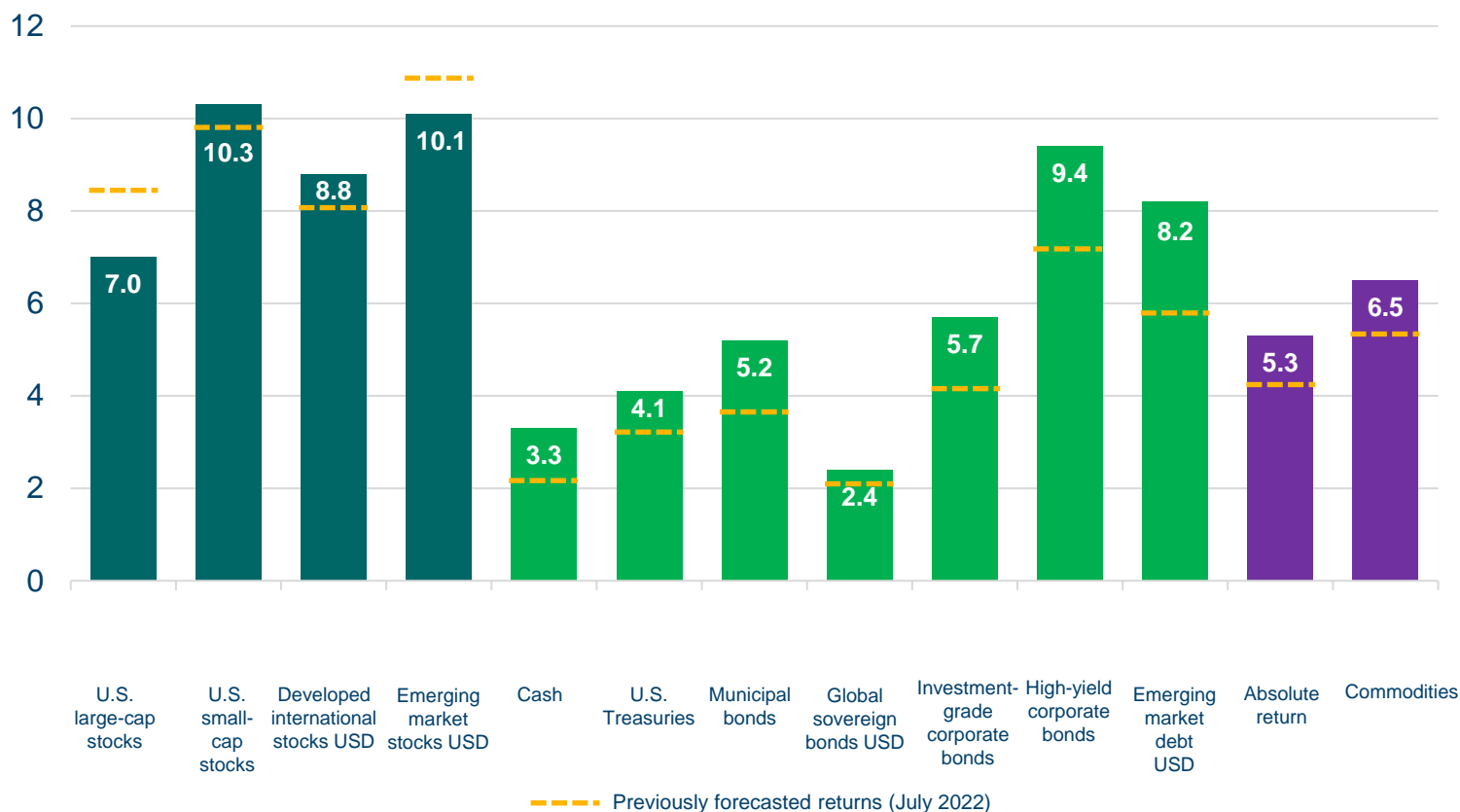


Source: Columbia Threadneedle Investments. **Past performance does not guarantee future results. It is not possible to invest directly in an index.**

Growth represented by Russell 3000 Growth Index; value by Russell 3000 Value Index; small-cap by Russell 2000 Index; large-cap by Russell 1000 Index; small growth by Russell 2000 Growth Index; large growth by Russell 1000 Growth Index; small value by Russell 2000 Value Index; large value by Russell 1000 Value Index; international growth by MSCI ACWI ex USA Growth Index; and international value by MSCI ACWI ex USA Value Index.

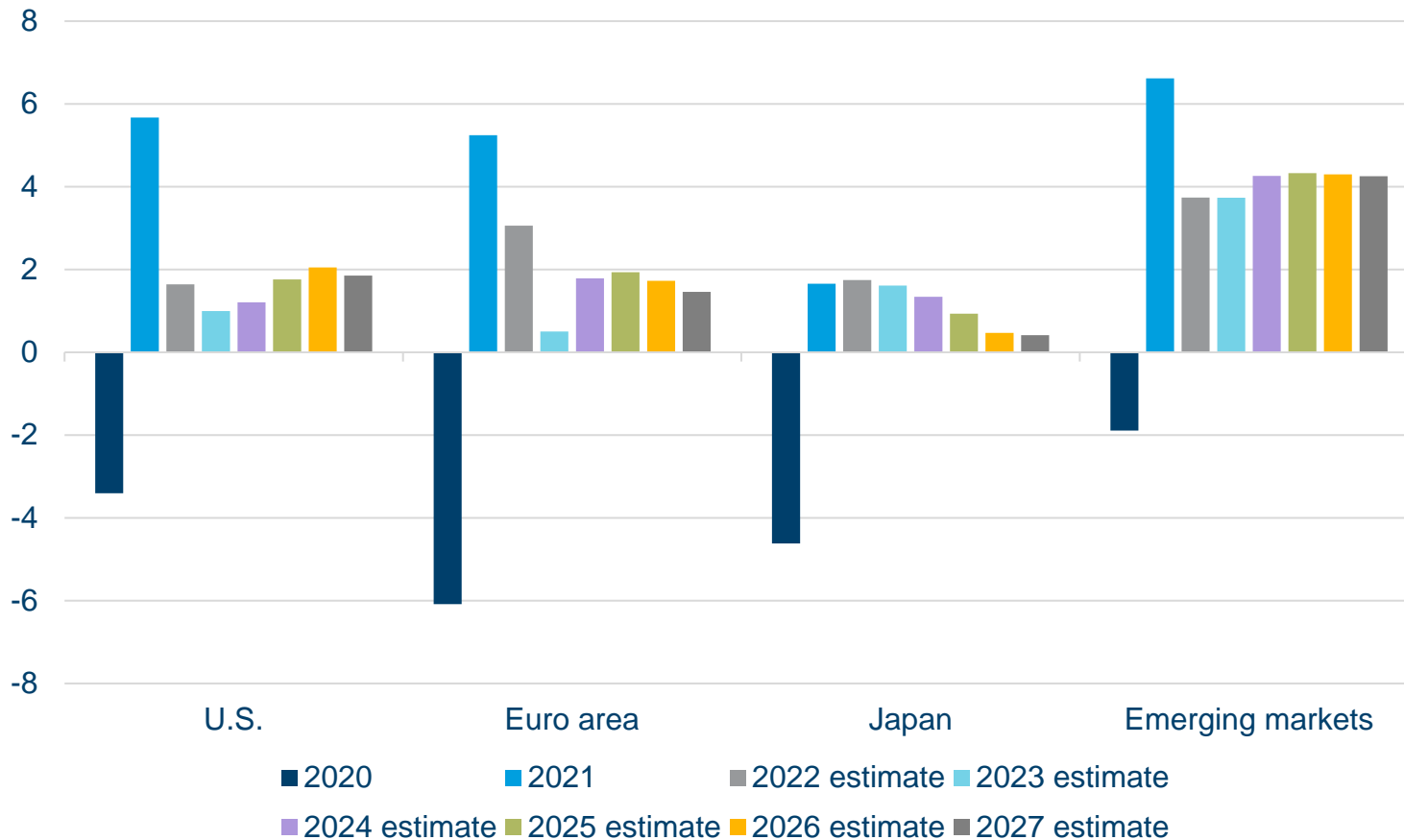
► Five-year forecasted returns

(updated twice a year, latest data as of December 2022, annualized %)



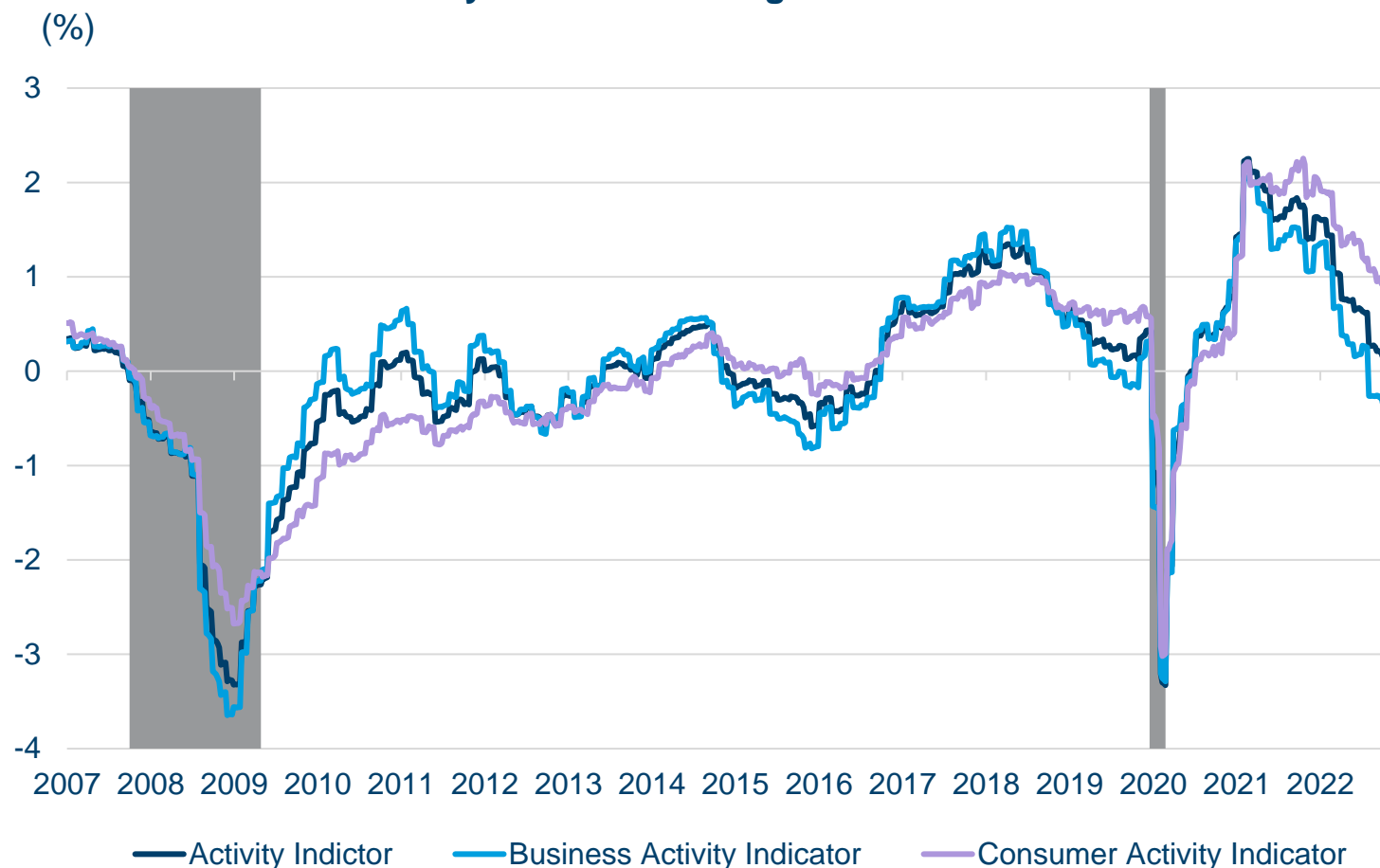
Source: Columbia Threadneedle Investments Global Asset Allocation Team. See disclosure for full index descriptions and methodology. **Past performance does not guarantee future results. It is not possible to invest directly in an index.**

► **Global growth is forecast to slow in 2023**
(GDP growth, %)



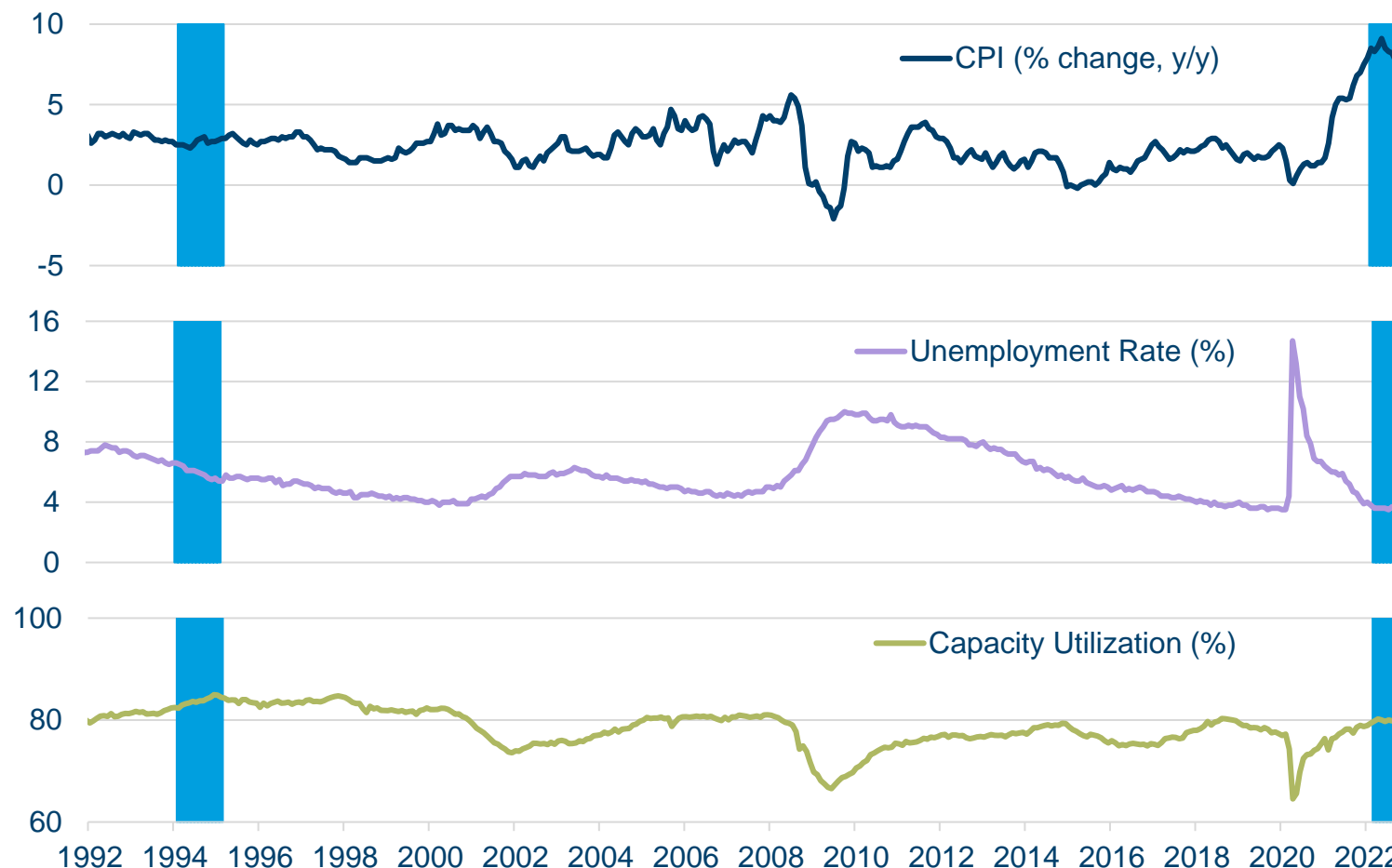
Source: IMF as of 10/22.

► Current economic activity levels are turning down



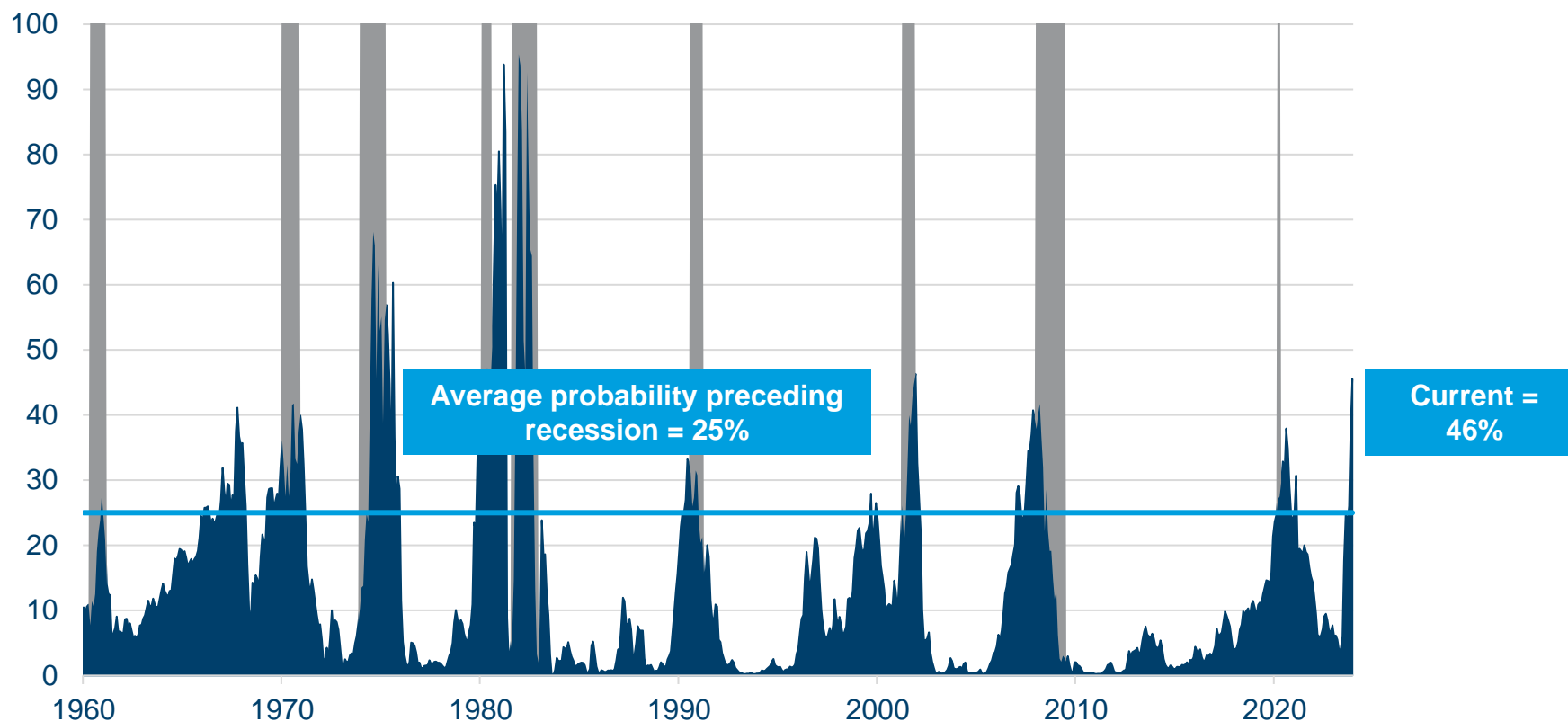
Source: Columbia Threadneedle Investments as of 12/26/22. The Columbia Threadneedle consumer activity tracker, business activity tracker and combined activity tracker are proprietary measures of economic activity based on established metrics published by the U.S. federal government and other sources. Consumer indicator utilizes consumer sentiment, employment, consumption, housing and income indices. Business indicator utilizes regional Federal Reserve outlooks, GDP forecasts, industrial production, transportation and sales indices. Grey-shaded periods indicate recessions.

► The last soft landing was 1994, when the Fed was acting proactively in response to falling unemployment and rising capacity utilization, ahead of any inflation increase



Source: Bureau of Labor Statistics, Federal Reserve, as of 11/30/22. Blue shading indicates 1994 soft landing and the current Fed tightening. Capacity utilization rate measures the percentage of potential output levels that is being achieved.

