CREWCIAL® PARTNERS

Q4 2022 | Global Market Summary

QUARTERLY HIGHLIGHTS

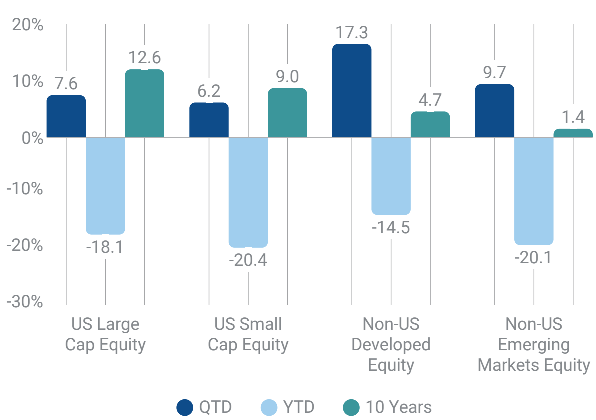
MORE QUESTIONS

Global equity markets recovered some ground during the fourth quarter with the S&P 500, MSCI EAFE and MSCI Emerging indices posting gains of 7.6%, 17.3%, and 9.7%, respectively. However, they still ended the year in negative territory with declines of 18.1%, 14.5%, and 20%, respectively, In 2022. The US Federal Reserve raised interest rates to their highest levels since 2007, setting the stage for large swings across global markets and a sharp selloff, particularly concerning high-growth and speculative areas, a reversal of the mania of the previous two years.

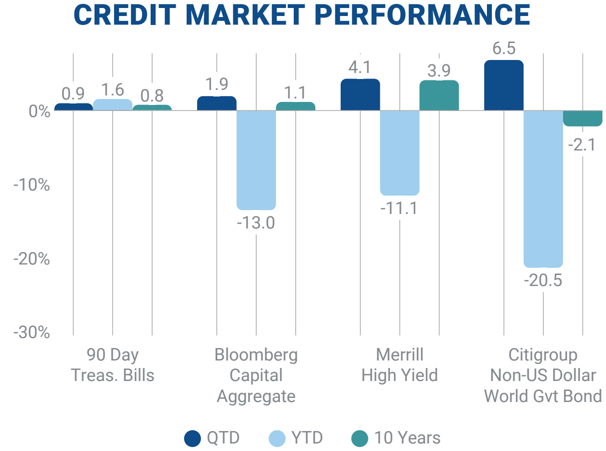
The quarter ended with the overall economic outlook for the US uncertain; the US Federal Reserve raising rates, elevated input costs, and declining demand led to higher borrowing costs, depressing several economic indicators. The most recent data from the Institute for Supply Management (ISM) showed manufacturing PMI dropping to 48.4 last month from 49.0 in November, contracting for a second consecutive month. Additionally, the ISM survey's forward-looking new orders sub-index declined to 45.2 (the lowest reading since May 2020) from 47.2 in November, the fourth straight month it has contracted. Non-manufacturing PMI also dropped last month for the first time since May 2020.

On a more positive note, the unemployment rate in the US ended the year at 3.5%; job growth remained steady despite announcements of significant job cuts by technology companies, including Twitter, Amazon, and Meta. Inflation trended downward throughout the quarter, with consumer prices in December posting their biggest monthly declines since early in the pandemic. The durability of this easing of inflation-related pressures remains to be seen.

EQUITY MARKET PERFORMANCE



CREDIT MARKET PERFORMANCE



The Federal Open Market Committee (FOMC) met in November and December. It agreed to increase the federal-funds target rate corridor by 125 bps in total (75 bps in November and 50 bps in December); the corridor is currently 4.25-4.50%. At the December meeting, the Summary of Economic Projections (SEP) was updated; Fed officials increased their projections for the federal-funds target rate at the end of 2023 from 4.6% to 5.1%. The FOMC made no changes to its balance-sheet reduction plans; the monthly reduction, targeted at $95 billion, is expected to continue until the FOMC has determined an appropriate reserve level.

After rising 43% during the pandemic, housing prices peaked in June 2022 according to the S&P/Case-Shiller Home Price Index. Since then, national housing prices have continued to post gains on an annual basis but declined 3% from June through October 2022. Housing transaction volume and new construction starts also decelerated in the second half of 2022. The slowdown can largely be attributed to the quick rise in mortgage rates, which bottomed out at 2.65% in January 2021 and ended 2022 at 6.42%. Housing affordability reached its lowest level in 30 years due to a combination of higher prices and higher interest rates.

After rising 46% in 2021, the Manheim Used Vehicle Value Index, which tracks prices of used vehicles sold at wholesale auctions, ended the year down 8.8%, its largest year-over-year decline since the late 1990s. While retail prices paid by consumers have remained elevated, inventories have recovered from 2021 lows; marquee brands such as Tesla have announced price reductions across their model lineups.

Eurostat data showed the region grew by 0.3% quarter-on-quarter in Q3, slowing from 0.8% growth as of Q2. While forward-looking indicators continued to point towards contraction, the rate of decline moderated as the inflation outlook improved. The S&P Global Eurozone Manufacturing PMI Index for December reflected 48.8, up from 47.8 in November. Similarly for services, the index came in at 49.8, up from 48.5 in November. Further supporting investor expectations in favor of a moderate contraction, the Eurozone unemployment rate remained unchanged at 6.5% in November, a record low for the region indicating continuing tightness in the labor market. In December, European Commission data showed overall sentiment turned positive for the first time since Russia's invasion of Ukraine, with the services, consumer, retail advertising, and construction industries more optimistic.

Inflation across the Eurozone slowed in November and December; smaller increases in energy and services costs helped push consumer price growth down to 9.2% from a record high of 10.6% in October. Recently, inflation rates have been heavily affected by government measures capping energy prices and a mild winter reducing demand for heating oil and natural gas.

The European Central Bank (ECB) raised interest rates by 50 bps in December to 2%, a slower pace relative to its 75 bps hike in October. Like the US Fed, the ECB raised its benchmark rates at its fastest pace on record in 2022. While some forecasts took the slowdown as a positive sign, ECB President Christine Lagarde warned the ECB is not pivoting and the bank has "more ground to cover."

China's uncompromising 'zero-COVID' policy over the past three years led the world's second-largest economy to suffer its slowest growth in nearly half a century until its recent reopening, announced without warning on December 7, 2022. Although this development is expected to positively impact China's economic activity, the drastic policy reversal has triggered a massive wave of infections which may diminish gains through business disruption. Key data released from the National Bureau of Statistics showed factory activity in the country contracted in December by its fastest pace in nearly three years, while the official manufacturing PMI slumped to 47.0 last month. The demand for emergency and critical care is overwhelming certain hospitals, especially in rural areas and small and midsized cities. Surging cases have also led people to adopt voluntary social distancing and factory production has been capped. While travel restrictions eased, travel remained below historical levels from a shortage of flights and concerns related to COVID-19.