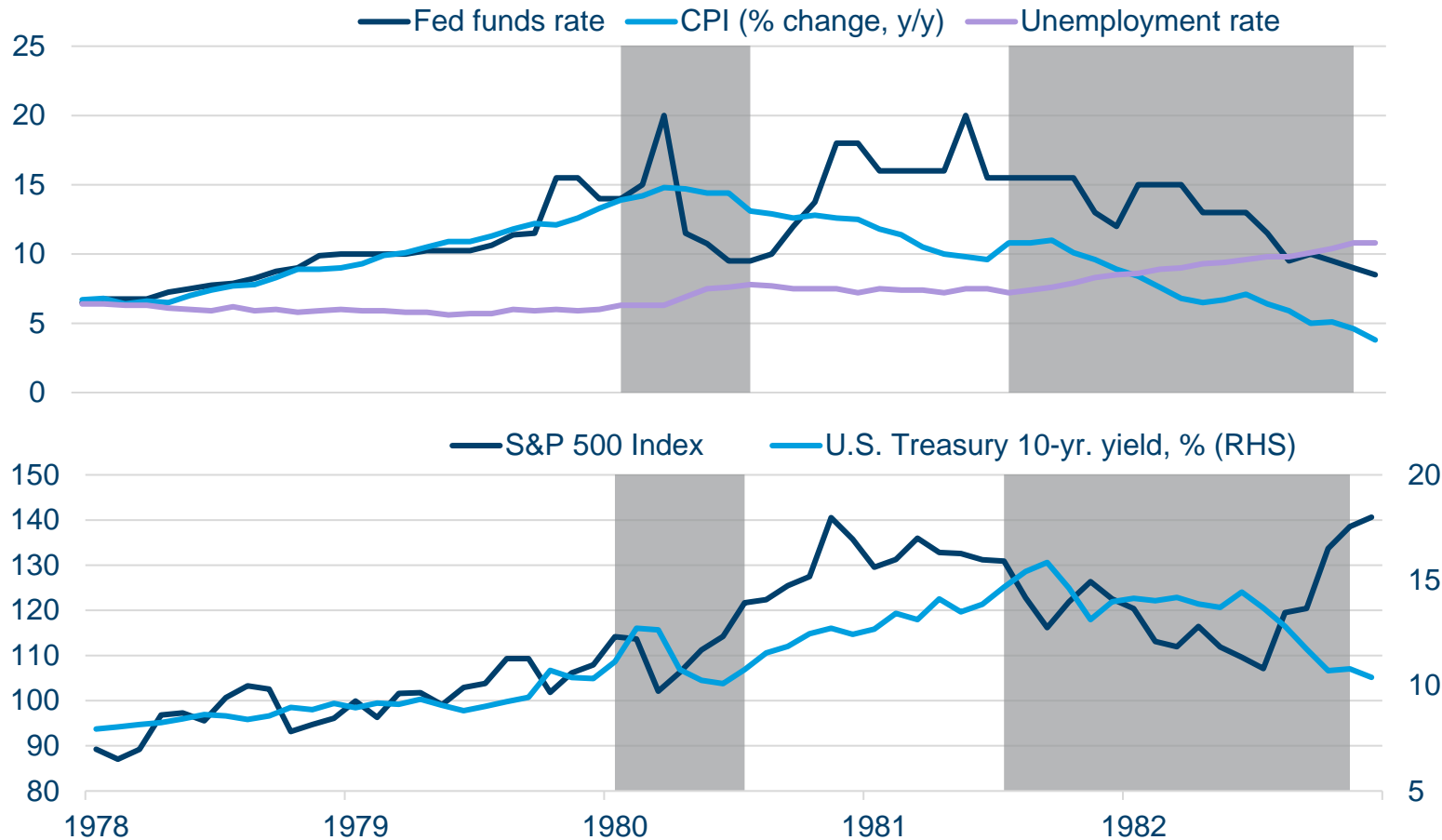
► In November 2022, the spread between 10-year U.S. Treasury bond yields and 3-month bills went above levels that historically have preceded a recession by 6-18 months (Probability, %)



Source: Federal Reserve Bank of New York, Bloomberg, as of 12/30/22. Parameters estimated using data from January 1959 to December 2009; recession probabilities predicted using data through November 2022. Grey-shaded periods indicate recessions.

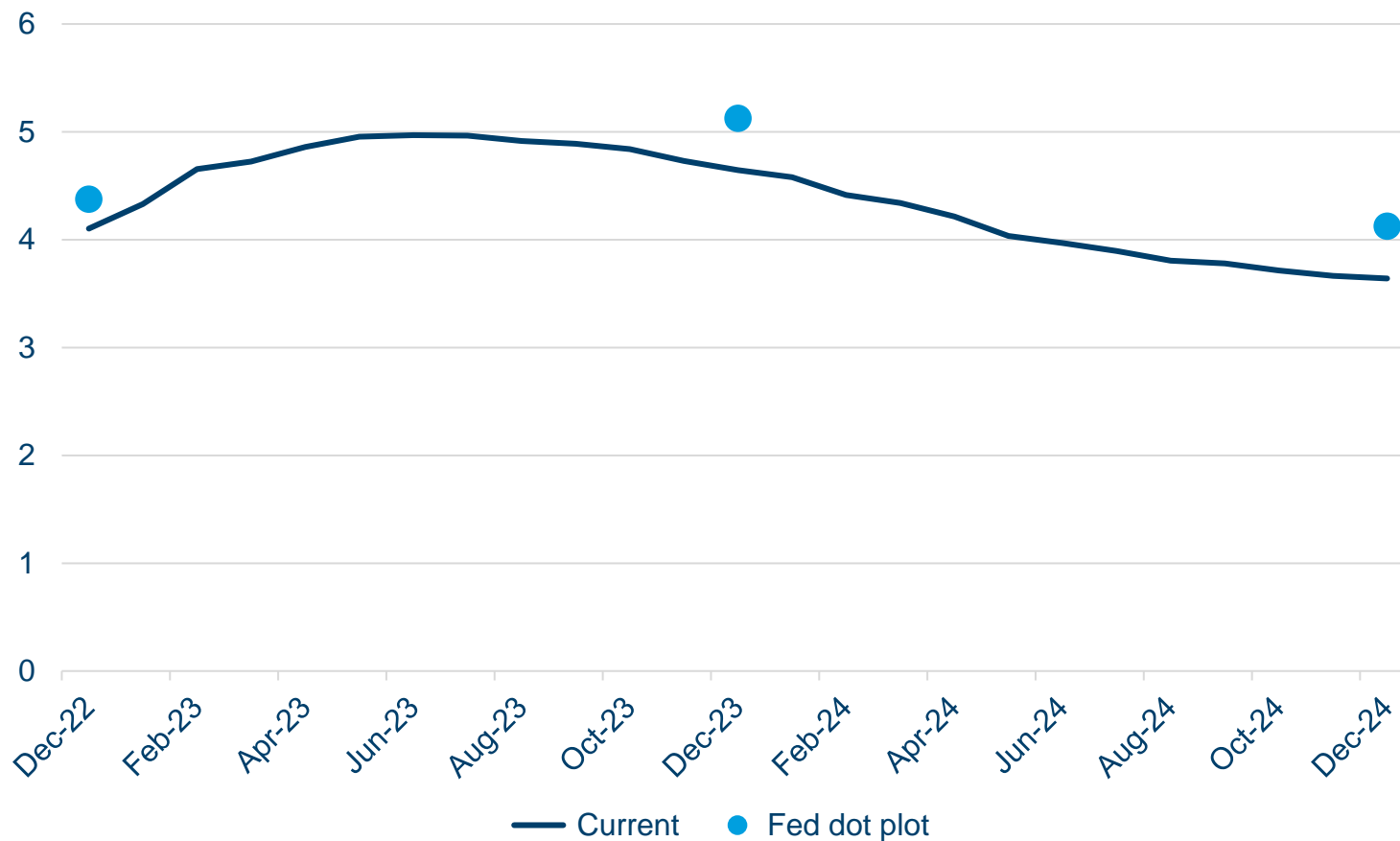
Volcker's premature easing saw bond yields surged; stocks soon tumbled

► After Fed hikes in 1980, a recession began and the Fed eased, despite high inflation. To reestablish credibility, the Fed again hiked. The 1981 recession was the worst since WWII.



Source: Columbia Threadneedle Investments, U.S. Bureau of Labor Statistics, Bureau of Economic Analysis, Bloomberg, data as of 11/30/22. Grey-shaded periods indicate recessions.

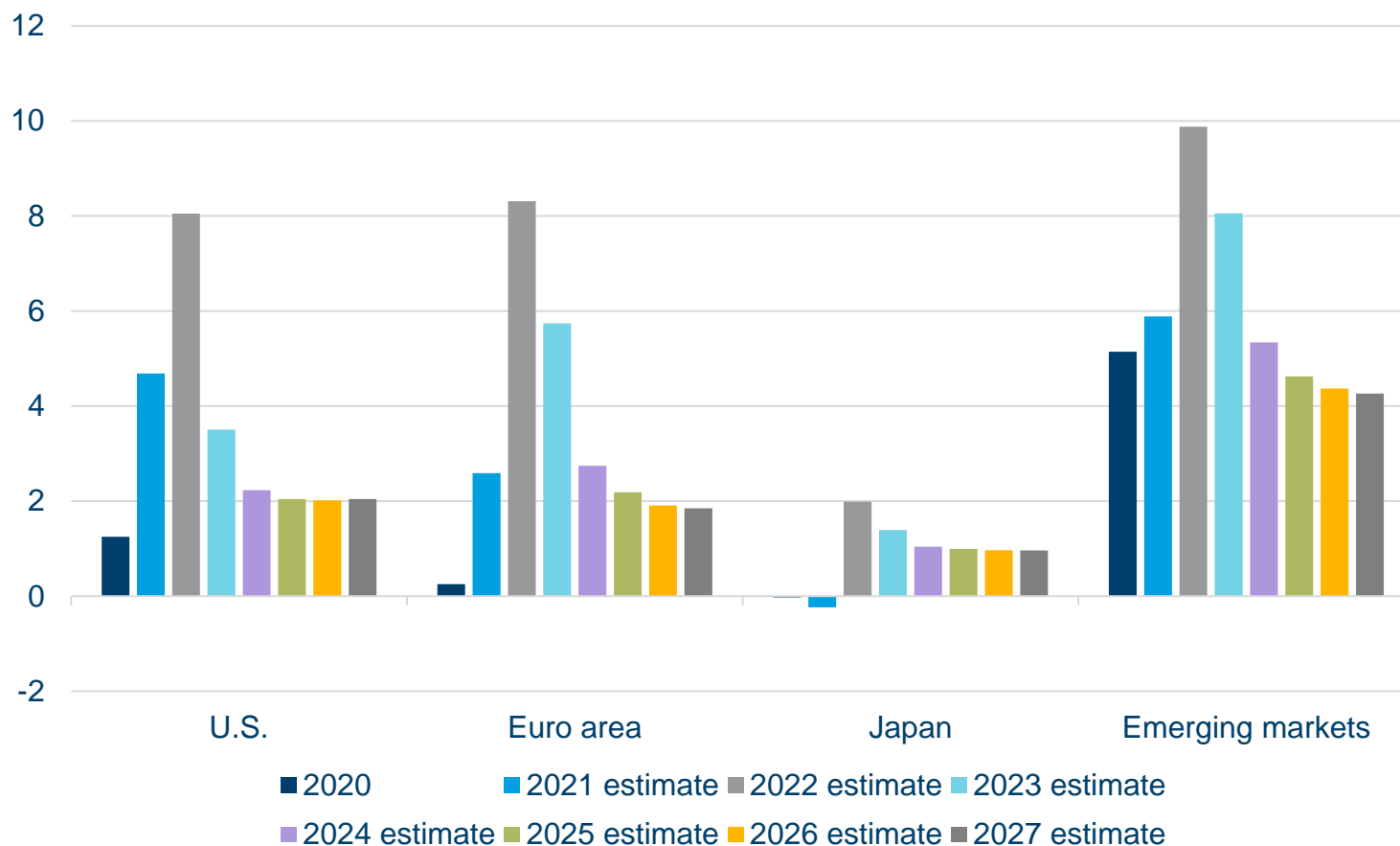
► **There is a gap between market expectations for 2023 easing and the Fed's own dot plot**
 (Fed fund futures, %)



Source: Columbia Threadneedle Investments, data as of 12/30/22.

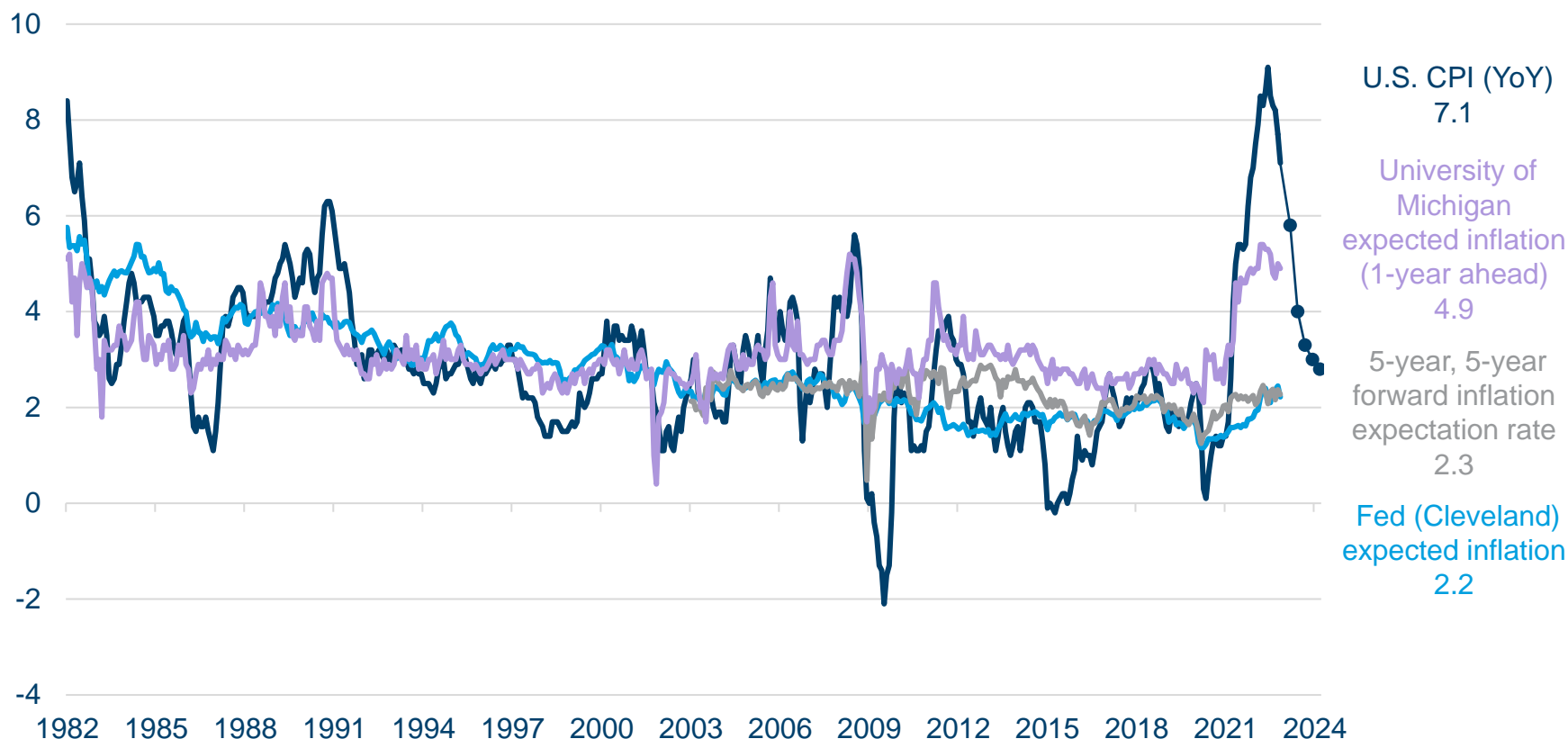
► Inflation is expected to slow and approach its historical trend by 2024

(Inflation, %)



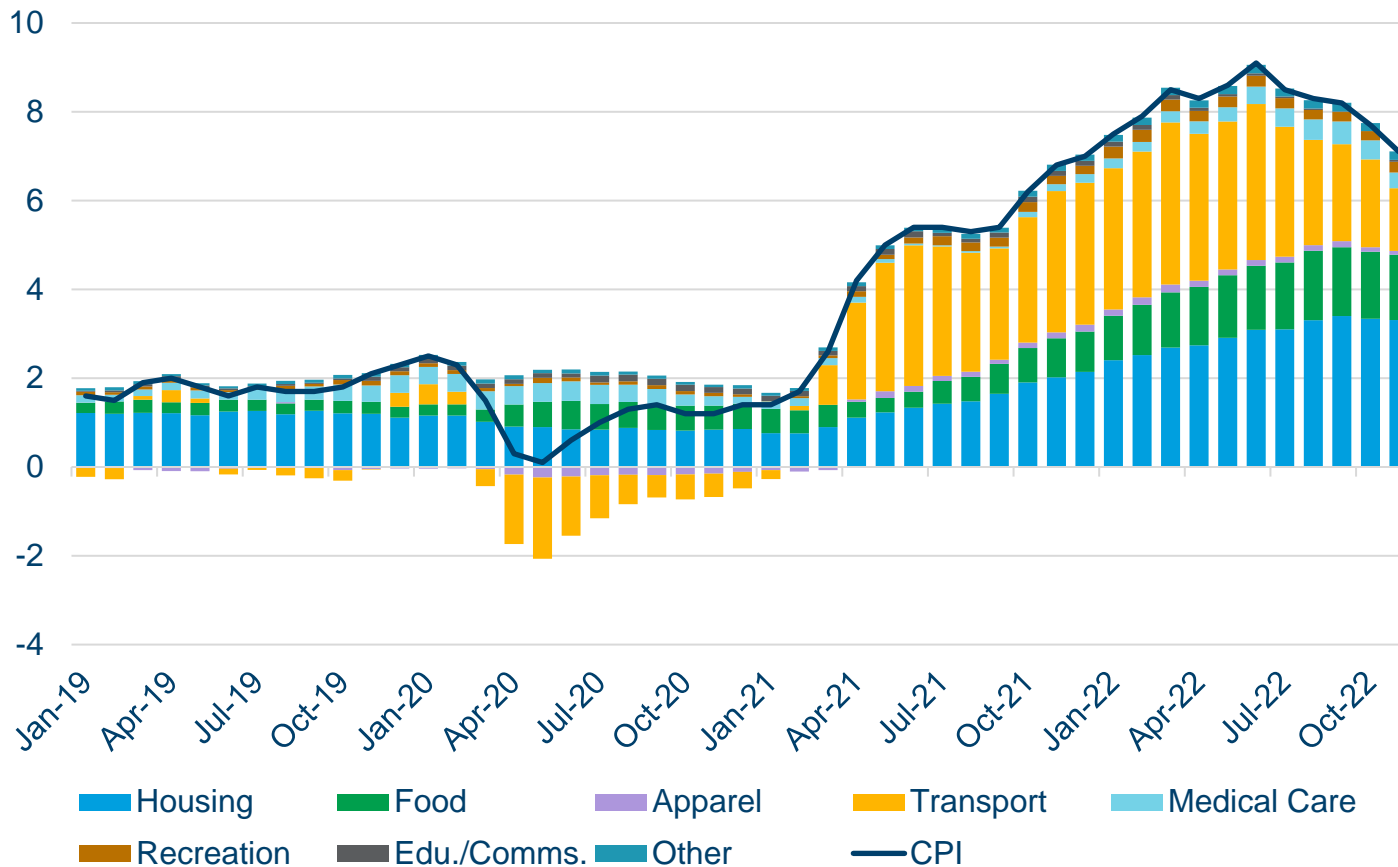
Source: IMF data as of 10/22 and updated every six months.

► **CPI and consumer 1-year expected inflation is still high, but the outlook for future inflation (e.g., Cleveland Fed estimate, 5-year futures and consensus CPI forecast) is low (Inflation, %)**



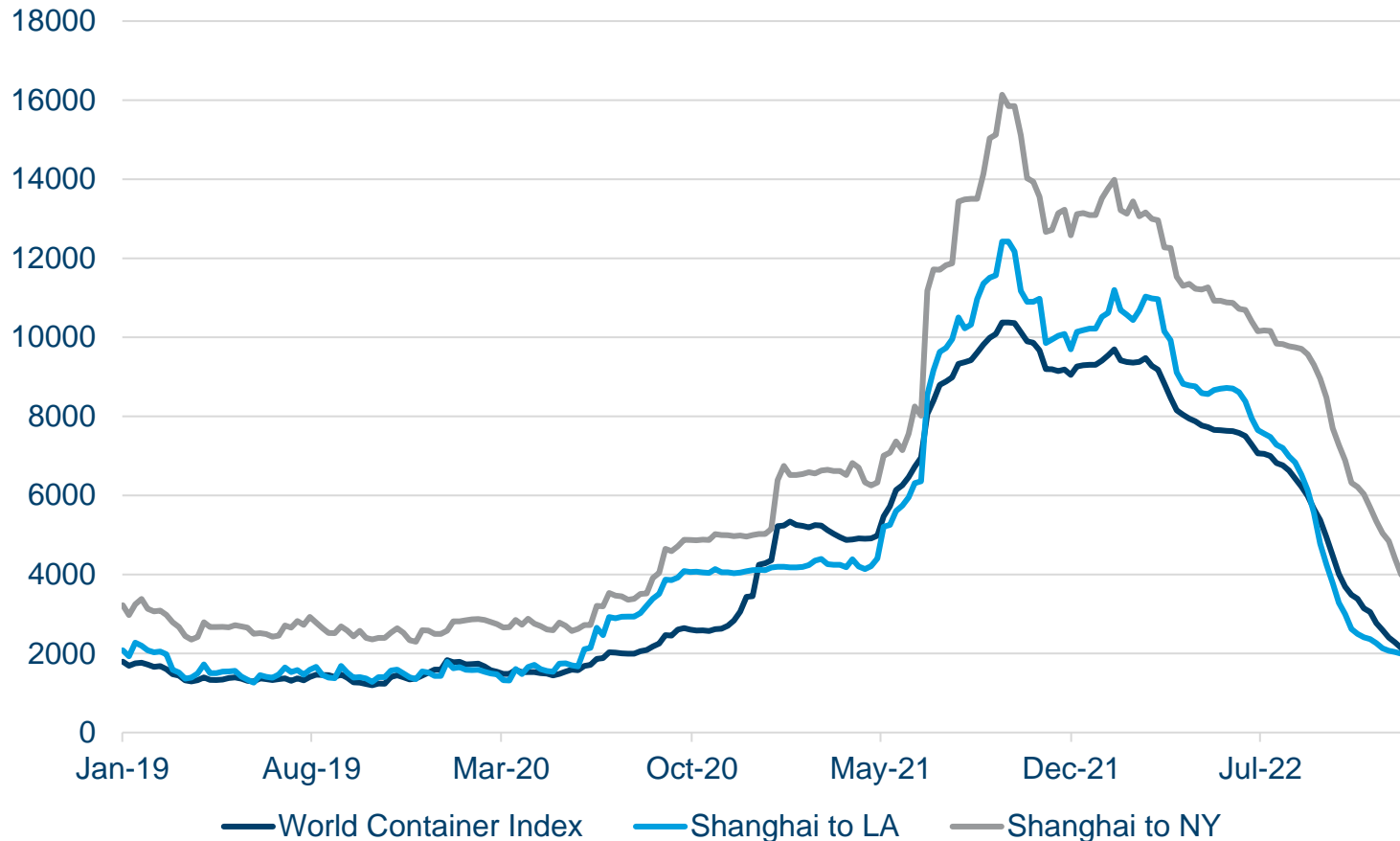
Source: Bureau of Labor Statistics, Federal Reserve Bank of Cleveland, Federal Reserve Bank of St. Louis, University of Michigan. The dots are quarterly CPI forecasts sourced from Bloomberg. All data as of 11/30/22, except 5-year, 5-year forward rate is as of 12/30/22. Note: Cleveland Fed estimates of the expected rate of inflation over the next 10 years are calculated using treasury yields, inflation data, inflation swaps and survey-based measures of inflation expectations. 5-year, 5-year forward inflation expectation rate represents a measure of expected inflation derived from 5-year treasury constant maturity securities and 5-year treasury inflation-indexed constant maturity securities. University of Michigan expected inflation is median expected price change next 12 months, Surveys of Consumers.

► **The cost of housing has replaced transportation as the biggest factor driving inflation higher**
(CPI by product type, %)



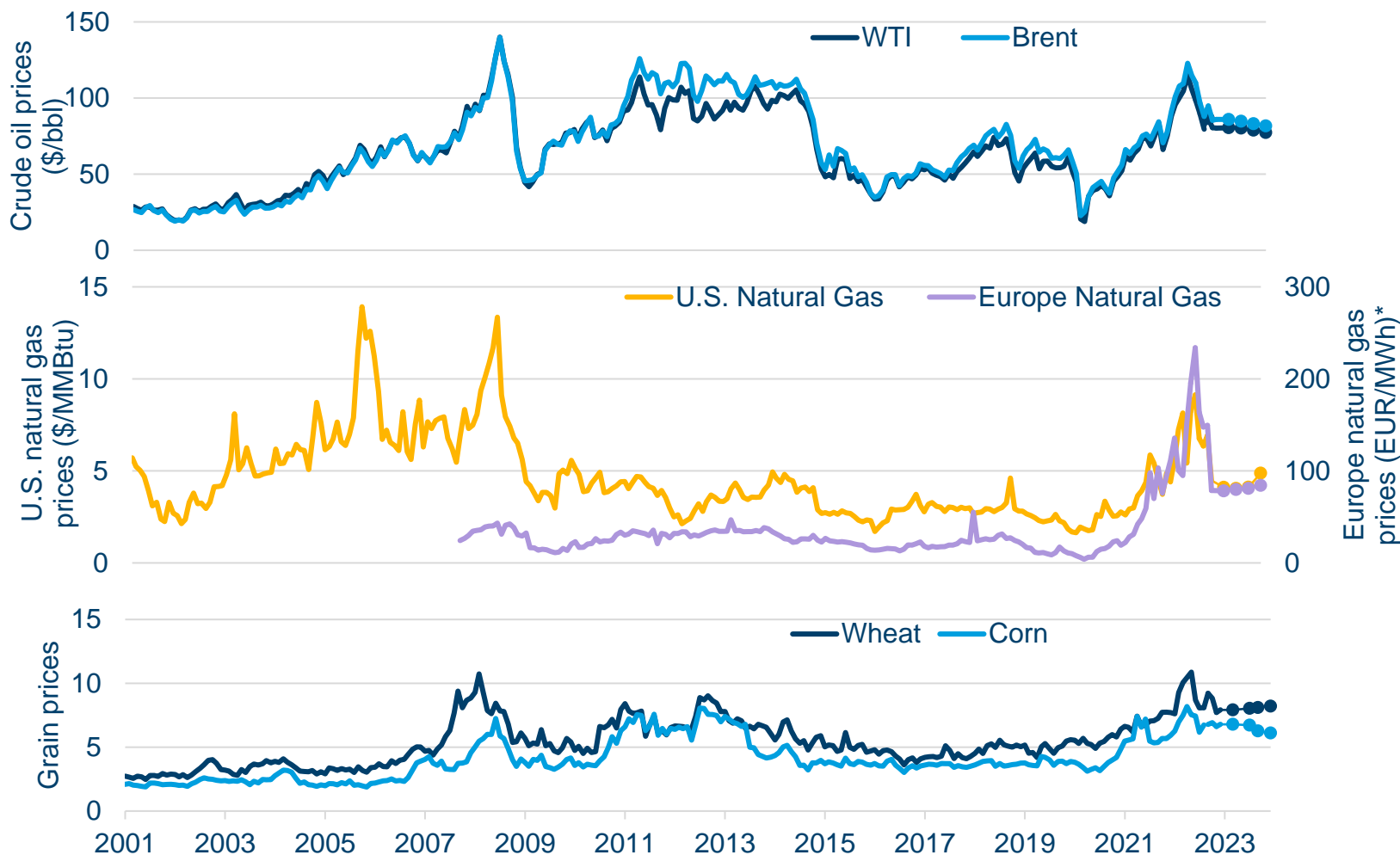
Source: Bureau of Labor Statistics, data as of 11/30/22.

► **The World Container Index is down 80% from the September 2021 peak, Shanghai to LA is down 84% and Shanghai to NY is down 76%*** (Shipping costs, \$ per 40ft container)



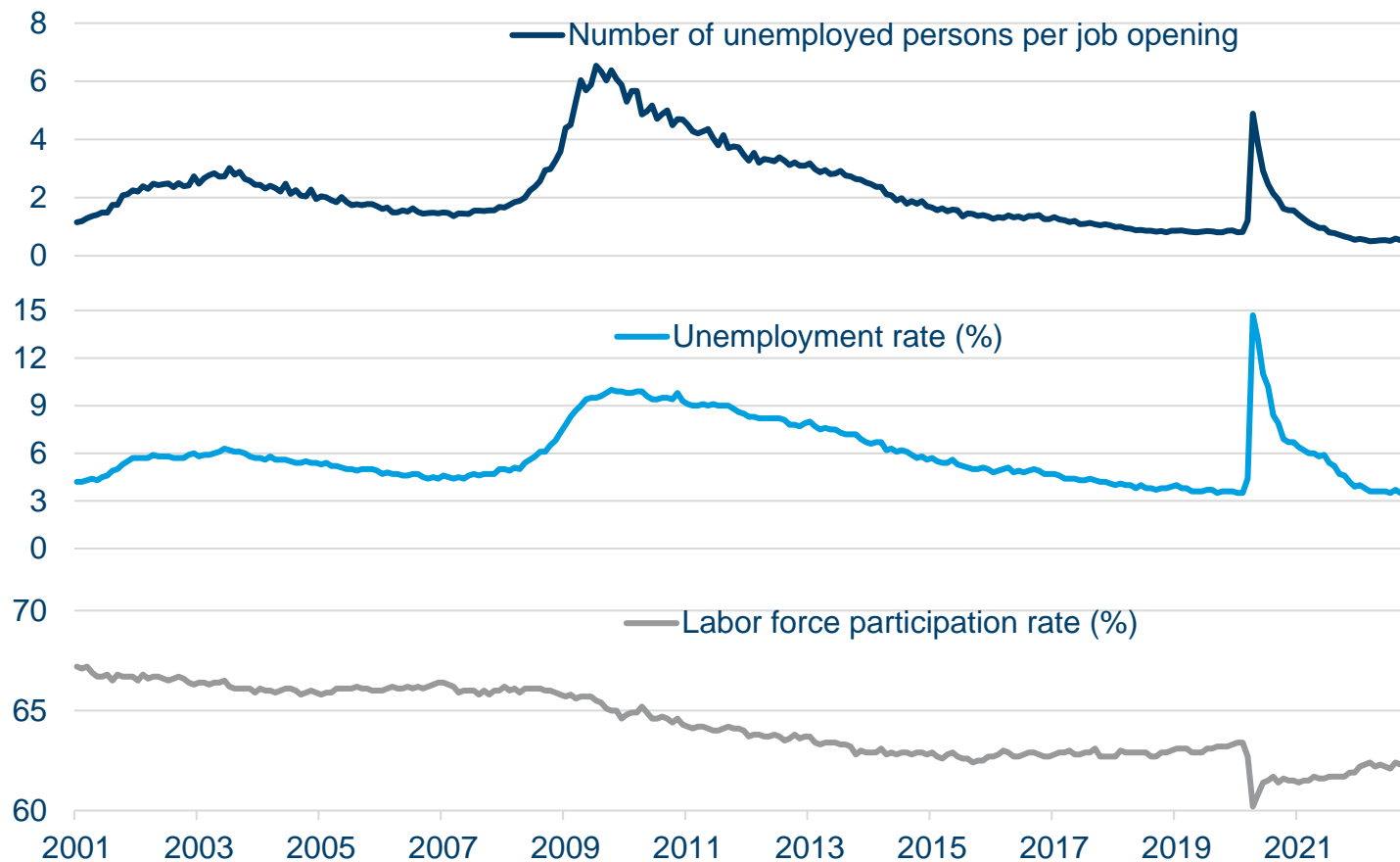
Source: Drewry World Container Index as of 12/22/22. The World Container Index (WCI) is the resource to assess container freight rates weekly. The container freight rates are reports of actual market prices sourced from an international panel of market participants.

► Current and futures prices suggests energy and grain prices may have peaked



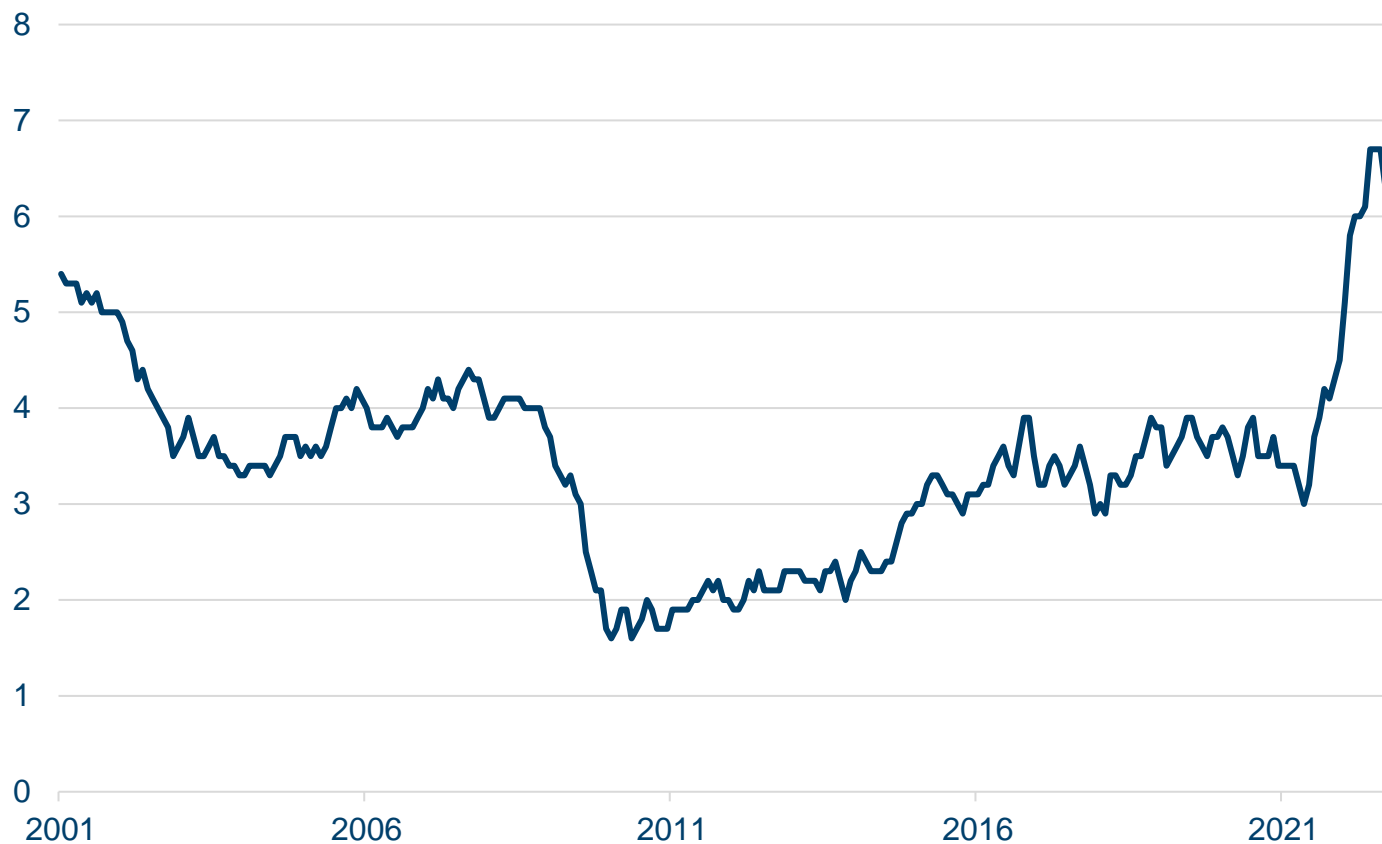
Source: Bloomberg, data as of 12/30/22. * Europe natural gas prices is measured by Netherlands TTF Natural Gas prices. Dots are the futures price of 03/23, 06/23, 09/23 & 12/23 contracts.

► The labor market remains tight



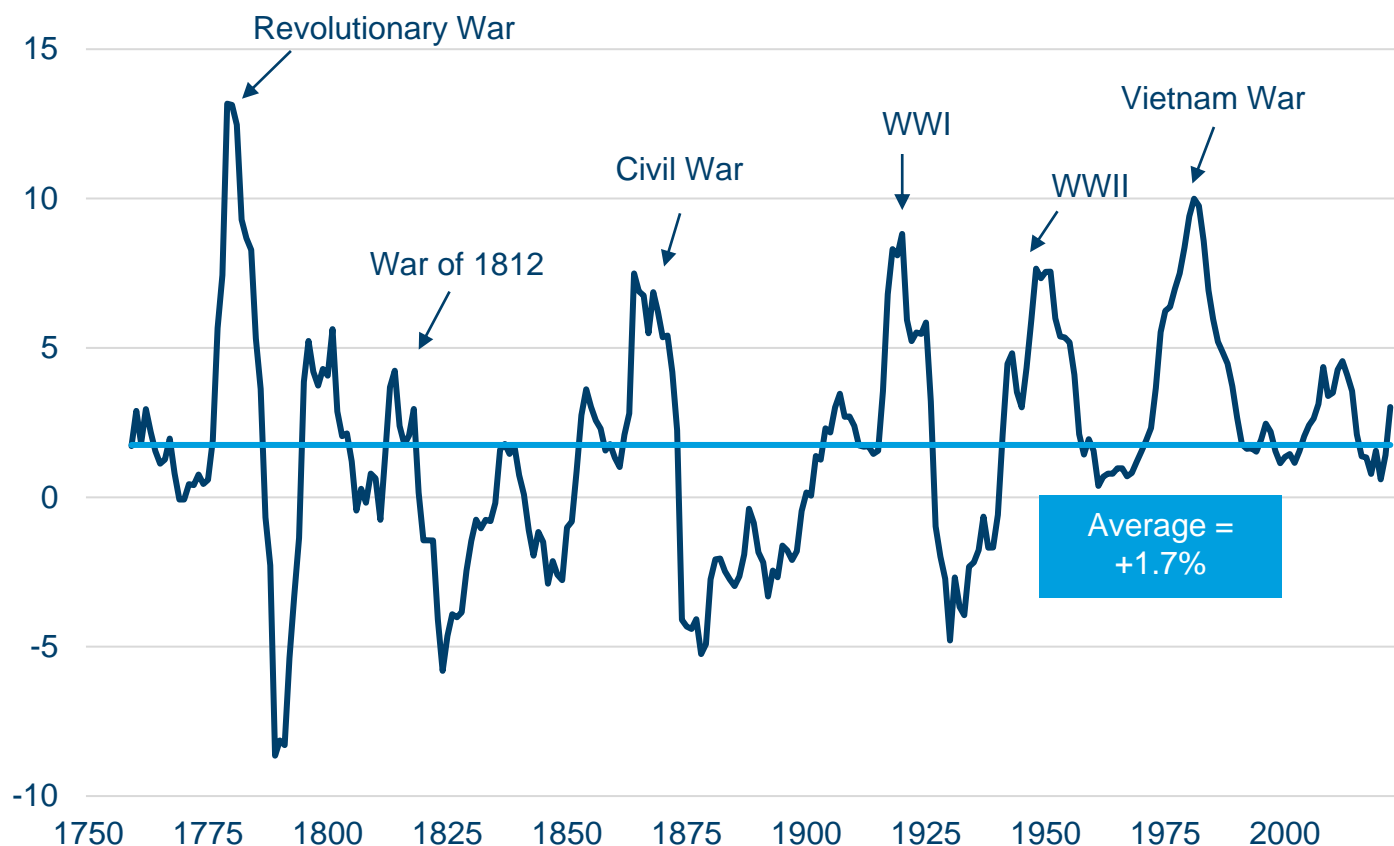
Source: U.S. Bureau of Labor Statistics, data as of 11/30/22.