The People's Bank of China kept benchmark lending interest rates unchanged throughout the quarter but increased its cash injections into the banking system. China's central bank also announced support for financing to spur domestic consumption and key investment projects, including a series of measures aimed at stabilizing the property sector, which has been a key pillar of the country's economy. For the public, policies include further lowering mortgage borrowing rates and down-payment requirements, as well as relaxing home-purchase restrictions in top-tier Chinese cities. For property developers, policies include loan-repayment extensions and the allowance of commercial banks to issue letters of guarantee to real-estate firms for escrow pre-sale funds. However, despite this stimulus, the sector's road to recovery is expected to be long and uneven, as many developers are still expected to struggle to significantly ease their funding squeeze, weighing on their ability to purchase new land and repay offshore creditors. As a result, analysts expect the sector will see more debt restructuring in the new year.

Japan's economy contracted 0.2% in the previous quarter during the July-September period. Among key inputs to GDP, private consumption, capital expenditures, and exports contributed to growth, while a weak yen and hefty import bills, which boosted the cost of living, detracted. Higher import costs also led to Japan reporting its first current account deficit in eight years in October. The forward-looking Tankan painted a positive picture but reflected some apprehension about the impact of higher costs and slowing growth. Large manufacturer results declined from their highs earlier in the year but remained in positive territory; large non-manufacturer business confidence improved.

Following through on Prime Minister Fumio Kishida's pledge to cushion the negative impact of rising inflationary pressures, the prime minister's cabinet approved an additional stimulus package worth $264 billion. The package includes targeted spending programs designed to reduce households' monthly electricity, natural gas, and gasoline costs alongside direct subsidies for pregnant women or those raising children. Kishida's administration lifted many of Japan's international travel restrictions more than two and a half years since they were first implemented and relaunched its travel visa-waiver program. Promoting a robust and growing tourism industry remains a key policy objective for the administration; the government extended its National Travel Discount program subsidizing domestic tourism, including hotel stays and bus and rail travel.

During its last policy-making meeting of 2022, the Bank of Japan (BOJ) unexpectedly announced its intention to widen the band within which it had been maintaining ten-year bond yields, effectively allowing longer-term rates to rise. Although the BOJ kept short-term rates unchanged, the shift in its yield control policy had an immediate impact on the yen; the currency quickly regained some ground lost to other major currencies over the course of 2022. In his commentary following the meeting, Bank Governor Haruhiko Kuroda brushed off the probability of future hikes, noting the decision was aimed at improving market functionality and was not a first step towards withdrawing the bank's massive stimulus program.

The S&P Goldman Sachs Commodity Index (SPGSCI) ended the quarter with a total return of 3.44%, as all major commodity constituents rose during the quarter. The index's positive performance was attributed to stronger prices in precious and industrial metals, offsetting weaker prices in agriculture. The notable exception (relative to the group, for a consecutive quarter) was within agriculture, specifically coffee and wheat prices, which fell 22.34% and 15.30% (Chicago Wheat), respectively. These constituents were the largest detractors to performance in Q4 2022. Industrial metals (13.58%, S&P GSCI Industrial Metals—SPGSIM) outperformed all other SPGSCI sub-index constituents, with sharply higher prices for nickel, lead, and copper. Within the precious metals sub-index, the price of silver and gold rose, while the former eclipsed the latter in performance. As for energy, a sharp price decline in natural gas was offset by strong price gains for unleaded gasoline and heating oil heading into the winter season. The US dollar began the year with significant momentum, rising to its highest levels in approximately two decades by Q3 2022, but weakened during Q4 2022 as inflation became more evident. Heading into 2023, the rising potential of a US recession, inflation, and supply-side concerns remain at the forefront of investors' minds.

"THE US DOLLAR BEGAN THE YEAR WITH SIGNIFICANT MOMENTUM, RISING TO ITS HIGHEST LEVELS IN APPROXIMATELY TWO DECADES BY Q3 2022, BUT WEAKENED DURING Q4 2022 AS INFLATION BECAME MORE EVIDENT."

ECONOMIC INDICATORS

UNEMPLOYMENT

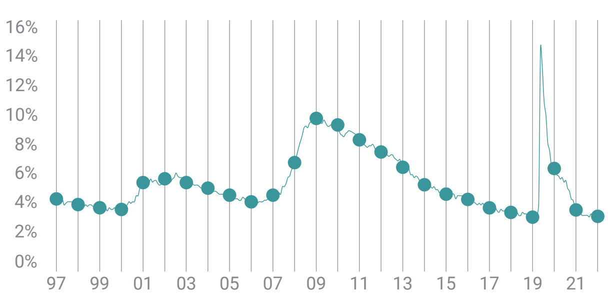
A total of 747,000 jobs were created in the fourth quarter, which does not outpace third-quarter gains. The US economy added 223,000 jobs in December. Monthly job growth averaged 375,000 in 2022—lower than the average 562,000 per month from 2021 and below the third-quarter average of 420,000 jobs created per month. December's notable job gains continued in leisure and hospitality (+67,000) along with healthcare (+55,000), construction (+28,000), and social assistance (+20,000).

The unemployment rate fell 0.1%, to 3.6%, in the fourth quarter, remaining within the 3.5% to 3.7% range since March 2022. In December, the number of unemployed persons slightly decreased to 5.7 million, while the labor-force participation rate measured 62.3%, showing little net change since early 2022 and measuring 1.0 percentage points below February 2020 values preceding the COVID-19 pandemic.

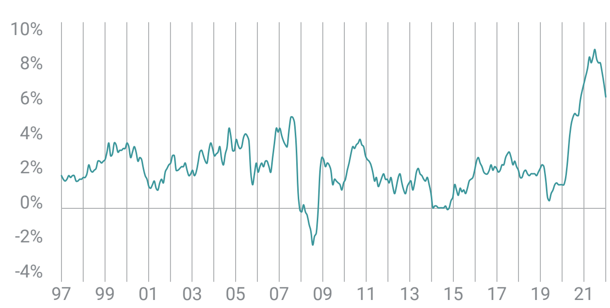
CPI

The Consumer Price Index for All Urban Consumers (CPI-U) decreased 0.1% in December following an increase of 0.1% in November. December was the first month-over-month decline in CPI for the fiscal year. Over the twelve months ending in December, the all-items index increased by 6.5% before seasonal adjustment, which remains lower than the all-items index increases during the earlier quarters of 2022. The main contributor to the decline was the gasoline index (-9.4%), which outweighed increases in the food index (+0.3%) and the index for all items less food and energy (+0.3%). Falling by 4.5% in December, the energy index, which includes the gasoline index, declined 4.3% overall on average.