► **The result of the tight labor market is that wages continue to rise sharply**
(Atlanta Fed wage growth tracker, %)



Source: Federal Reserve Bank of Atlanta, data as of 11/30/22.

► **Over the long-term, moderate levels of inflation are normal**
(Wholesale prices in the U.S., rolling 10-yr. average, annually, %)



Source: Historical Statistics of United States, Bureau of Labor Statistics, Columbia Management Investment Advisers, LLC, data as of 11/30/22.

The U.S. dollar: Driven by Treasury spreads, GDP differentials and geo-political risk

Review and outlook

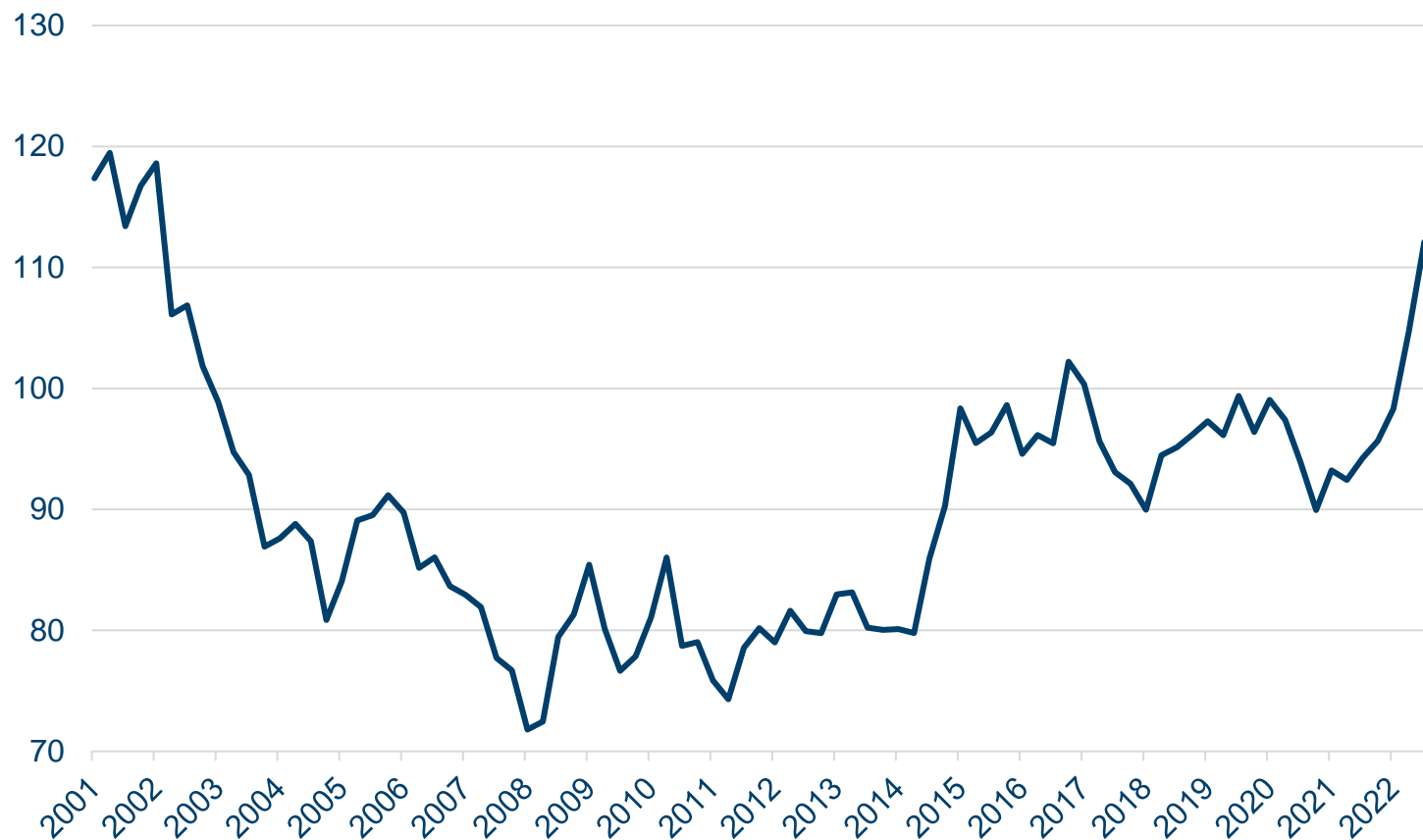
Macroeconomic

Global equity

Global fixed income

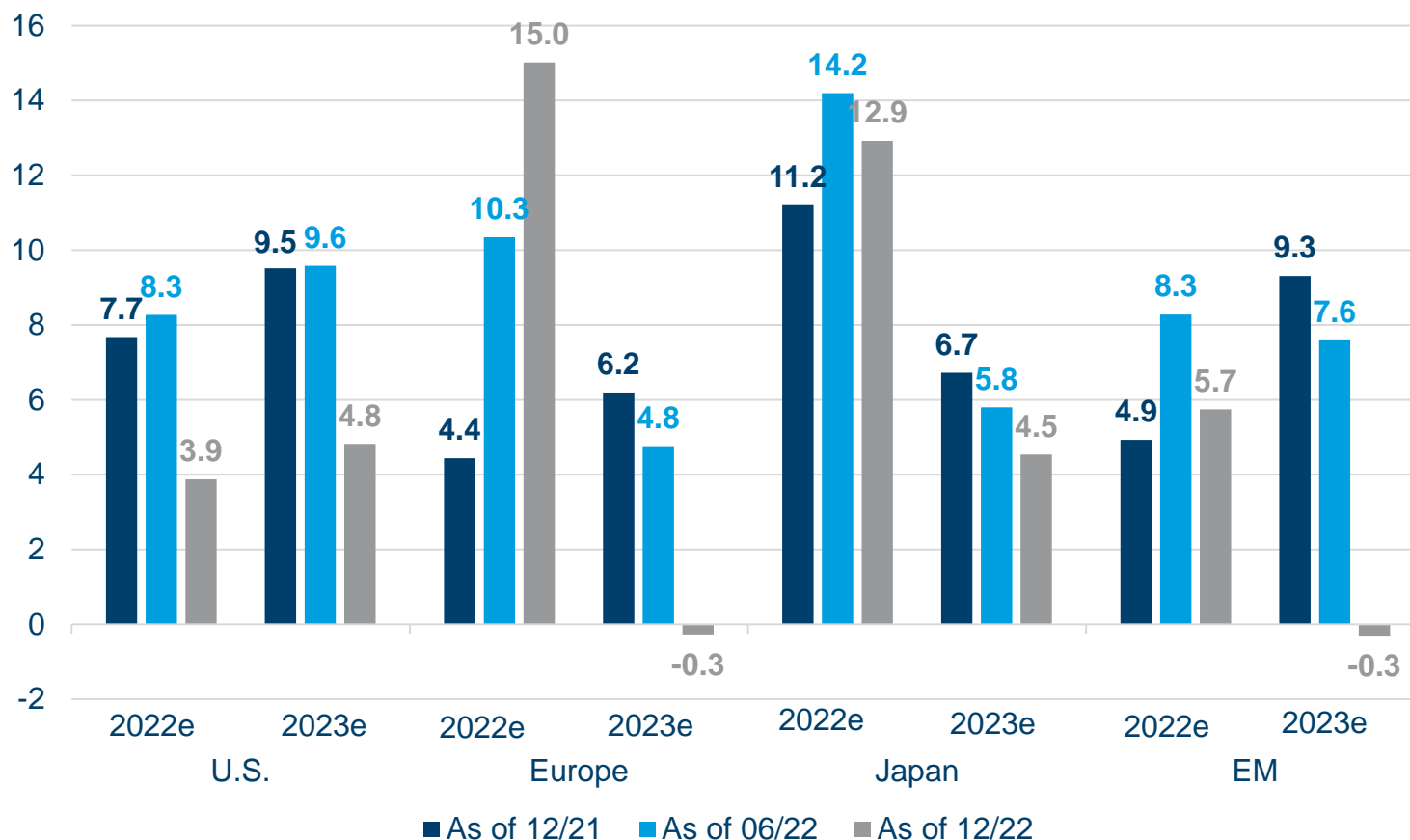
Multi-asset

► **The U.S. dollar has weakened, reflecting a slowing relative GDP growth differential vs. global levels and a decline in geo-political risk (The U.S. Dollar Index)**



Source: Federal Reserve Bank of Dallas; Economic Policy Uncertainty as of 12/30/22. The U.S. Dollar Index (USDIX) indicates the general international value of the USD. It is calculated by averaging the exchange rates between the USD and major world currencies. The USDIX was established by the U.S. Federal Reserve in 1973. **Past performance does not guarantee future results. It is not possible to invest directly in an index.**

► **U.S. consensus 2023 earnings growth is still forecast to be positive, despite the probability of recession (Earnings growth, %)**



Source: FactSet, MSCI, data as of 12/30/22. U.S. is represented by MSCI US Index; Europe by MSCI Europe Index; Japan by MSCI Japan Index; EM by MSCI Emerging Markets Index. **It is not possible to invest directly in an index.**

Earnings growth: EPS change around recession periods

Review and outlook

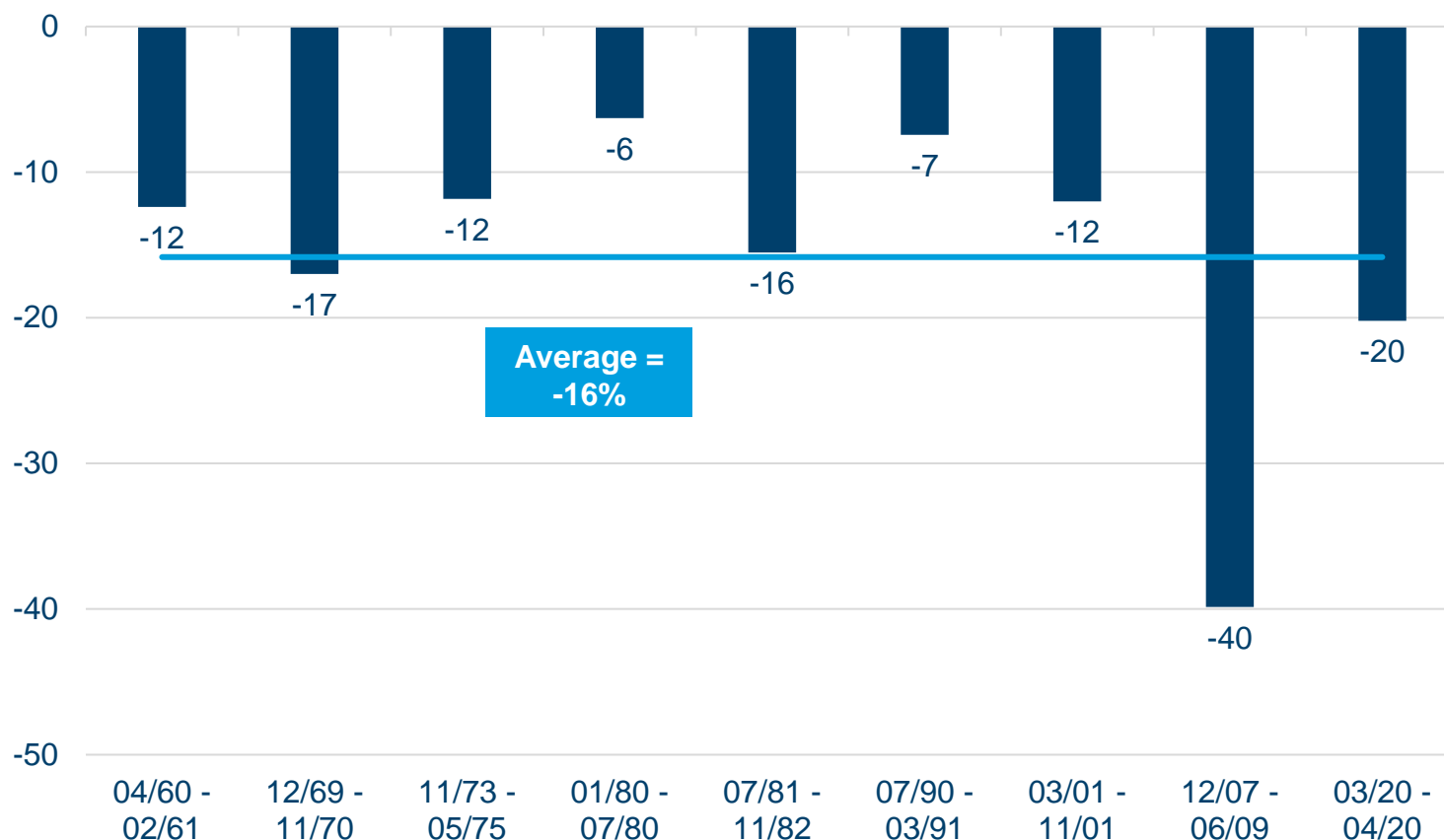
Macroeconomic

Global equity

Global fixed income

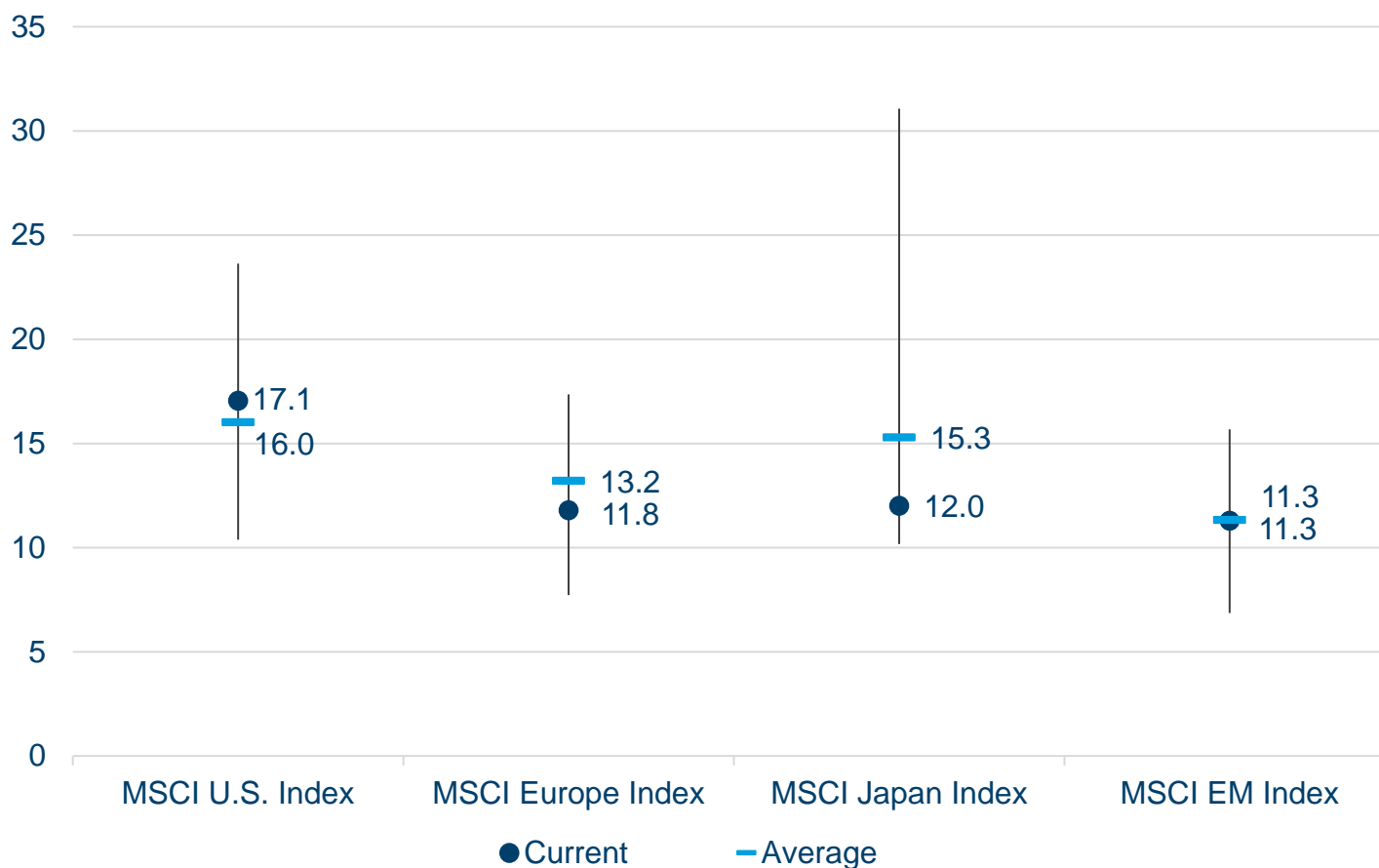
Multi-asset

► **Historically, earnings have consistently declined around recessions**
(EPS change, %)



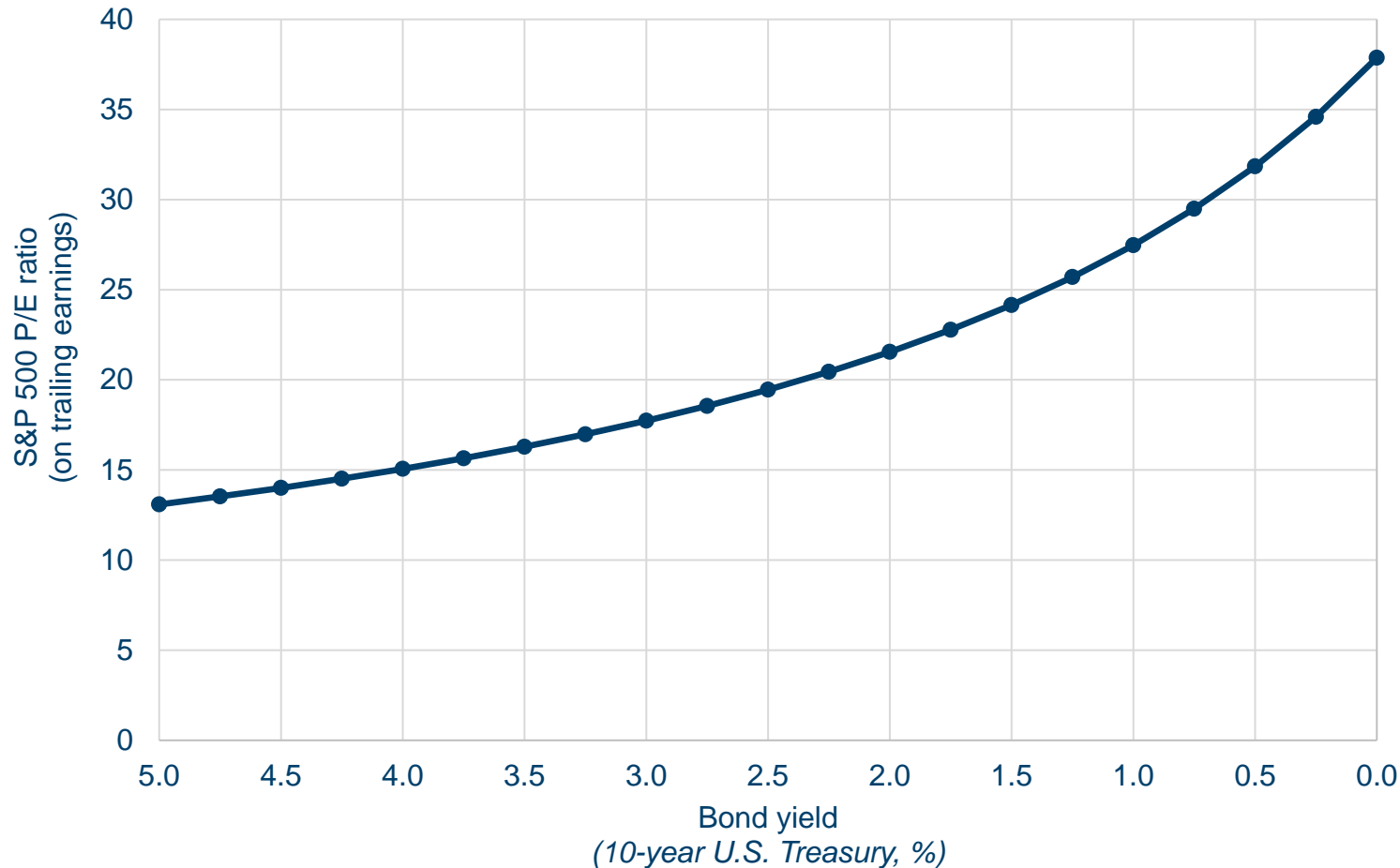
Source: Bloomberg, data as of 11/30/22. EPS change is calculated for the S&P 500 Index from peak prior to or during recession to trough. The horizontal axis represents the recessionary period and is not necessarily the peak and trough earnings time period. **It is not possible to invest directly in an index.**

► **The U.S. P/E is now a bit above average. International equity P/Es are below historical average levels (12-month forward P/E ratio)**



Source: MSCI, data as of 12/30/22. The data series starts from June 2003. **It is not possible to invest directly in an index.**

► P/E levels rise with lower bond yields, and vice versa



Source: Bloomberg, as of 12/30/22. The calculation for P/E ratio takes into consideration the average spread (from June 2003) of 262 basis points between the S&P 500 Index earnings yield and U.S.10-year bonds. A basis point is 1/100th of a percent. **Past performance does not guarantee future results. It is not possible to invest directly in an index.**

U.S. equity: S&P 500 earnings yield minus U.S. 10-year Treasury bond yield

Review and outlook

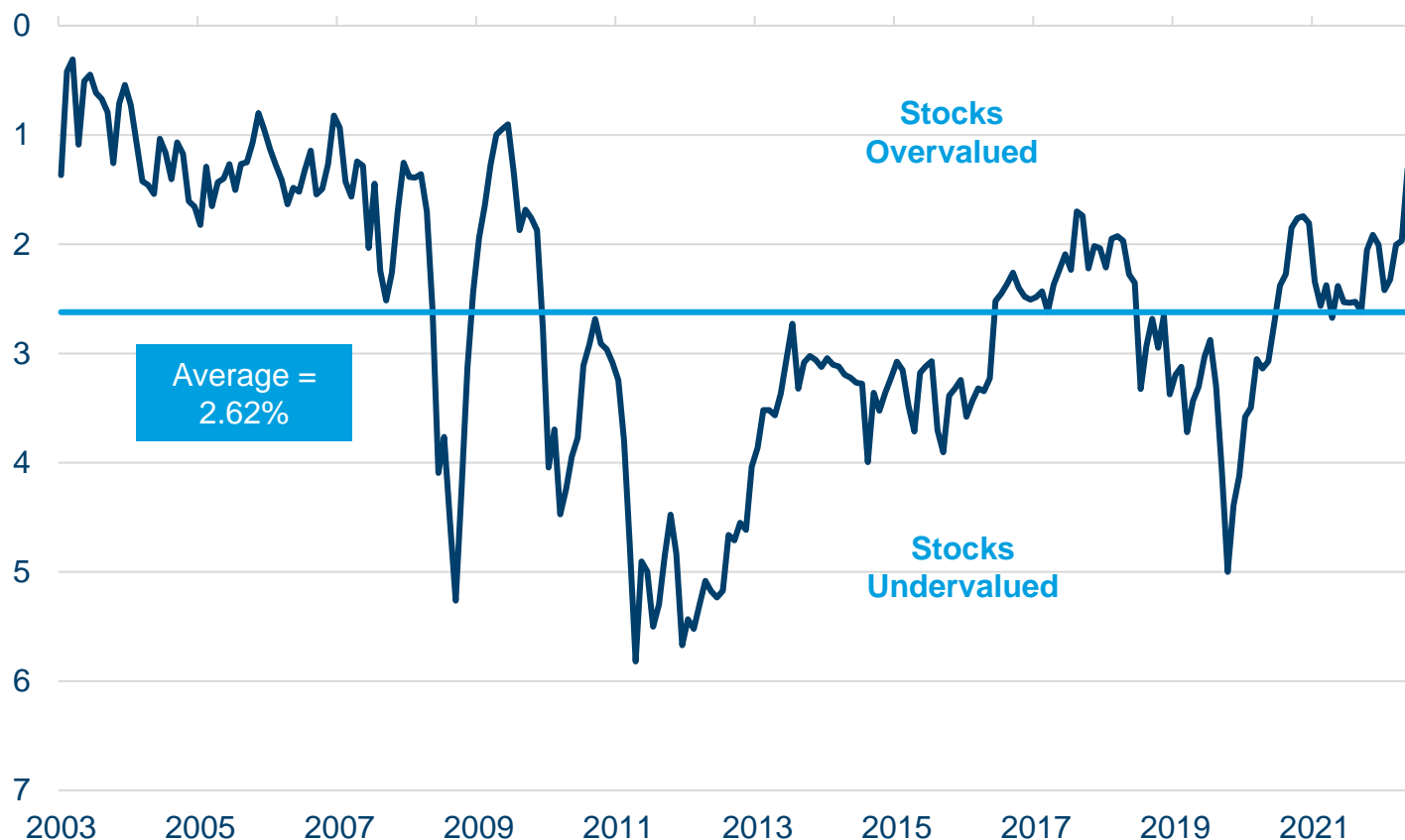
Macroeconomic

Global equity

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► Adjusted for current bond yields, stocks remain above equilibrium (Spread between the S&P 500 Index earnings yield and U.S. 10-year bonds, %)



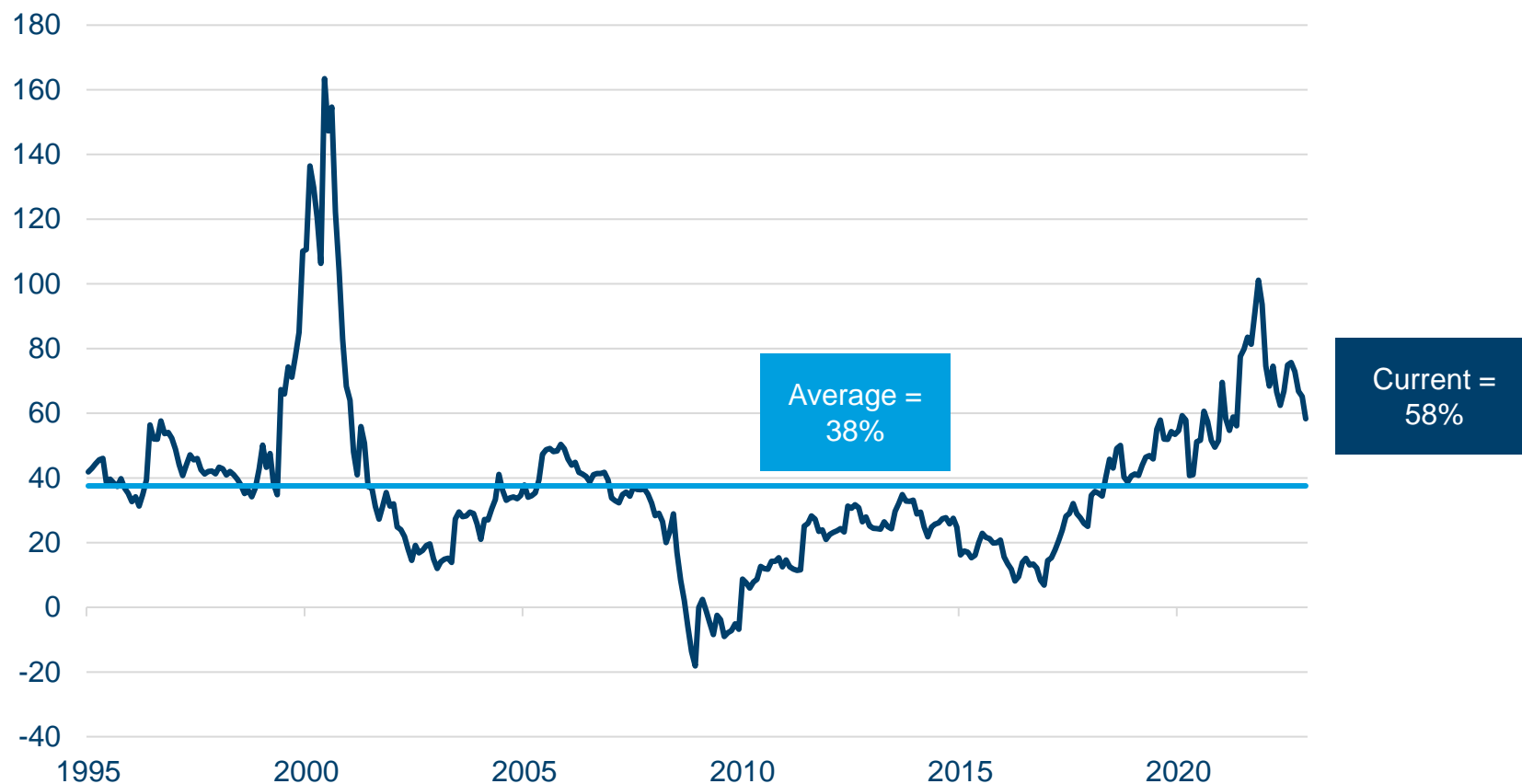
Source: Bloomberg as of 12/30/22. The data series starts from June 2003. A basis point is 1/100th of a percent. **Past performance does not guarantee future results. It is not possible to invest directly in an index.**

► **During recessions, the best performing factors are Quality/Value: FCF to EV, EBITDA Margin, ROE and Forward E/P** (Ranking based on S&P 500 Cumulative Factor Returns, avg. %, during recessions)

Factors	Rank
FCF to EV	1
EBITDA Margin	2
ROE	3
Forward E/P	4
Earnings Quality	5
Share Buyback	5
OCF Surprise	7
Prior 1-Month Return	8
Price Momentum	9
Debt to Assets	10
Revenue Stability	11
Analyst Sentiment	11
Book to Price	13
LT Growth Rate	14
Size	15
Dividend Yield	16
Beta	17

Source: Columbia Threadneedle Investments. The recession periods considered are: Dot-com bubble (03/01-11/01), Global financial crisis (12/07-06/09) and 2020 pandemic (02/20-04/20). Green color is for top five performers and red for bottom five performers. **Past performance does not guarantee future results. It is not possible to invest directly in an index.**

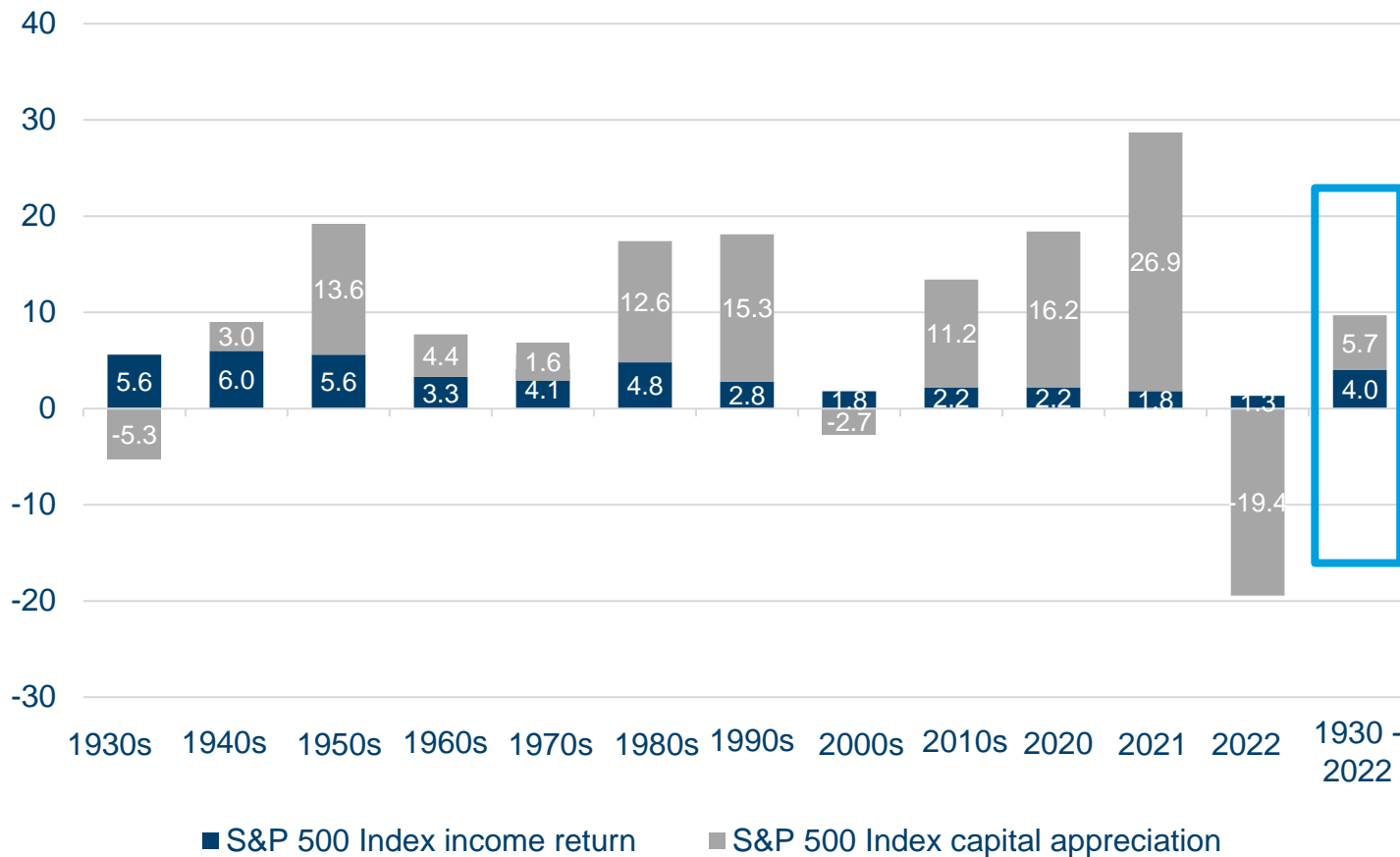
► **Despite growth stocks sharply underperforming value stocks since November 2021, growth remains above the average P/E premium (Forward P/E ratio: U.S. growth relative to value, %)**



Source: Bloomberg as of 12/30/22. Growth represented by Russell 1000 Growth Index; value by Russell 1000 Value Index. **Past performance does not guarantee future results. It is not possible to invest directly in an index.**

► Dividends are an important part of total return

(S&P 500 Index returns by dividend and capital appreciation, average annual return, %)



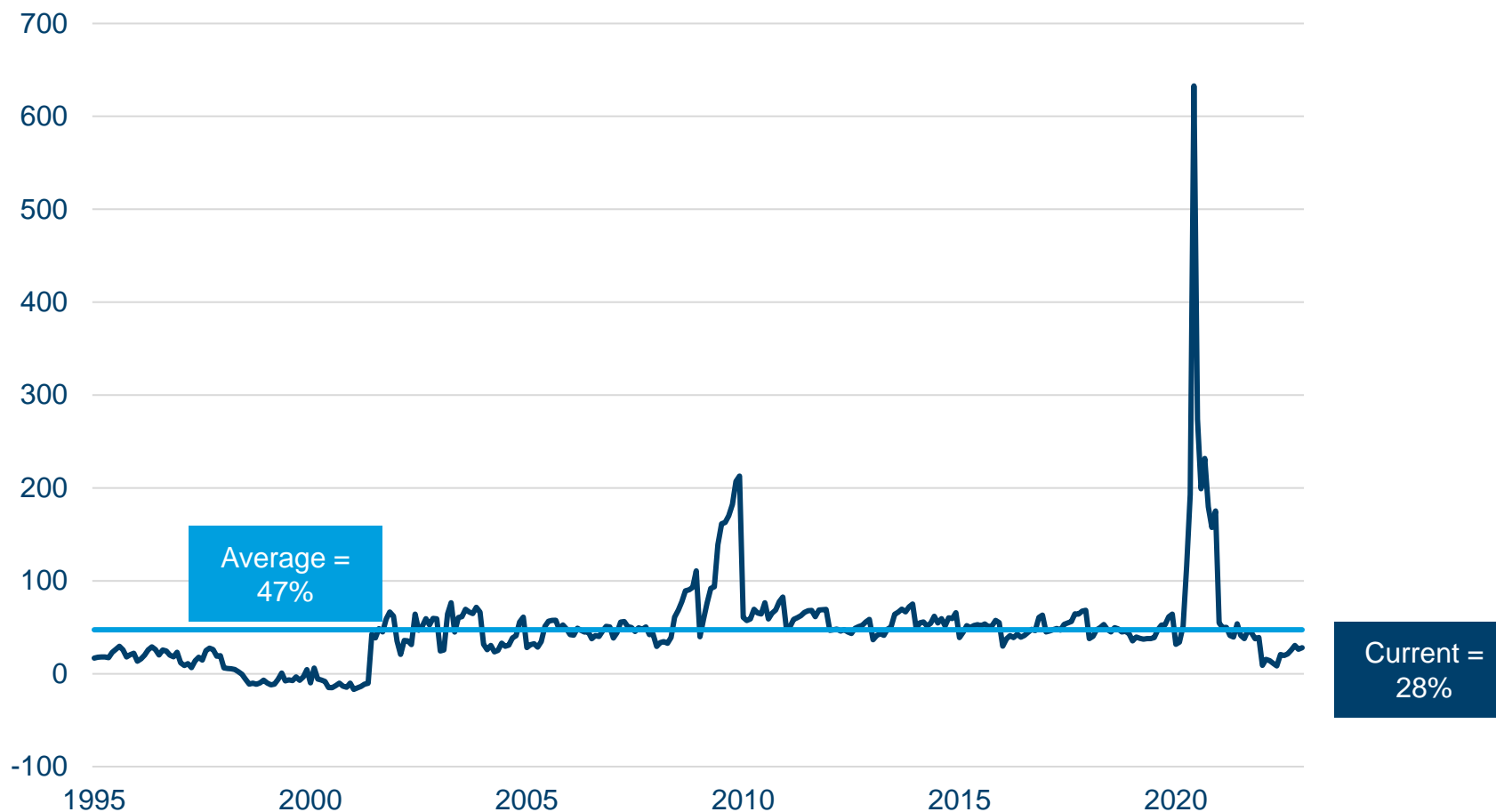
Source: Ned Davis Research, as of 12/31/22. Updated annually. Dividend payments are not guaranteed and the amount, if any, can vary over time. **Past performance is not a guarantee of future results. It is not possible to invest directly in an index.**

► Sustainable dividends drive long-term returns with lower risk

Index comparison: 01/31/73–12/30/22	Annualized Return (%)	Volatility (%)
Dividend growers & initiators	10.25	16.16
All dividend-paying stocks	9.19	16.91
Dividend payers w/ no change in dividends	6.61	18.57
Dividend cutters & eliminators	-0.60	25.06
Non-dividend paying stocks	3.96	22.19
S&P 500 geometric equal-weighted total return	7.69	17.77