UNEMPLOYMENT RATE
25 YEARS THROUGH DECEMBER 2022



ROLLING 12 MONTH CONSUMER PRICE INDEX
25 YEARS THROUGH DECEMBER 2022



VIX

Market volatility, as measured by the VIX Index, had an average close in Q4 of 25.00, higher than the Q3 average of 24.79, remaining above its five-year average of 20.0. Rising inflation and pressure on equity valuations continued in Q4, while investor sentiment remains uneasy from economic softening and dislocations globally.

GDP

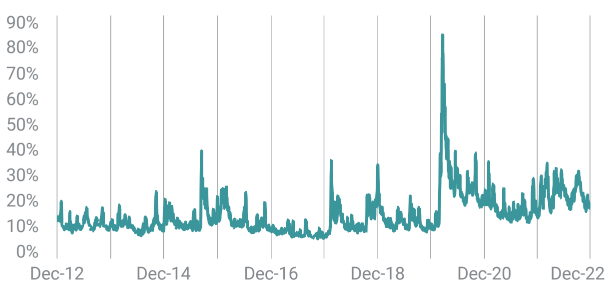
During Q3 2022, Real GDP increased at an annual rate of 3.2% following the 0.6% decrease in Q2. This increase reflects increases in exports, consumer spending, government spending, and non-residential fixed investment. These factors are partly offset by decreases in residential fixed investment and private inventory investment. Imports continued to decrease as well.

RETAIL SALES

Retail and food-service sales for November 2022 totaled $689.4 billion, down 0.6% from the previous month and weaker than expectations (0.3%). This is also the weakest number since December of last year. Nevertheless, sales compared to November 2021 were up 6.5% with a CPI inflation rate of 7.1%. Total sales for the September 2022 through November 2022 period were up 7.7% from the same period one year ago. Gasoline stations were up 16.2% from November 2021, while food services and drinking venues were up 14.1% compared to one year ago. The pullback in the market during Q3 and Q4 was felt across various categories—furniture and home-furnishings stores reported a decrease of 2.6%, building & materials and garden centers were down 2.5%, and motor vehicles and parts dealers dropped 2.3%.

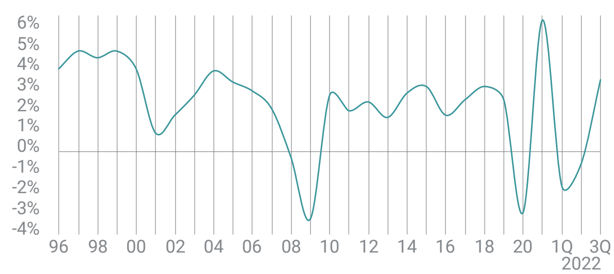
CBOE VIX DAILY CLOSING VALUES

LAST 10 YEARS



REAL GROSS DOMESTIC PRODUCT

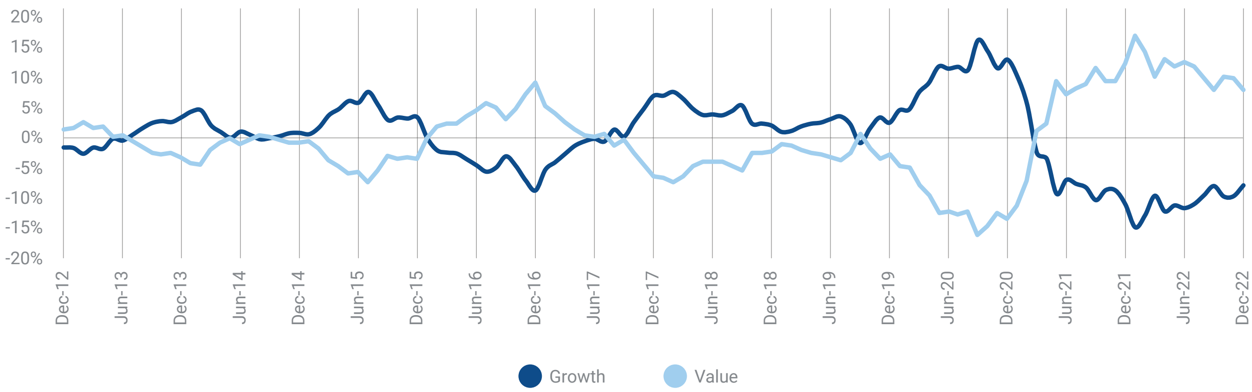
25 YEARS THROUGH 3Q2022



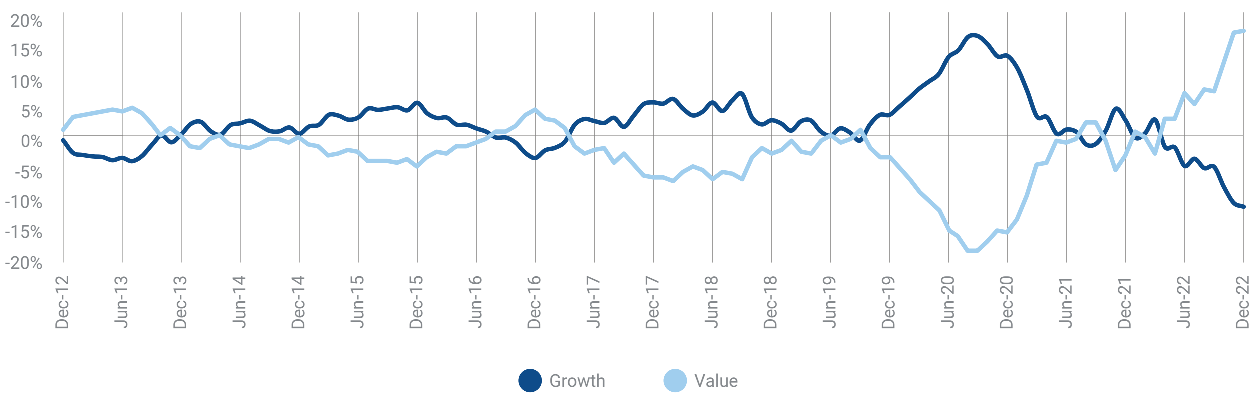
RETURNS BY STYLE

	Q4 2022	YTD		Q4 2022	YTD
Large Cap Value	13.4%	-5.1%	Large Cap Growth	1.1%	-29.7%
Mid Cap Value	10.5%	-12.0%	Mid Cap Growth	6.9%	-26.7%
Small Cap Value	8.4%	-14.5%	Small Cap Growth	4.1%	-26.4%