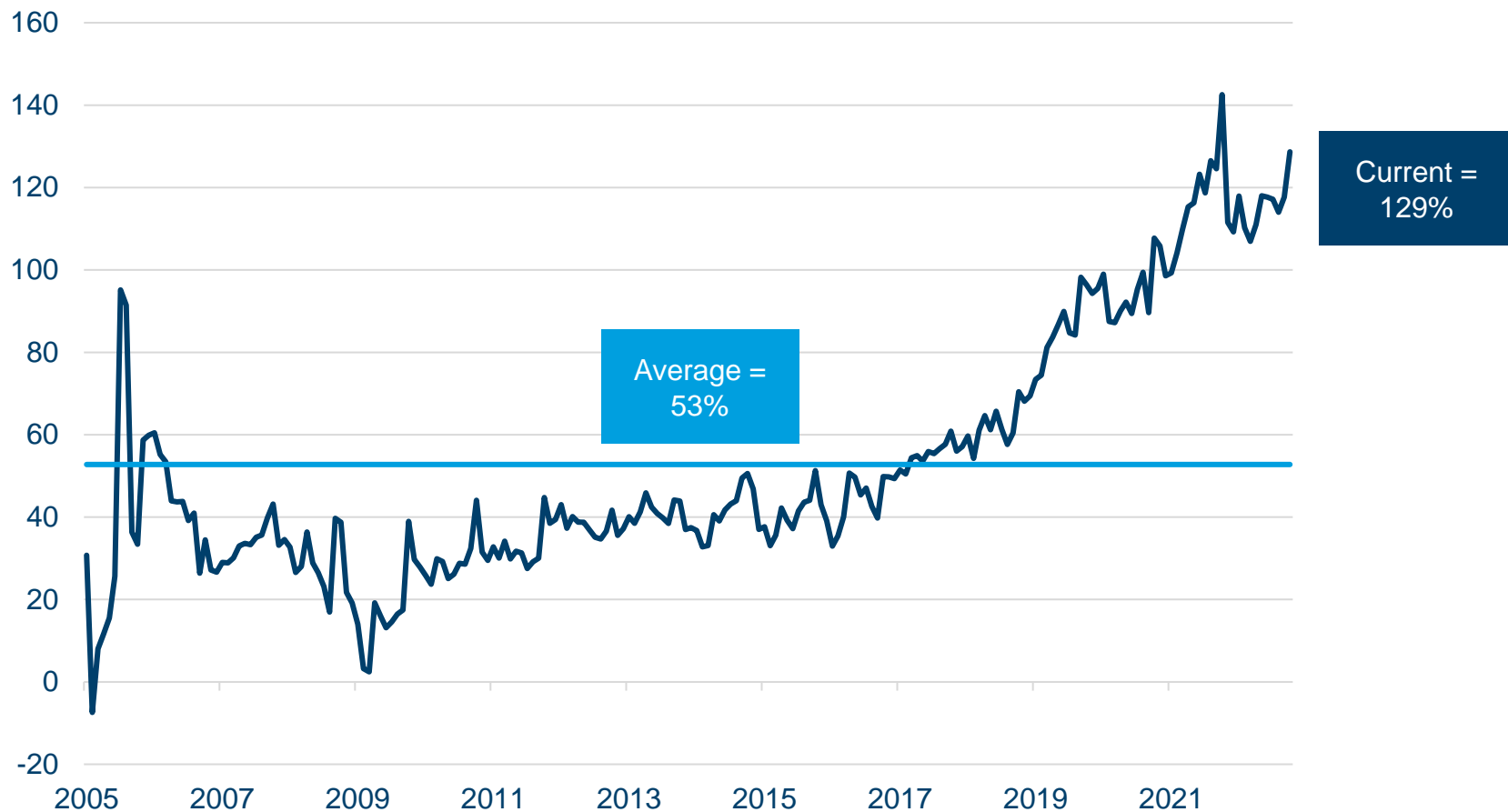
Source: Ned Davis Research, data as of 12/30/22. Volatility is measured by standard deviation. **Past performance is not a guarantee of future results. It is not possible to invest directly in an index.** There is no guarantee that these trends will continue. This information is intended for illustrative purposes only. It is not intended to be representative of specific portfolio holdings. Categories are based on dividend activity by companies in the S&P 500 Index in the last 12 months.

► U.S. small-cap forward P/Es are still below average relative to large-cap (%)



Source: Bloomberg as of 12/30/22. Small-cap represented by Russell 2000 Index; large-cap by Russell 1000 Index. **Past performance does not guarantee future results. It is not possible to invest directly in an index.**

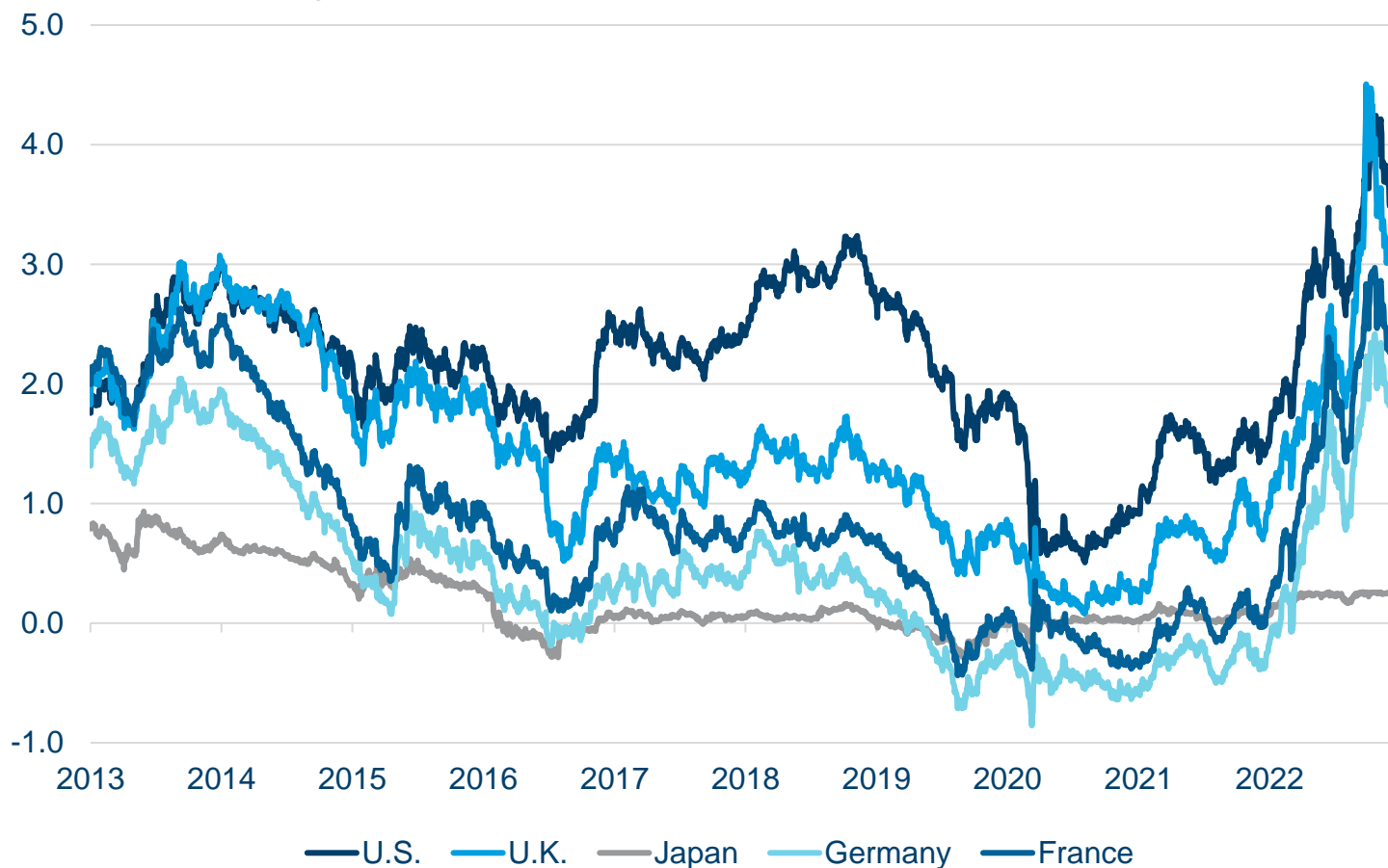
► Forward P/E ratios for international growth stocks are still high relative to value stocks (%)



Source: Bloomberg as of 12/30/22. Growth represented by MSCI ACWI ex USA Growth Index; value by MSCI ACWI ex USA Value Index. **Past performance does not guarantee future results. It is not possible to invest directly in an index.**

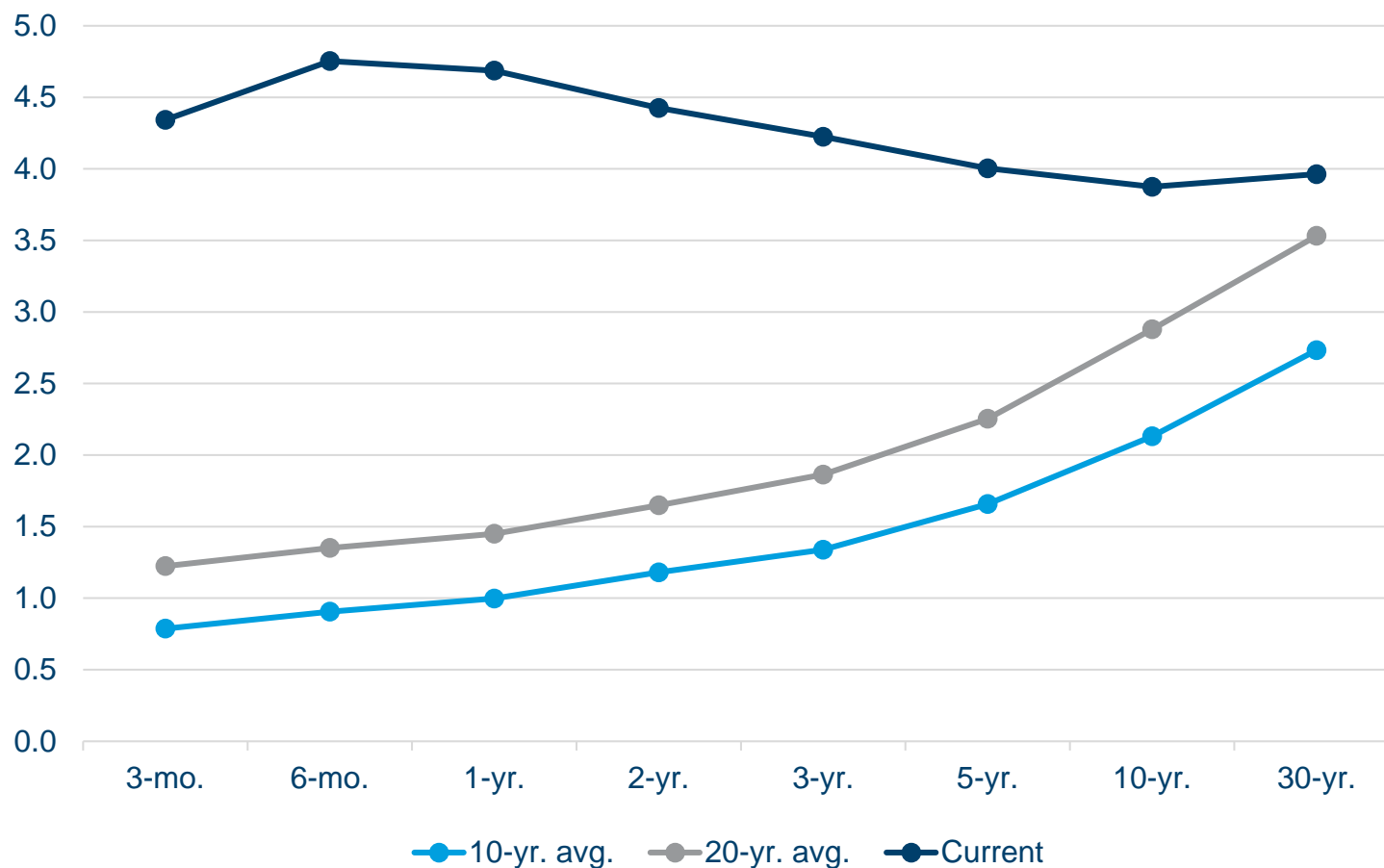
► Global bond yields soared higher in early 2022, then briefly pulled back, and rose again in Q4

(Rate for 10-year government bonds, %)



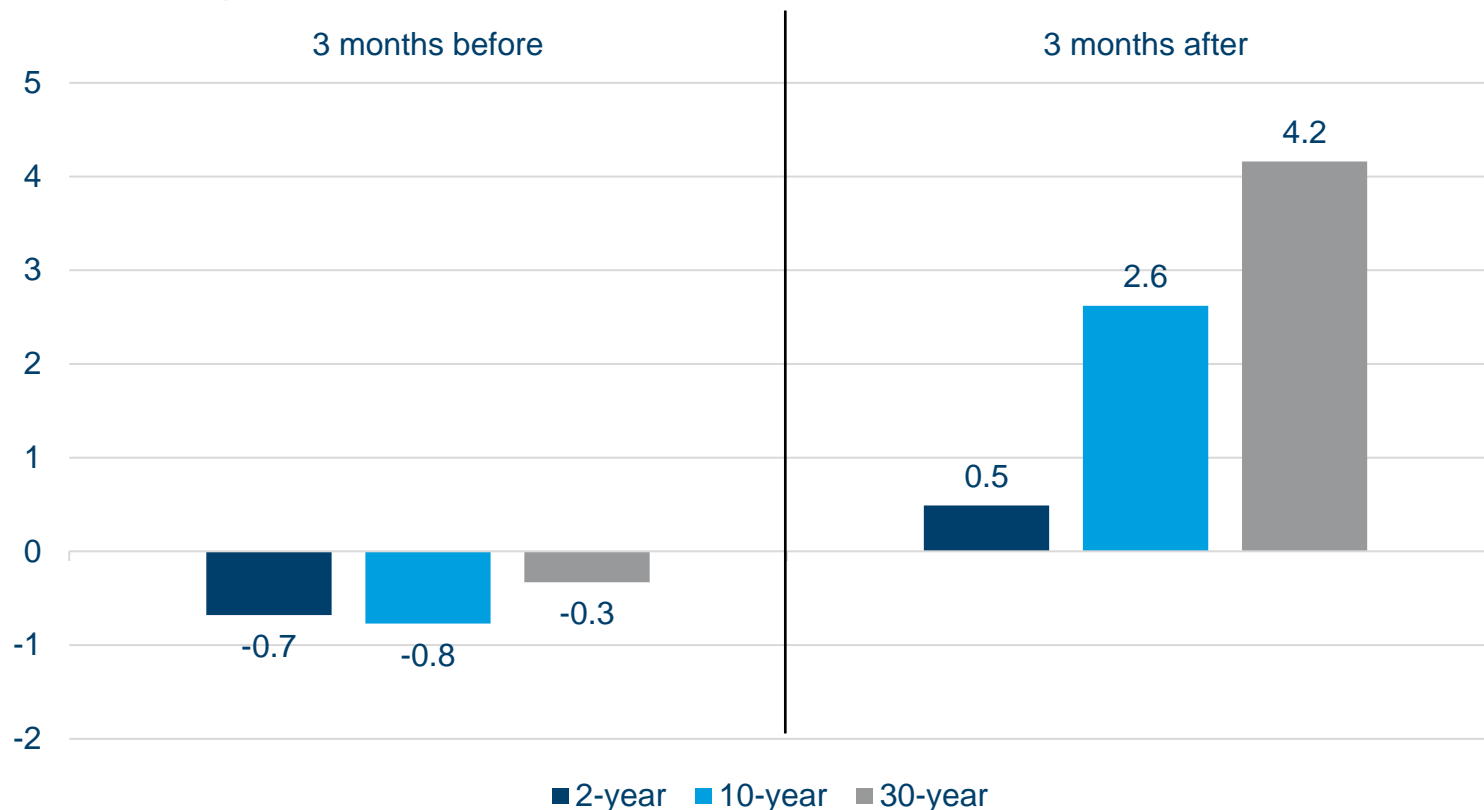
Source: Bloomberg, data as of 12/30/22.

► The yield curve is inverted (U.S. Treasury yields, %)



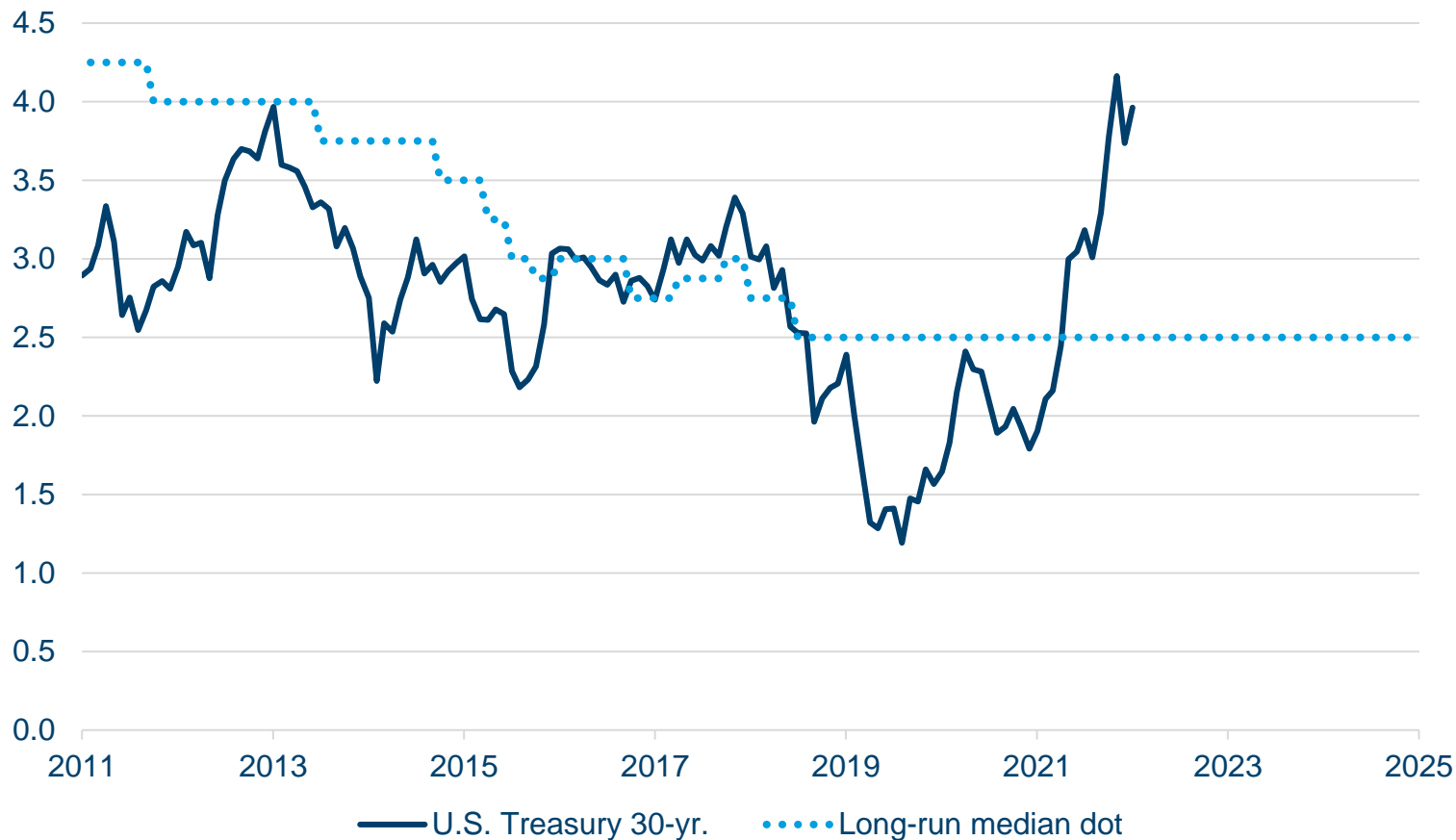
Source: Columbia Threadneedle Investments as of 12/30/22. **Past performance does not guarantee future results.**

► **Performance becomes more differentiated across bonds of different maturities as the end of a hiking cycle approaches (Price return, %)**



Source: Bloomberg as of 12/30/22. Bloomberg indices, 2-yr. = 2-yr. bellwether, 10-yr. = 10-yr. bellwether, 30-yr. = 30-yr. bellwether. Based on monthly price returns in the 3 months before/after the Fed reached its terminal level in monetary tightening cycles since January 1981. **Past performance does not guarantee future results. It is not possible to invest directly in an index.**

► **The Fed’s long-run dot forecast has served as a governor on long-term U.S. Treasury yields. Will that relationship return? (U.S. Treasury 30-yr. yields vs. the long-run dot, %)**