SMALL CAP VALUE VS. GROWTH
ROLLING 1 YEAR PERFORMANCE VS. RUSSELL 2000
12/31/2012 TO 12/31/2022



LARGE CAP VALUE VS. GROWTH
ROLLING 1 YEAR PERFORMANCE VS. RUSSELL TOP 2000
12/31/2012 TO 12/31/2022



SECTOR RETURNS BY CAPITALIZATION

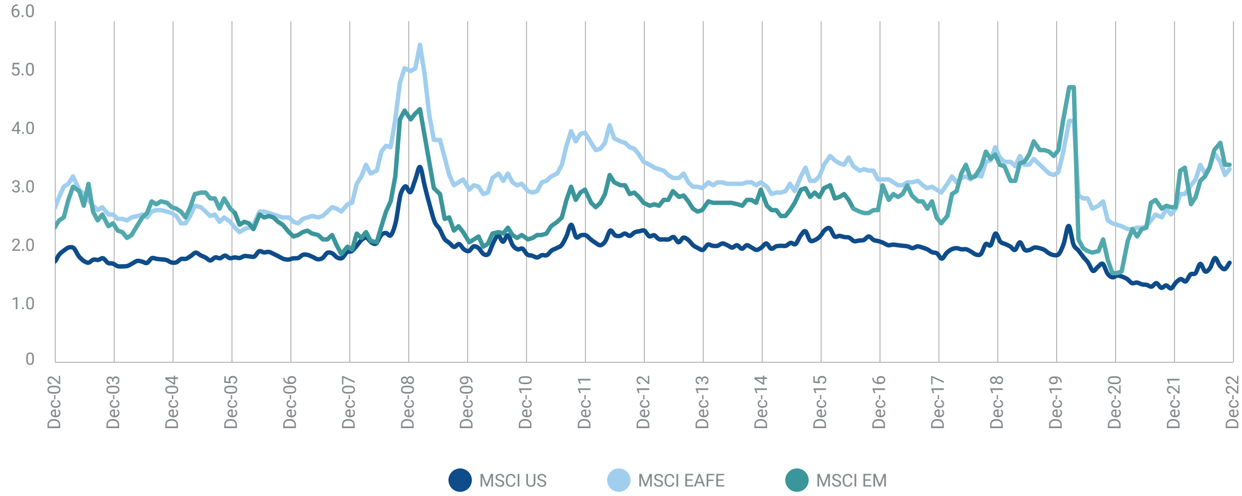
	U.S. Large Cap		U.S. Mid Cap		U.S. Small Cap	
	Q42022	YTD	Q42022	YTD	Q42022	YTD
Basic Materials	22.1	-11.2	10.8	-7.9	10.1	-13.3
Consumer Goods	14.6	5.3	9.4	5.0	8.4	-11.7
Consumer Services	-11.2	-37.8	9.5	-26.5	8.8	-30.6
Financials	14.5	-10.2	9.3	-12.4	5.7	-15.5
Health Care	12.8	0.6	12.8	-21.3	-3.7	-29.0
Industrials	17.3	-11.1	13.0	-16.7	11.7	-14.3
Oil & Gas	23.0	68.2	13.1	50.1	14.0	42.9
Real Estate	3.9	-28.1	4.1	-24.0	7.8	-27.9
Technology	0.5	-34.5	1.9	-34.9	4.0	-36.1
Telecommunications	14.8	-18.3	4.6	-35.3	2.1	-20.4
Utilities	5.4	-0.6	9.8	1.7	9.7	-2.5

Source: Russell Investments & Industry Classification Benchmark

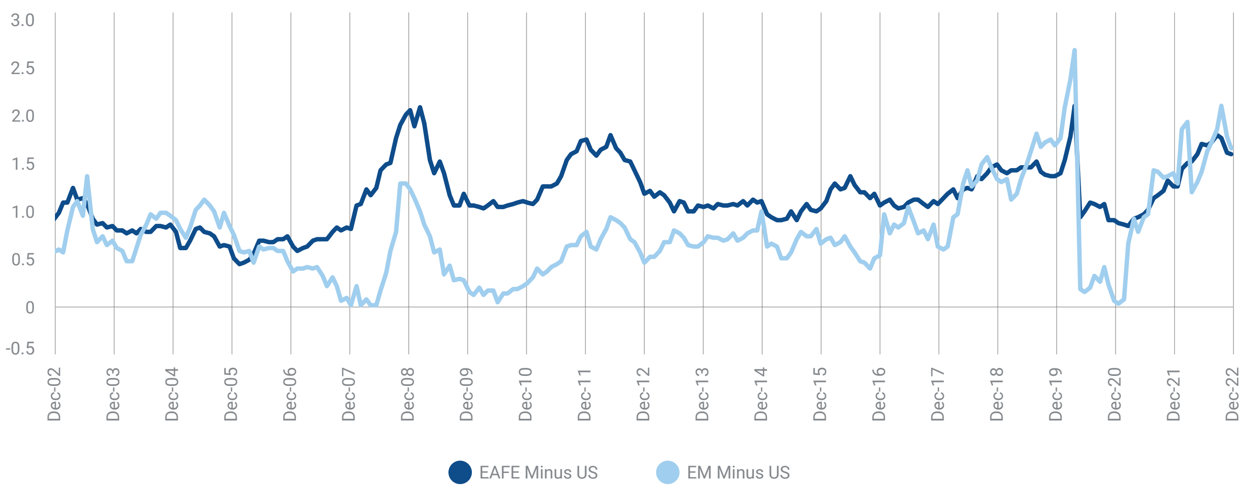
*Large Cap: Russell Top 200 Index Mid Cap: Russell Mid Cap Index Small Cap: Russell 2000 Index

GLOBAL EQUITY RATIOS

DIVIDEND YIELDS

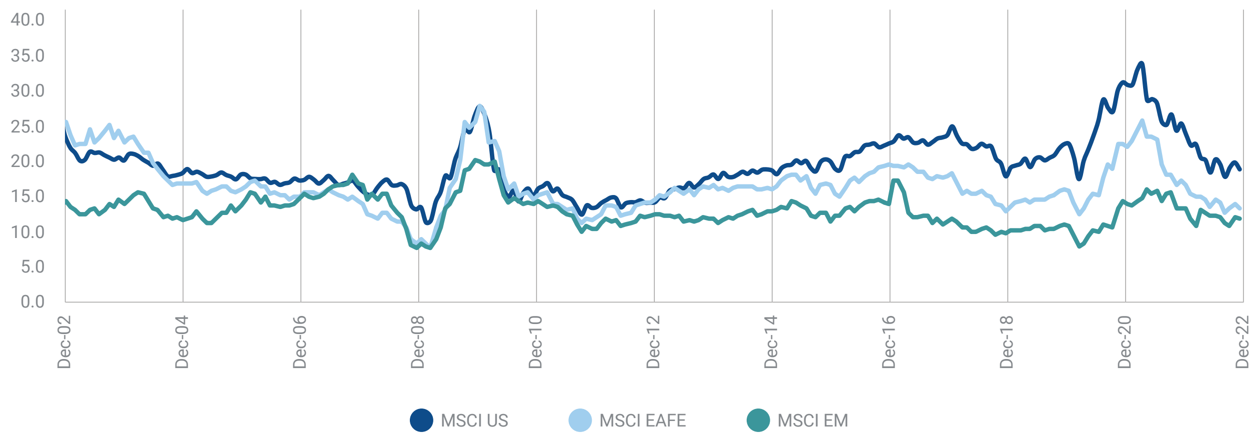


DIVIDEND YIELD DIFFERENTIALS

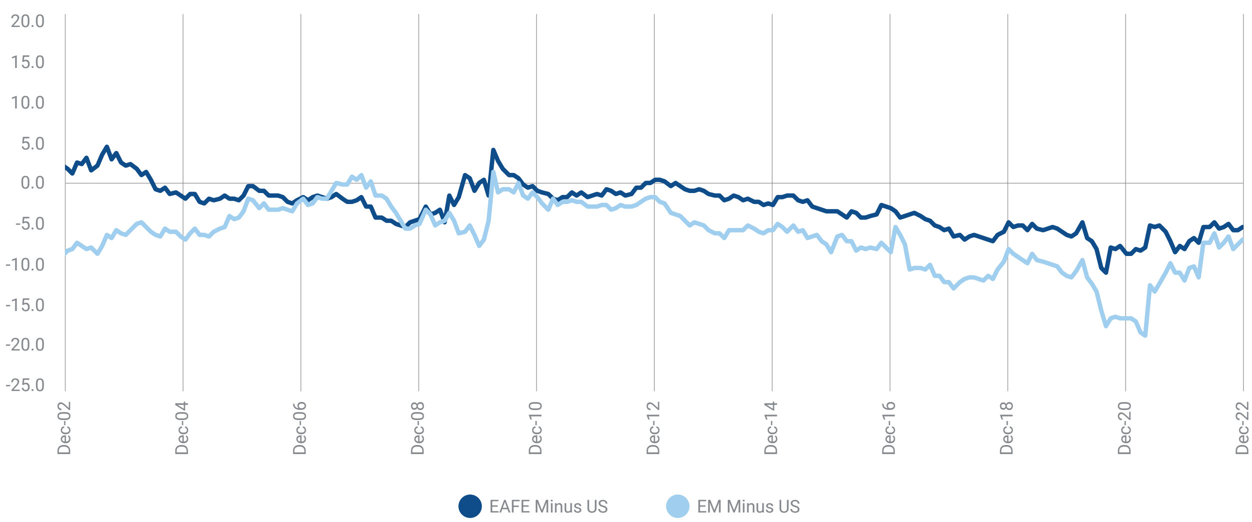


GLOBAL EQUITY RATIOS

PRICE/EARNINGS RATIOS



PRICE/EARNINGS RATIO DIFFERENTIALS

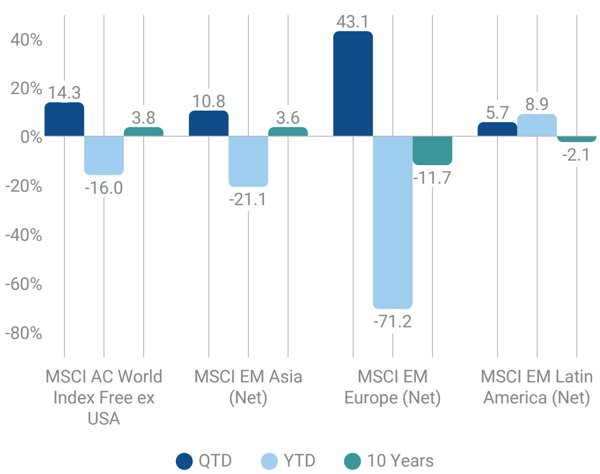


GLOBAL EQUITY PERFORMANCE

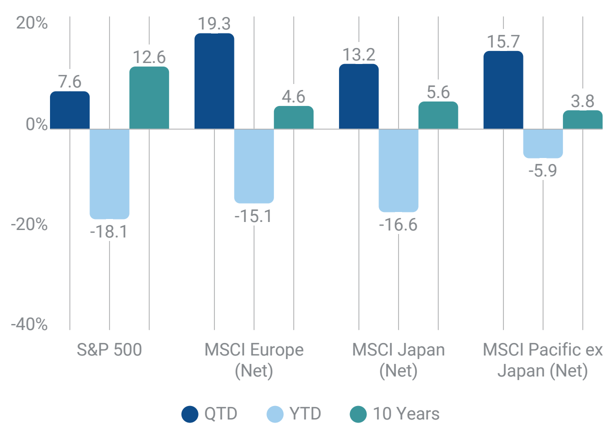
The MSCI All Country World Index (ACWI) finished the quarter 9.8% higher, reducing the year's decline to 18.4%. Of the major regional indices, only the Gulf Cooperation Council (GCC) was negative for the quarter. Emerging markets, Europe, and Japan all benefited from falling energy prices and a weakening US dollar.

Eastern European equity was the most significant contributor to the EM index, rebounding following months of underperformance from the war in neighboring Ukraine. Turkey was again the best-performing EM market; its central bank cut interest rates to 9% during the quarter and the economy continued to experience solid growth. In spite of the uncertainty and risk related to the abrupt reopening, the Chinese equity markets reacted positively. Asian shares rose sharply as well on investor hopes for China's emergence from the COVID-19 pandemic. Although Indonesian stocks declined, Indonesia ended the year as the region's best-performing country. Other laggards included India, where macroeconomic data releases were mixed, and Brazil, where policy uncertainty overshadowed the positive outlook following President Lula's election in October.

GLOBAL EQUITY MARKET PERFORMANCE



DEVELOPED EQUITY MARKET PERFORMANCE



US VALUATIONS

Price increases coupled with a decrease in forward-earnings estimates caused forward price multiples to expand across all US size and style segments. On a normalized basis, the S&P 500 Index remains expensively priced despite the market pullback in 2022, trading at a cyclically adjusted P/E (CAPE) more than 1.5 standard deviations above its long-term average. The near-term earnings outlook for US equities continued to weaken during the quarter, with both Q4 2022 and CY 2023 earnings estimates revised down over the period. The S&P 500 is expected to report a year-over-year earnings decline of 4.1% for the fourth quarter, a 650 bps downward revision from the Q4 earnings estimate as of 9/30/22. Overall, four of the eleven sectors are projected to grow earnings, while seven are projected to experience earnings declines. The energy sector is the one significant positive outlier; it is expected to grow earnings by 63% over the year due largely to the surge in energy prices that occurred earlier this year. Excluding energy, the year-over-year earnings forecast for the S&P 500 falls to -8.5%.