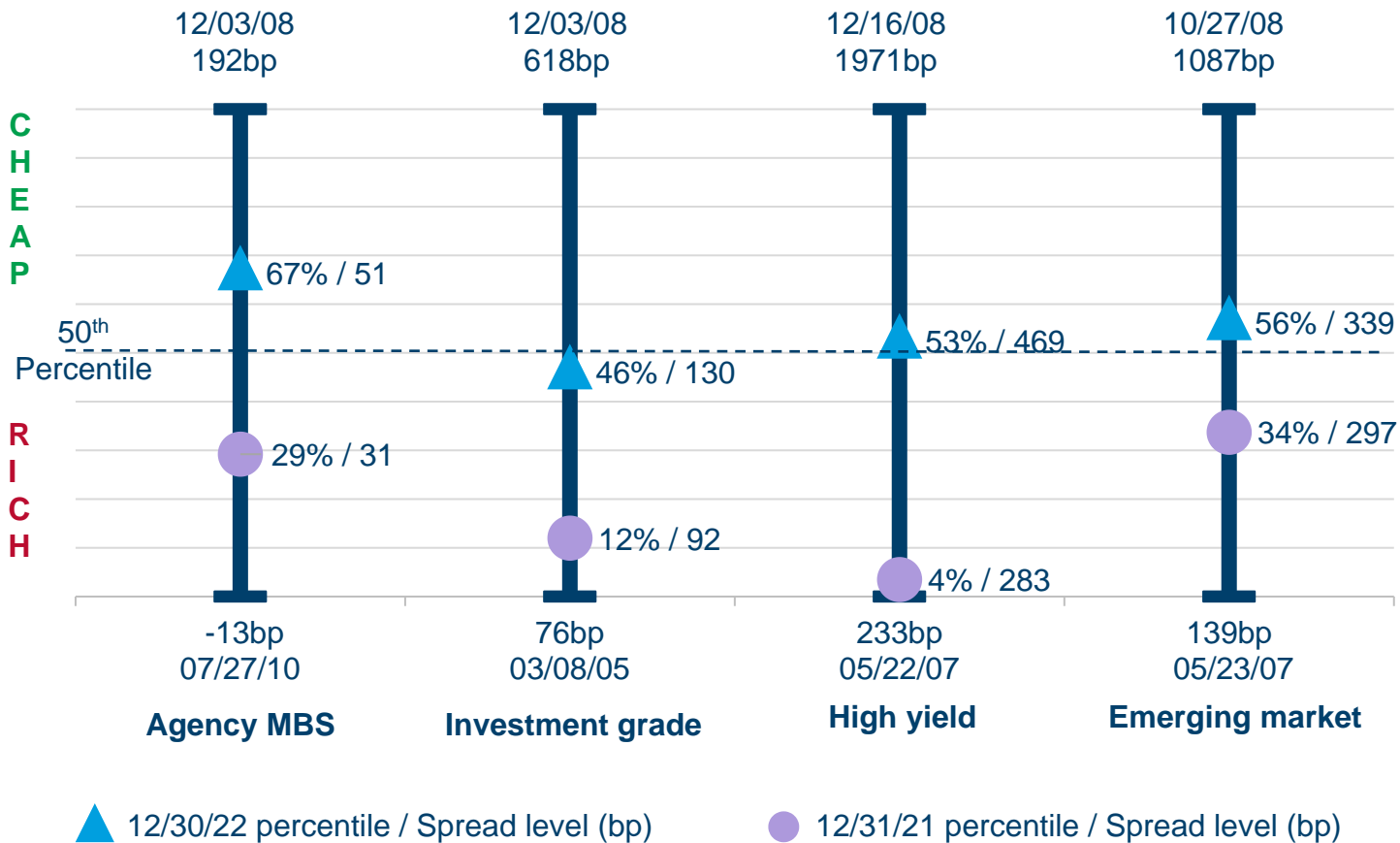
Source: Bloomberg, data as of 12/30/22. The long-run median dot is the median of FOMC’s projections of the Fed rate in the long-run. **Past performance does not guarantee future results.**

► Higher yields should provide some “cushion” now from further rate increases and larger gains should rates decline (U.S. 10-year bond returns assuming change in yield)

10-year bond starting yield (%)	1-year return (%) assuming change in yield of . . .				
	-50 bp	-25 bp	No change	+25 bp	+50 bp
0.00	5.1%	2.5%	0.0%	-2.5%	-4.9%
0.50	5.5%	3.0%	0.5%	-1.9%	-4.2%
1.00	5.9%	3.4%	1.0%	-1.3%	-3.6%
1.50	6.2%	3.8%	1.5%	-0.8%	-3.0%
2.00	6.6%	4.3%	2.0%	-0.2%	-2.4%
2.50	7.0%	4.7%	2.5%	0.4%	-1.7%
3.00	7.3%	5.1%	3.0%	0.9%	-1.1%
3.50	7.7%	5.6%	3.5%	1.5%	-0.5%
4.00	8.1%	6.0%	4.0%	2.0%	0.1%
4.50	8.5%	6.5%	4.5%	2.6%	0.7%
5.00	8.9%	6.9%	5.0%	3.1%	1.3%

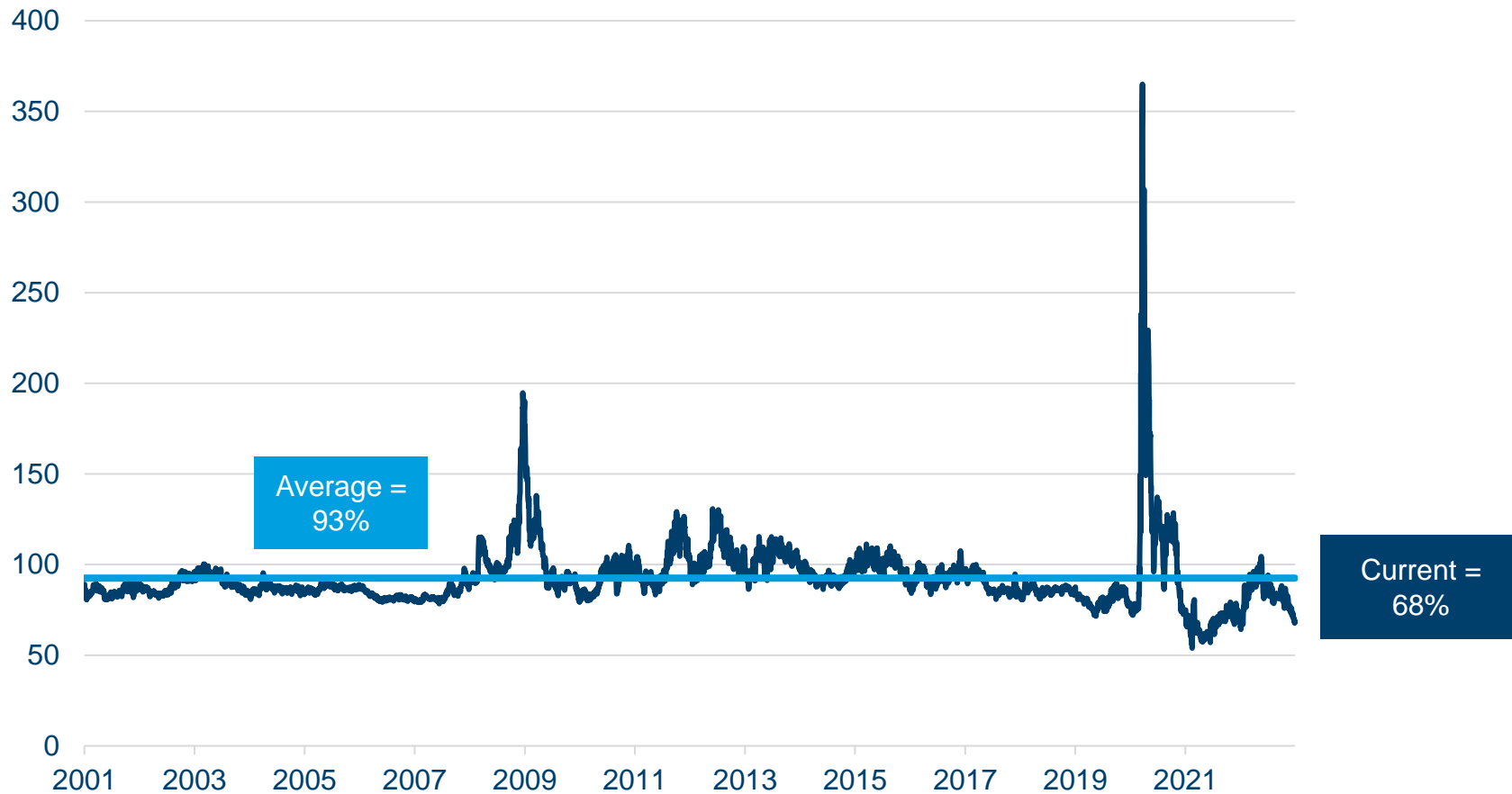
Source: Columbia Threadneedle Investments. Past performance does not guarantee future results. These hypothetical results were achieved by means of a mathematical formula using the assumptions shown and do not reflect the effect of other factors that could impact returns. A basis point is 1/100th of a percent.

► **Spreads now are around their average levels**
(Fixed-income spreads)



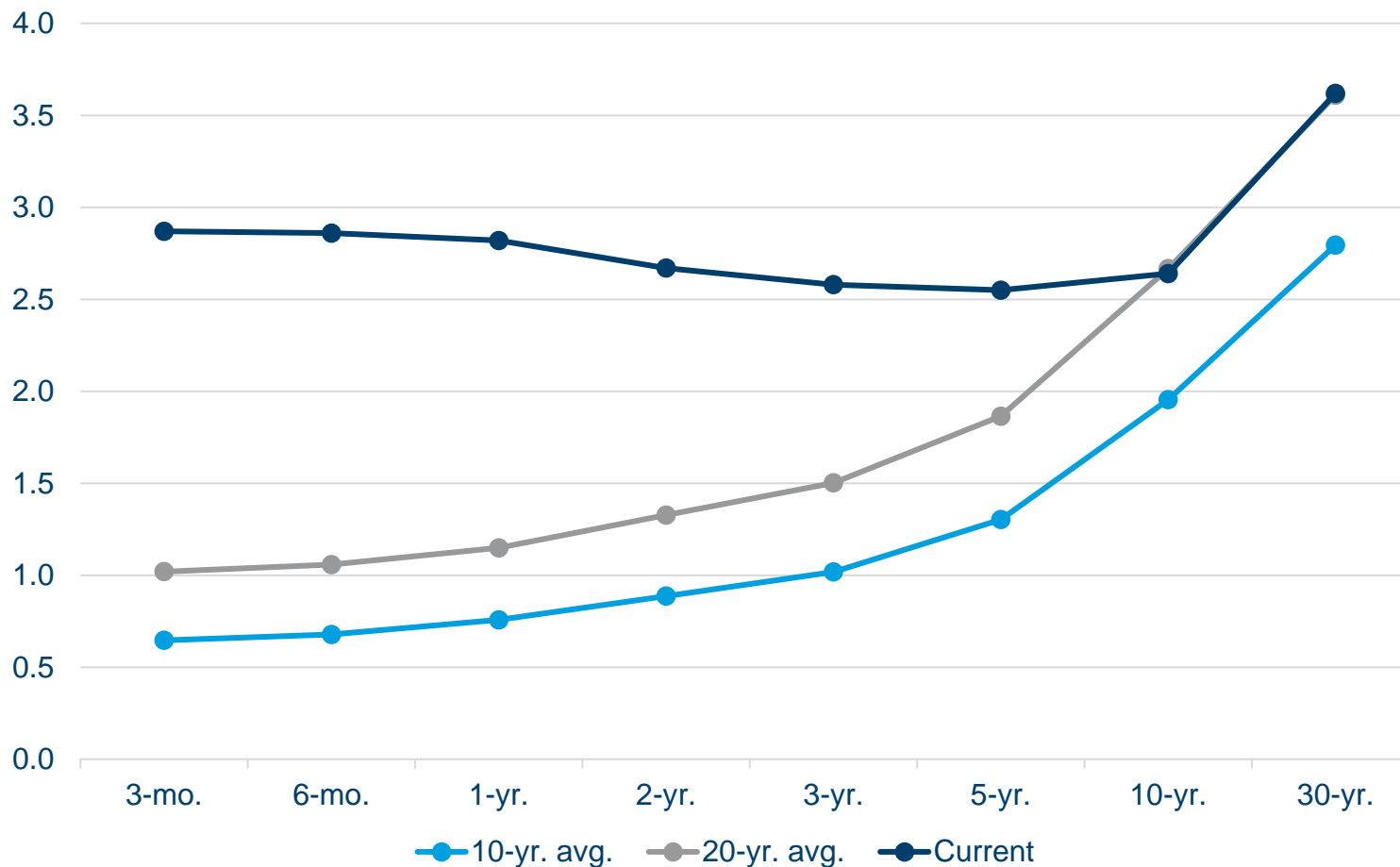
Source: Bloomberg as of 12/30/22. Daily spreads since 2001. See disclosure for index details. **It is not possible to invest directly in an index.** A basis point is 1/100th of a percent. Note: Spread is the difference in quoted rates of return for a security with credit risk over a risk-free security (e.g., Treasuries or 3-month LIBOR).

► Benchmark Muni yields are below average versus taxable bonds (AAA Muni to U.S. Treasury yield ratio, 10-year, %)



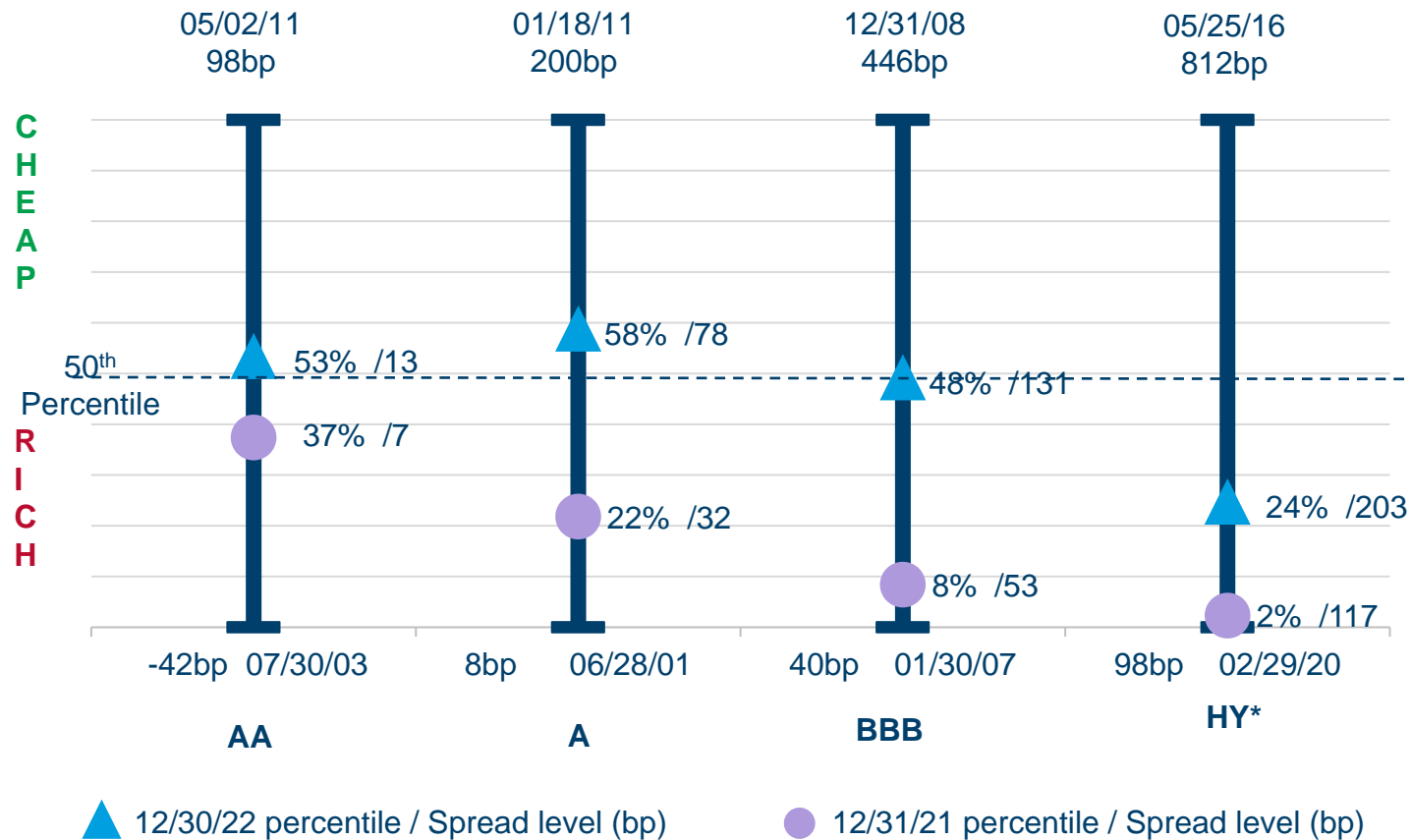
Source: Bloomberg as of 12/30/22. Past performance does not guarantee future results. It is not possible to invest directly in an index.

► A flat yield curve for munis until the long end (AAA Muni yields, %)



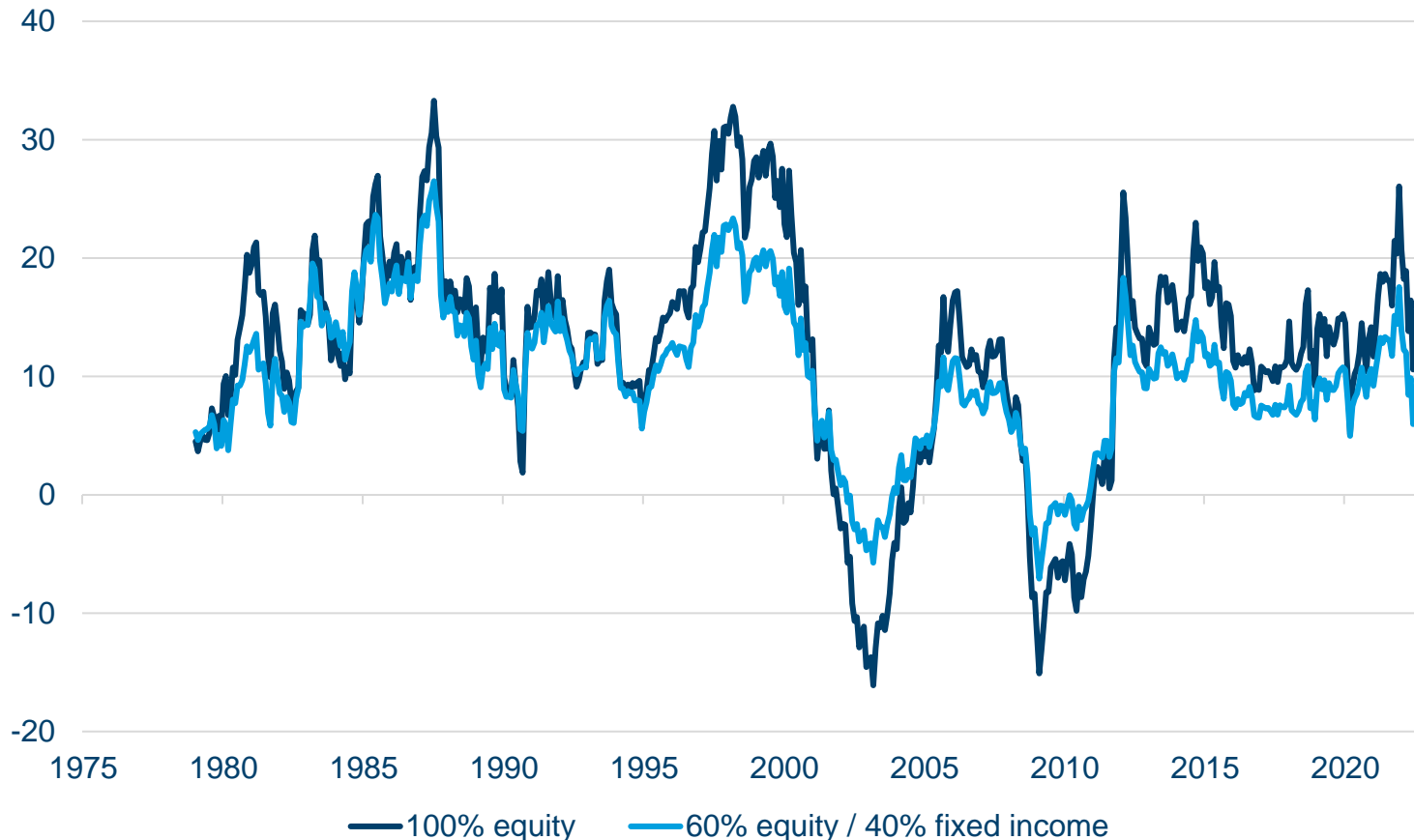
Source: Bloomberg, Columbia Threadneedle Investments as of 12/30/22. **Past performance does not guarantee future results.**

► **Muni spreads are close to average, except for high yield, which is below average**
 (Muni spreads to AAA Muni, bp)



Source: Bloomberg, as of 12/30/22. Daily spreads since 2001. * For high yield (HY), daily spreads start from 2010. See disclosure for index details. A basis point is 1/100th of a percent. **Past performance does not guarantee future results. It is not possible to invest directly in an index.**

► Returns from a traditional 60% equity and 40% fixed-income portfolio have been highly correlated with equity markets (Rolling three-year returns annualized, %)



Sources: Bloomberg, Columbia Threadneedle Investments as of 12/30/22. Equity is represented by S&P 500 Index, and fixed income is represented by the Bloomberg U.S. Aggregate Bond Index. Correlation based on rolling three-year returns annualized (%). **Past performance is not a guarantee of future results. It is not possible to invest directly in an index.** Diversification and asset allocation do not assure a profit or protect against loss.