INTERNATIONAL VALUATIONS

Multiples of non-US developed equities increased across both value and growth in Q4 as the international equity market enjoyed double-digit share-price gains. Both on an absolute and relative basis (as compared to US equities), international equities continue to trade at a steep discount relative to historical averages. European and Japanese equity markets are projected to grow earnings at 15% and 13%, respectively, for 2022. In terms of forward-earnings expectations, Japan is expected to continue to grow in the mid-high single digits over the next two years, while recessionary conditions in Europe are projected to cause earnings to flatline in 2023 before growth rates normalize to the mid-to-high single digits in 2024. Emerging-market valuations also trended higher in Q4 but remain cheap on both an absolute and relative basis. The emerging markets are on pace for a 6% earnings growth rate for 2022, though the outlook for corporate profitability is slightly negative for 2023.

US VALUATIONS

US Large Cap Equity	Quarter Ending 12/31/2022		Quarter Ending 9/30/2022	
	Value	Growth	Value	Growth
Price/Earnings Ratio	17.9	26.9	15.4	25.0
IBES LT Growth (%)	8.4	13.1	9.8	16.5
1 Year Forward P/E Ratio	14.1	21.1	12.2	20.8
Negative Earning (%)	5.2	4.1	7.0	4.3

US Mid Cap Equity	Quarter Ending 12/31/2022		Quarter Ending 9/30/2022	
	Value	Growth	Value	Growth
Price/Earnings Ratio	17.2	37.4	15.4	35.8
IBES LT Growth (%)	8.9	16.3	9.6	17.0
1 Year Forward P/E Ratio	13.6	19.7	11.7	18.1
Negative Earning (%)	10.1	15.8	9.2	17.0

US Small Cap Equity	Quarter Ending 12/31/2022		Quarter Ending 9/30/2022	
	Value	Growth	Value	Growth
Price/Earnings Ratio	18.8	13.3	17.5	12.6
IBES LT Growth (%)	9.0	14.1	9.1	14.5
1 Year Forward P/E Ratio	10.5	15.2	9.3	13.4
Negative Earning (%)	22.7	30.5	24.0	32.2

INTERNATIONAL VALUATIONS

International Equity	Quarter Ending 12/31/2022 Value	Quarter Ending 12/31/2022 Growth	Quarter Ending 9/30/2022 Value	Quarter Ending 9/30/2022 Growth
Price/Earnings Ratio	10.2	23.9	9.8	22.1
IBES LT Growth (%)	5.9	12.9	7.6	12.1
1 Year Forward P/E Ratio	8.7	19.4	7.9	17.7
Negative Earning (%)	5.7	3.9	6.2	6.4

Emerging Markets Equity	Quarter Ending 12/31/2022 Value	Quarter Ending 9/30/2022 Value
Price/Earnings Ratio	13.3	21.6
IBES LT Growth (%)	14.1	9.4
1 Year Forward P/E Ratio	12.2	17.9
Negative Earning (%)	5.9	6.3

Source: Russell Investments Total Equity Profile

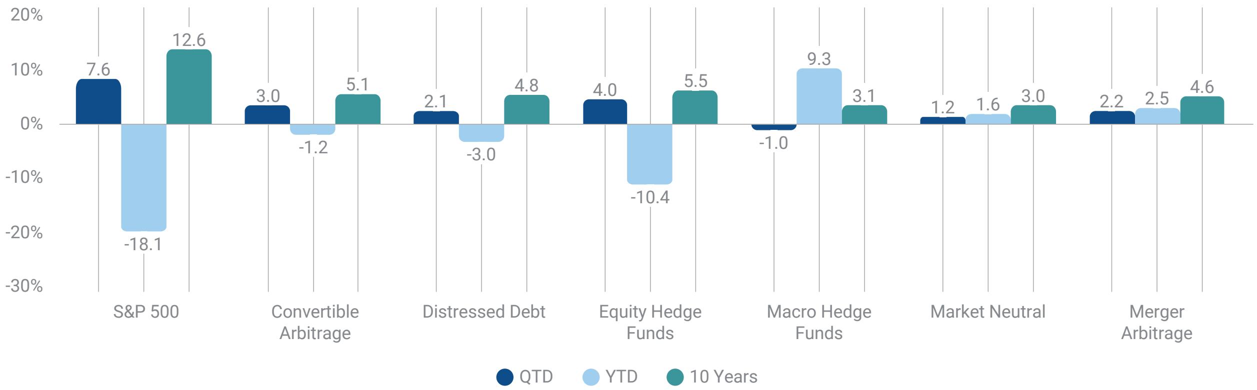
NON-US DEVELOPED/EMERGING CAP & STYLE: MSCI AC WORLD EX - US INDICES (SOURCE: MSCI - DATA SOURCED 'AS IS')

	Q4 2022	YTD		Q4 2022	YTD
Large Cap Value	15.6%	-7.7%	Large Cap Growth	12.9%	-22.5%
Mid Cap Valuev	16.0%	-12.5%	Mid Cap Growth	12.7%	-25.3%
Small Cap Value	14.9%	-13.6%	Small Cap Growth	11.7%	-26.1%

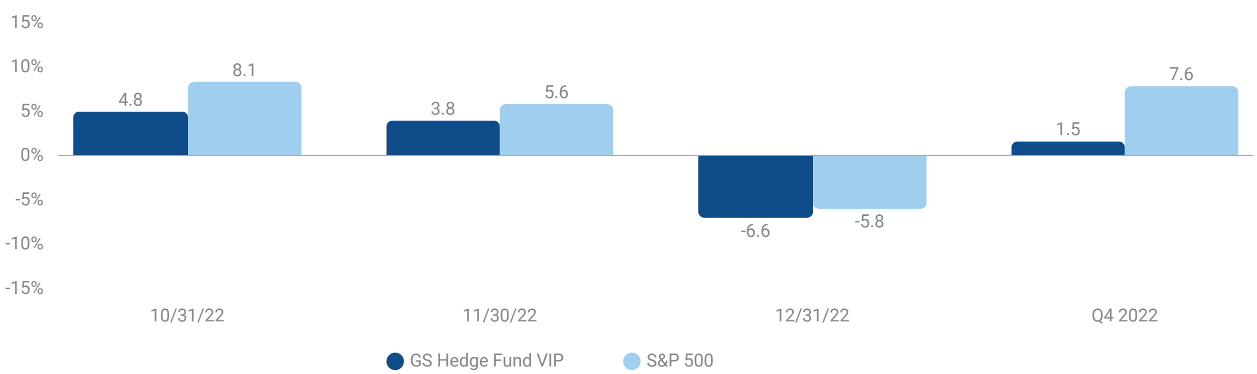
Country	Best Performing Style
Australia	Value
Brazil	Value
Canada	Growth
China	Growth
France	Value
Germany	Value
Hong Kong	Growth
Indonesia	Growth
Italy	Value
Japan	Value
Mexico	Value
Singapore	Value
Spain	Value
Thailand	Growth
United Kingdom	Value

HEDGE FUND PERFORMANCE

HFR HEDGE FUND STRATEGY RETURNS

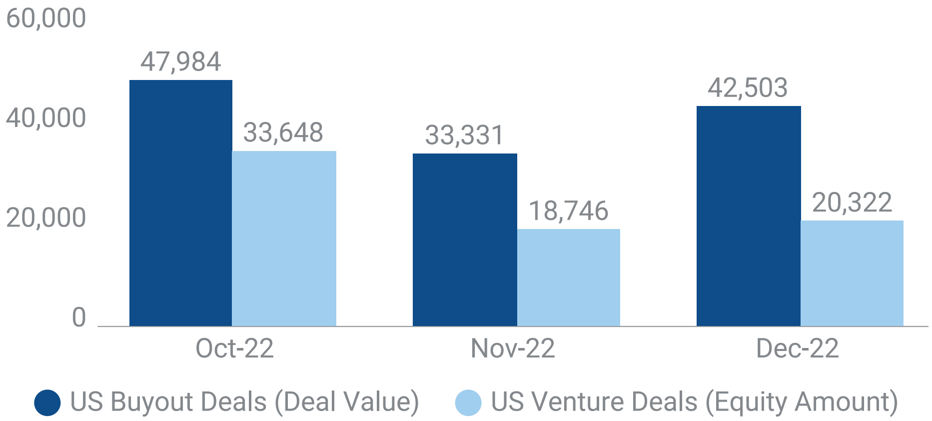


GS HEDGE FUND VIP INDEX
(THE 50 STOCKS MOST WIDELY HELD BY HEDGE FUNDS)

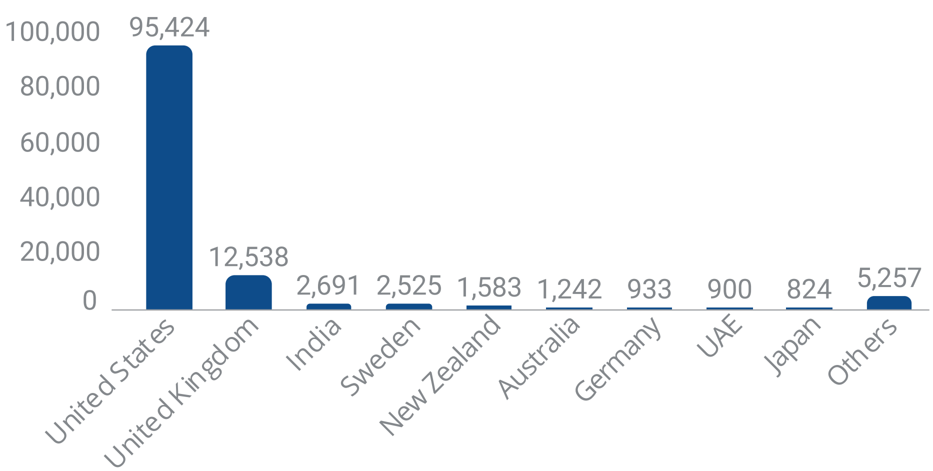


PRIVATE EQUITY PERFORMANCE

Q4 2022 PRIVATE EQUITY DEALS
(USD MIL)



Q4 2022 PE DEALS BY VALUE
(USD MIL)
SNAPSHOT AS OF 1/4/2022

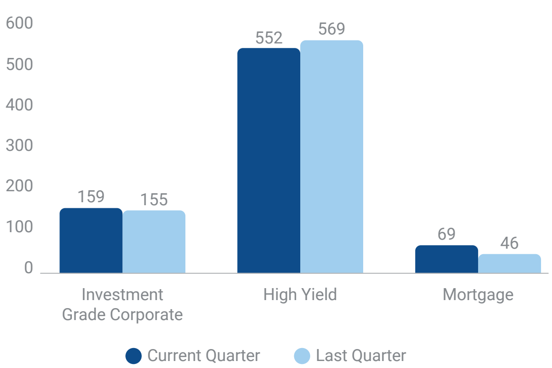


US SPREAD PRODUCTS

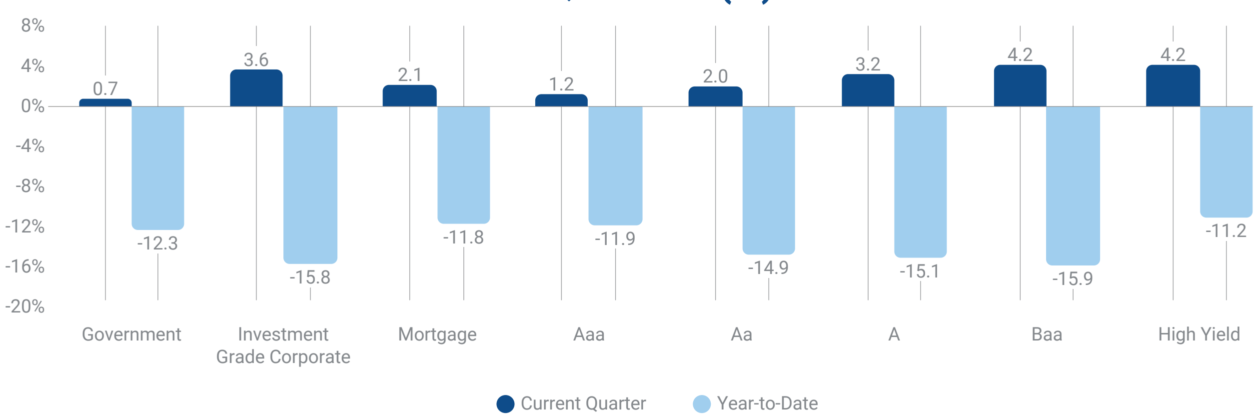
The investment-grade corporate bond market returned 3.6% for the quarter and -15.8% for 2022. A substantial majority of these returns were driven by the movement in US Treasury yields; investment-grade yields moved in sympathy. Changes in this market's option-adjusted spread (OAS) were a less meaningful driver: -29 bps in Q4 (+38 bps in 2022) to 130 bps; the OAS is slightly below its historical average of 140 bps. Given the more favorable risk environment, lower-quality credits outperformed for the quarter: Aa-rated corporates, 2.0%; A-rated corporates, 3.2%, and Baa-rated corporates, 4.2%. This market's issuance totaled approximately $200 billion for the quarter and $1.2 trillion for the year, a decrease of approximately 35% and 16%, respectively, from the corresponding periods in 2021.