Multi-asset: Sharpe ratio for asset classes over the past 20 years

Review and outlook

Macroeconomic

Global equity

Global fixed income

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► Over the past 20 years, on average, investors achieved a higher risk-adjusted return from diversified portfolios (Sharpe ratio)

Period Ending (annual)	Sharpe Ratio										
	S&P 500 Index	Russell 2000 Index	MSCI EAFE Index Net	MSCI EM Index Net	Bloomberg US Agg - Treasury Index	Bloomberg US Agg - Investment Grade	Bloomberg US Agg - High Yield Index	JP Morgan EMBI Global Diversified Index	HFRX Global Hedge Fund Index	DJ UBS Commodity Index	Equal Blend
2002	-1.21	-1.01	-0.98	-0.40	1.79	1.68	-0.27	1.25	1.02	2.15	-0.25
2003	2.52	2.97	2.68	3.76	0.17	1.02	4.98	2.91	4.99	1.54	3.96
2004	1.37	1.22	2.08	1.61	0.48	0.84	2.55	1.33	0.44	0.63	1.90
2005	0.24	0.11	1.09	1.65	-0.07	-0.36	-0.07	1.46	-0.08	1.25	1.06
2006	2.03	1.04	2.39	1.53	-0.65	-0.16	3.21	0.97	1.17	-0.18	1.52
2007	0.05	-0.55	0.67	1.95	1.11	-0.16	-0.53	0.26	-0.13	1.03	0.78
2008	-1.94	-1.31	-1.76	-1.54	1.83	-0.54	-1.36	-0.74	-2.32	-1.17	-1.62
2009	1.23	0.96	1.29	2.83	-0.72	2.85	4.65	4.36	3.73	1.19	2.24
2010	0.81	1.15	0.35	0.93	1.42	2.33	2.18	1.89	1.14	0.91	1.28
2011	0.13	-0.19	-0.66	-0.79	2.73	1.83	0.53	1.06	-1.92	-0.72	-0.23
2012	1.58	1.31	1.08	0.96	0.66	2.77	4.11	3.34	1.14	-0.08	1.54
2013	3.98	3.71	1.95	-0.24	-1.06	-0.35	1.61	-0.63	2.30	-1.11	1.39
2014	1.73	0.33	-0.53	-0.17	2.45	2.48	0.56	1.33	-0.20	-1.32	0.26
2015	0.10	-0.32	-0.06	-0.89	0.23	-0.18	-0.74	0.26	-0.86	-1.69	-0.74
2016	1.18	1.20	0.05	0.64	0.16	1.21	2.90	1.43	0.59	0.96	1.40
2017	5.57	1.86	6.08	5.82	0.86	3.24	3.19	3.93	4.55	0.15	7.65
2018	-0.43	-0.70	-1.32	-1.11	-0.29	-1.39	-1.16	-1.22	-1.77	-1.46	-1.30
2019	2.37	1.36	1.79	1.02	1.04	3.10	2.56	2.60	2.54	0.58	2.04
2020	0.71	0.55	0.28	0.71	1.63	0.91	0.44	0.27	0.77	-0.19	0.60
2021	2.71	1.33	1.20	-0.24	-0.71	-0.28	2.14	-0.36	1.30	2.01	1.63
2022	-0.89	-0.89	-0.77	-1.04	-2.20	-1.62	-1.13	-1.36	-2.04	0.73	-1.05
Average	1.14	0.67	0.80	0.81	0.52	0.92	1.45	1.16	0.78	0.25	1.15

Sources: FactSet, Columbia Threadneedle Investments as of 12/30/22. Equal blend is a hypothetical portfolio with equal weights to all the asset classes in the table. Returns used to calculate Sharpe Ratios are monthly. The cells highlighted in red and green show the bottom 3 and top 3 performers, respectively, for the particular year. **Past performance is not a guarantee of future results. It is not possible to invest directly in an index.** Diversification and asset allocation do not assure a profit or protect against loss.

Since November, the N.Y. Fed probability of recession model has been above levels that have preceded a recession by 6-18 months and has been trending sharply higher.

The last soft landing was 1994, when the Fed was acting proactively in response to falling unemployment and rising capacity utilization, and unlike today, ahead of any inflation increase.

There is a gap between the market's expectation for easing in 2023 and the Fed's own dot plot.

Commodity inflation may have peaked, but the labor market remains tight, and wages continue to rise sharply.

U.S. equity P/Es on expected earnings are a bit above their historical average. Adjusted for current bond yields, P/Es on current earnings are above equilibrium.

Consensus 2023 earnings growth, while dropping, is still modestly positive despite the probability of recession. Earnings have consistently declined around recessions.

Historically, Quality-Value factors have led equities during recessions. The best performing factors have been: FCF to EV, EBITDA Margin, ROE and Forward E/P.

Higher benchmark (10-year U.S. Treasury) bond yields continue to provide some “cushion” if rates increase and larger gains should rates decline. While fixed income spreads have tightened, there is opportunity for selective use of spreads, which are currently around their average levels.

Longer term, if we see a return to 2% inflation (the Fed's target and the historical average), 10-year U.S. Treasury bond yields could be 2.5-3% and the SP 500 P/E could be mid-teens, based on historical relationships.

Asset allocation remains key. Investors should consider that, historically, a well-diversified strategy has provided attractive risk-adjusted returns.

Disclosures

Index definitions

It is not possible to invest directly in an index.

The **Bank of America Merrill Lynch All Convertibles All Qualities Index** is a widely used index that measures convertible securities' performance. It measures the performance of U.S. dollar denominated convertible securities not currently in bankruptcy with a total market value greater than \$50 million at issuance.

The **Bloomberg Emerging Markets Bond Index** includes USD-denominated debt from sovereign, quasi-sovereign and corporate EM issuers.

The **Bloomberg Global Aggregate Bond Index** is an unmanaged, broad-based, market-capitalization-weighted index that is designed to measure the broad global markets for U.S. and non-U.S. corporate, government, governmental agency, supranational, mortgage-backed and asset-backed fixed-income securities.

The **Bloomberg Global Inflation Linked Bond Index** is designed to include those markets in which a global government linked fund is likely and able to invest.

The **Bloomberg Global Treasury Index ex-U.S.** tracks fixed-rate, local currency government debt of investment grade countries, including both developed and emerging markets but excluding the U.S.

The **Bloomberg Multiverse Index** provides a broad-based measure of the global fixed-income bond market. The index represents the union of the Global Aggregate Index and the Global High-Yield Index and captures investment-grade and high-yield securities in all eligible currencies.

The **Bloomberg Municipal Bond Index** is an unmanaged index that is considered representative of the broad market for investment-grade tax-exempt bonds with a maturity of at least one year.

The **Bloomberg Muni BBB rated index** is an unmanaged index of tax-exempt bonds with a BBB credit rating.

The **Bloomberg U.S. Aggregate Corporate Bond Index** consists of publicly issued, fixed-rate, nonconvertible, investment-grade debt securities.

The **Bloomberg U.S. Corporate Investment Grade Index** measures the investment-grade, taxable corporate bond market.

The **Bloomberg U.S. High Yield Corporate Bond Index** represents the universe of fixed-rate, non-investment grade debt.

The **Bloomberg U.S. Mortgage-Backed Securities Index** includes 15- and 30-year fixed-rate securities backed by mortgage pools of Government National Mortgage Association (GNMA), Federal Home Loan Mortgage Corporation (FHLMC) and Federal National Mortgage Association (FNMA).

The **Bloomberg U.S. Treasury Index ("U.S. Treasuries")** measures U.S. dollar-denominated, fixed-rate, nominal debt issued by the U.S. Treasury.

The **Bloomberg Commodity Index** (formerly, DJ UBS Commodity Index) is a broadly diversified index composed of commodities traded on U.S. exchanges, with the exception of aluminum, nickel and zinc, which trade on the London Metal Exchange (LME).

The **BofA Merrill Lynch 10-Year T-Bill Index** is an unmanaged market index of U.S. Treasury securities that assumes reinvestment of all income.

The **ICE BofA Merrill Lynch U.S. High Yield Constrained Bond index** is a commonly used benchmark index for high-yield corporate bonds.

The **Bloomberg Treasury Index** tracks the total return of U.S. Treasury notes.

Floating rate loans are represented by the **Credit Suisse Leveraged Loan Index**, also known as the Bank Loan Index, which provides broad and comprehensive total return metrics of the universe of syndicated term loans.

The **FTSE Broad Investment-Grade (BIG) Index** tracks the performance of U.S. dollar-denominated bonds issued in the U.S. investment-grade bond market.

The **FTSE National Association of Real Estate Investment Trusts (NAREIT) Index** is an index that reflects performance of all publicly traded equity real estate investment trusts.

The **FTSE U.S. Domestic 3-month T-Bill Index** is intended to track the daily performance of 3-month U.S. Treasury bills.

The **FTSE World Government Bond Index** measures the performance of fixed-rate, local currency, investment-grade sovereign bonds.

The **JPMorgan Emerging Market Bond Index** tracks total returns for traded external debt instruments in emerging markets and is an expanded version of the JPMorgan EMBI+. As with the EMBI+, the EMBI Global includes U.S.-dollar-denominated Brady bonds, loans and Eurobonds with an outstanding face value of at least \$500 million. It covers more of the eligible instruments than the EMBI+ by relaxing somewhat the strict EMBI+ limits on secondary market trading liquidity.

The **JPMorgan Leveraged Loan Index** is designed to mirror the investable universe of U.S. dollar institutional leveraged loans.

Index definitions

The **MSCI ACWI Index** is a market capitalization weighted index designed to provide a broad measure of equity-market performance throughout the world.

The **MSCI ACWI ex USA Growth Index** is a market capitalization weighted index designed to provide a broad measure of growth stocks outside the U.S.

The **MSCI ACWI ex USA Value Index** is a market capitalization weighted index designed to provide a broad measure of growth stocks outside the U.S.

The **MSCI Europe, Australasia, Far East (EAFE) Index** captures large and mid-cap stocks across developed market countries around the world, excluding the U.S. and Canada.

The **MSCI Emerging Markets Index**, an unmanaged market-capitalization weighted index, is compiled from a composite of securities markets of 27 emerging market countries.

The **MSCI Japan Index** is designed to measure the performance of the large- and mid-cap segments of the Japanese markets.

The **MSCI U.S. Index** is designed to measure the performance of the large- and mid-cap segments; aims to represent ~85% of the U.S. market.

The **MSCI USA High Dividend Yield Index** is based on the MSCI USA Index, its parent index, and is designed to reflect the performance of equities with higher dividend income and quality characteristics.

The **MSCI World ex-U.S. Index** captures large- and mid-cap representation across 22 of 23 Developed Markets (DM) countries, excluding the United States.

The **Russell 1000 Value Index** is a stock market index that represents stocks from the Russell 3000 Index with lower price-to-book ratios and lower expected growth rates.

The **Russell 1000 Growth Index** is a market-capitalization-weighted index of those firms in the Russell 1000 with higher price-to-book ratios and higher forecasted growth values.

The **Russell 2000 Index** is composed of the smallest 2,000 companies in the Russell 3000 Index, representing approximately 8% of the Russell 3000 total market capitalization.

The **Russell 3000 Index** measures the performance of the 3,000 largest publicly held companies incorporated in America as measured by total market capitalization.

The **S&P 500 Index** tracks the performance of 500 widely held, large capitalization U.S. stocks. Index returns assume the reinvestment of all distributions unless otherwise indicated.

The **S&P 500 Geometric Equal-Weighted Total Return Index** is the returns based on monthly equal-weighted geometric average of total returns of the S&P 500 component stocks, with components reconstituted monthly.

The **S&P GSCI** is a composite index of commodity sector returns that represents a broadly diversified, unleveraged, long-only position in commodity futures. The index's components qualify for inclusion in the index based on liquidity measures and are weighted in relation to their global production levels.

The **S&P U.S. Preferred Stock Index** is designed to serve the investment community's need for an investable benchmark representing the U.S. preferred stock market.

The **U.S. Dollar Index** is an index of the value of the United States dollar relative to a basket of foreign currencies. It is a weighted geometric mean of the dollar's value relative to the following select currencies: Euro (EUR) 57.6%, Japanese yen (JPY) 13.6%, Pound sterling (GBP) 11.9%, Canadian dollar (CAD) 9.1%, Swedish krona (SEK) 4.2%, Swiss franc (CHF) 3.6%.

VIX is the ticker symbol for the Chicago Board Options Exchange's CBOE Volatility Index, a measure of the stock market's expectation of volatility based on S&P 500 index options.

Disclosure

YTD asset class returns slides: The shown asset class descriptors reference the following indices: MSCI ACWI Index (Global stocks), S&P 500 Index (U.S. stocks), MSCI World ex-U.S. Index (International developed equity), MSCI Emerging Markets Index (Emerging market equity), Bloomberg Treasury Index (Treasuries), Bloomberg US Aggregate Bond Index (U.S. aggregate bond), Bloomberg Municipal Bond Index (U.S. municipal bond), Bloomberg Global Aggregate TR USD (Global aggregate bond), Bloomberg US MBS TR USD (Mortgage-backed securities), FTSE Broad Investment-Grade (BIG) Index (Investment-grade corporate bond), Merrill Lynch US High Yield Constrained Index (High-yield corporate bond), Bloomberg Global ex-U.S. Aggregate TR USD (Global ex-US aggregate Bond), JP Morgan EM Bond Index (Emerging market bond), Bloomberg Global Infl Linked TR USD (unhedged) (Global Inflation-linked bond), Bloomberg Commodity Index (Commodities), FTSE All Equity NAREIT Index (REITs).

Five-year forecast slide: Equity forecasts are based on three components: expected dividend payments, expected earnings growth and change in valuation levels (price-to-earnings ratios). Expected earnings growth is driven by expected economic growth, input cost changes and pricing power. Fixed-income forecasts are based on the shape of the yield curve, direction of interest rates, increase/decrease in yield spreads and timing of those changes. To calculate the five-year forecast, we consider three scenarios and calculate a weighted average based on the likelihood of each. We see equal odds (40/40) of either a recession or a weak period of economic growth also characterized as a “soft-landing”. We assign a smaller probability (20%) to better than consensus growth which delays recession and implies rates higher for longer. The major asset classes are based on the following indices: U.S. large-cap stocks (S&P 500 Index), U.S. small-cap stocks (Russell 2000 Index), Developed market stocks USD (MSCI EAFE Index), Emerging market stocks USD (MSCI EM Index), Cash (FTSE U.S. Domestic 3-Month T-Bill Index), U.S. Treasuries (Bloomberg U.S. Treasury Index), Municipal Bonds (Bloomberg Municipal Bond Index), Global sovereign bonds USD (Bloomberg Global Treasury Index, excl. U.S.), Investment-grade corporate bonds (Bloomberg U.S. Aggregate Credit Index), High-yield corporate bonds (Bloomberg Corporate High Yield Index), Emerging market debt USD (JPMorgan EMBI Global Diversified Index), Absolute return (FTSE U.S. Domestic 3-Month T-Bill Index), Commodities (Bloomberg Commodity Index).

Factor calculations are based on the S&P 500 and are calculated monthly. Factor spreads reflect the top 20% of stocks minus bottom 20% of stocks based on square root market cap weighted. Free Cash Flow to Enterprise Value (FCF to EV) – Trailing twelve months (TTM) of free cash flow divided by enterprise value. Earnings before interest, taxes, depreciation, and amortization (EBITDA) Margin – TTM EBITDA dividend divided by TTM revenues. Return on Equity (ROE) – TTM net income scaled by average common equity over past year. Forward Earnings to Price (E/P) – Next twelve-month earnings per share forecast divided by current price. Earnings Quality – Twelve-month change in net operating assets scaled by average total assets over past year. Otherwise known as Total Operating Accruals factor. Share Buyback – Twelve-month change in common shares outstanding reported on balance sheet. Operating Cash Flow (OCF) surprise – Change in reported OCF vs result from four quarters ago scaled by standard deviation of OCF surprises over past 12 quarters. Final factor is weighted average of past four quarters of change. Prior 1-month Return – Return of stock over past one month. Price Momentum – Twelve-month price momentum excluding most recent month. Debt to Assets – Average total debt over past year scaled by average total assets over past year. Revenue Stability – Standard deviation of past 12 quarters of Revenue scaled by average of past 12 quarters of revenue multiplied by -1. Analyst Sentiment – Change in analyst earnings per share (EPS) forecasts. Book to Price – Current common equity divided by current market cap. Long term (LT) Growth Rate – Analyst forecast of LT Earnings Growth. Size – Market Cap of company. Dividend Yield – Current Dividend per share forecast scaled by current price. Beta – Stock’s correlation with overall market over past two years

The Agg is not diversified slide: Bloomberg U.S. Treasury Index (U.S. Treasuries), Bloomberg Global Treasury x-U.S. Index (Global Treasury ex-U.S.), Bloomberg U.S. Mortgage-Backed Securities Index (Agency MBS), Bloomberg Emerging Markets Bond Index (Emerging market), Bloomberg U.S. Corporate Index (Investment grade corporate), Bloomberg U.S. High Yield Index (U.S. Corporate high yield). Data starts from January 2006.

Fixed-income spread slide: Bloomberg US MBS Fixed Rate (Agency MBS); Bloomberg US Agg Corporate Index (Investment Grade); Bloomberg US Corporate High Yield Index (High Yield); Bloomberg EM USD Agg Index (Emerging Markets); Bloomberg US Agg CMBS (CMBS).

Municipal spread slide: ICE BofA AA U.S. Municipal Securities Index (AA); ICE BofA A U.S. Municipal Securities Index (A); ICE BofA BBB U.S. Municipal Securities Index (BBB); ICE BofA U.S. Municipal High Yield Securities Index (HY).

Multi-asset annual return slide: The chart represents returns of an equally weighted portfolio comprising the following asset class (with their proxy): U.S. Equity (S&P 500 Index); Non U.S. Developed Equity (MSCI EAFE); Emerging Markets (MSCI EM Equity Index); U.S. Treasuries (Bloomberg U.S. Treasury Total Return Unhedged USD Index); Global Bonds (FTSE World Government Bond Index); Emerging Market Bonds (J.P. Morgan EM Bond Index Global Index); Investment Grade Bonds (Bloomberg U.S. Corporate Total Return Index); High Yield (Bloomberg U.S. Corporate High Yield Total Return Index); Mortgage-backed Securities (Bloomberg U.S. MBS Index); TIPS (Bloomberg Global Inflation-Linked Total Return index); REITs (FTSE NAREIT ALL Equity REITs Index); Commodities (Bloomberg Commodity Index).

Disclosure

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