The high-yield corporate bond market returned 4.2% for the quarter and -11.2% for 2022. For the quarter and year, a substantial majority of the returns were driven by the movement in US Treasury yields. Changes in this market's option-adjusted spread (OAS) were a less meaningful driver: -83 bps in Q4 (+186 bps in 2022) to 469 bps; the OAS is slightly below its historical average of 500 bps. Despite the more favorable risk environment, higher-quality credits outperformed for the quarter: Ba-rated corporates, 4.3%; B-rated corporates, 4.9%; and Caa-rated corporates, 0.5%. This market's issuance totaled approximately $16 billion for the quarter and $112 billion for the year, a decrease of approximately 80% and 75%, respectively, from the corresponding periods in 2021.

YIELD SPREADS
(BASIS POINTS)



RETURNS BY SECTOR AND QUALITY (%)



YIELD CURVE

US Treasury yields generally increased during the quarter. Yields increased on the two-year note (+19 bps to 4.41%), ten-year note (+5 bps to 3.88%), and 30-year bond (+18 bps to 3.97%), but declined on the five-year note (-7 bps to 3.99%). The two- to ten-year spread fell further into inversion (-14 bps to -53 bps); this spread is more than one and a half standard deviations below its historical mean (91 bps).

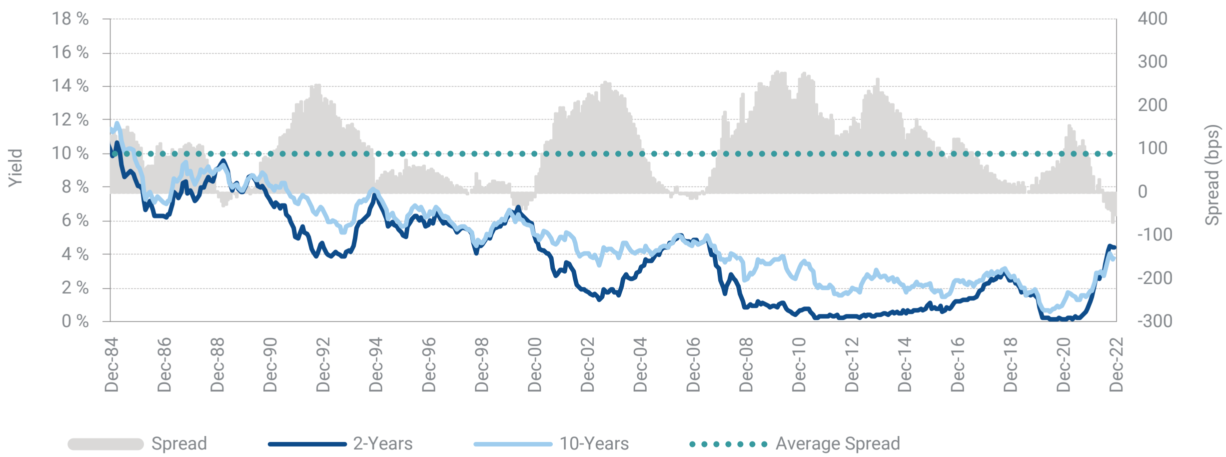
Similar to the previous two quarters, bill yields increased the most and generally tracked the Fed's interest-rate hikes (e.g., the three-month bill increased by 109 bps to 4.42%); as a result, the three-month to ten-year spread fell sharply into inversion (-104 bps to -54 bps).

The increase in interest rates across most points on the curve during the fourth quarter is mostly attributable to an acknowledgement by the bond market and Fed that not only had inflation reached levels not seen since the 1980s, but its potential persistence is not yet clear; despite a recent softening among some economic and inflation indicators, strong employment and wage growth signal a very tight labor market, and Russia's ongoing invasion of Ukraine is adding to an already tight energy-supply situation. The flattening of the curve is mostly attributable to the bond market's fear of "overtightening" by the Fed; secondary reasons include a yield advantage that continues to favor the US relative to Europe and Japan, as well as mostly stable long-term inflation expectations that remain anchored near the Fed's longer-term headline-PCE inflation target of approximately 2%.

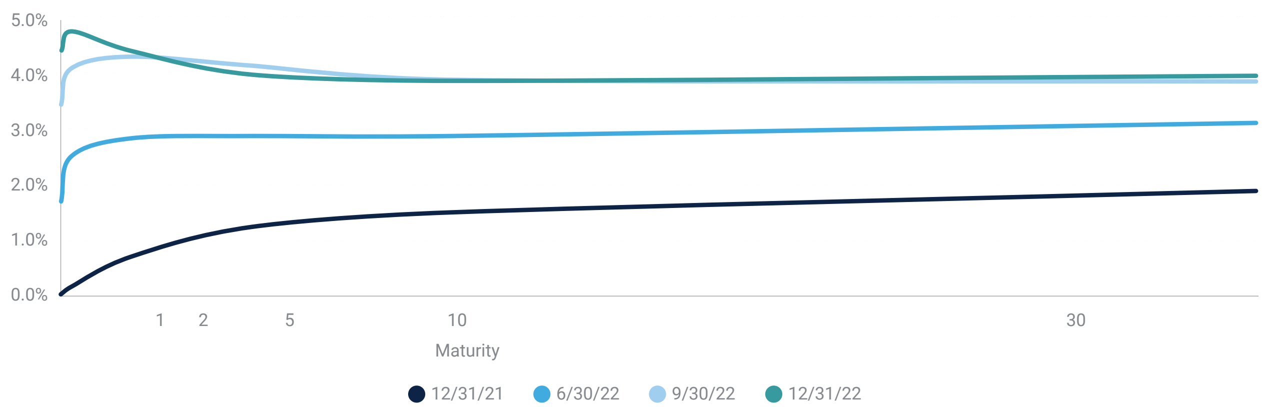
At the end of the quarter, the federal-funds futures market predicted a target rate of 4.6% by the end of 2023, which is approximately 50 bps below that expected by Fed officials.

“DESPITE A RECENT SOFTENING AMONG SOME ECONOMIC AND INFLATION INDICATORS, STRONG EMPLOYMENT AND WAGE GROWTH SIGNAL A VERY TIGHT LABOR MARKET...”

2 YEAR VS. 10 YEAR TREASURY YIELDS



TREASURY YIELD CURVE



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