# Equities climb as the globe spins into a new season.

## Monthly Snapshot

- Equities rallied in October around most of the globe, with a sizeable gain for developed-market shares and a loss for emerging markets.[1]
- Fixed-income asset classes remained under pressure during the month as interest rates continued to rise (yields and prices have an inverse relationship).
- A global recession is on the horizon, with Europe and the U.K. more vulnerable to a downturn than the U.S. in the months immediately ahead.

Equities around most of the globe moved higher in October after hitting a fresh bear-market bottom in the first half of the month on a selloff that began in August. The rally was uneven, with a sizeable gain for developed-market shares and a loss for emerging markets due to an abysmal performance by mainland Chinese equities.[1]

Eastern European stocks outpaced other regions for the month, while Latin American equities also performed well. U.S. equities edged out Europe as a whole with a large advance; Europe, in turn, was followed by the U.K. and then Japan at a distance. Hong Kong shares tumbled by double digits, but not as deeply as they did in mainland China.

U.S. Treasury yields climbed across the entire curve, most markedly at the short end, lengthening an inversion. Gilt yields declined sharply at shorter maturities and were slightly higher at the long end during October, flattening what had become an inverted curve. Eurozone government-bond rates increased across all maturities through about 25 years and declined thereafter.

Fixed-income asset classes remained under pressure in the month as rates continued to rise (yields and prices have an inverse relationship). U.S. high-yield bonds benefited as risk assets rallied, while the most rate-sensitive areas of the market—mortgage-backed securities, U.S. Treasurys, and investment-grade corporates—delivered sizeable losses.[2]

Commodity prices were mixed during October. Brent and West-Texas Intermediate crude oil spot prices climbed by 9.01% and 8.86%, respectively, while natural gas prices slid by 2.36%. Wheat prices finished only 4.26% lower for the full month despite having plummeted by more than 10% late in the period; the recovery—driven by Russia's threat to back out of a Ukrainian grain-shipping deal—proved brief as prices tumbled back again at the beginning of November.[3]

Liz Truss resigned as U.K. prime minister in late October after the disastrous reception of her fiscal program sent gilt and sterling markets reeling, collapsing her support within the Conservative Party. Her departure cleared the way for Rishi Sunak, who ascended as Conservative leader and prime minister near the end of the month.

[1] According to the MSCI ACWI Index
[2] According to data from FactSet and Lipper
[3] According to market data from The Wall Street Journal

## Key Measures: October 2022

| EQUITY | | |
|---|---|---|
| Dow Jones Industrial Average | 14.07% | ↑ |
| S&P 500 Index | 8.10% | ↑ |
| NASDAQ Composite Index | 3.94% | ↑ |
| MSCI ACWI Index (Net) | 6.03% | ↑ |
| **BOND** | | |
| Bloomberg Global Aggregate Index | -0.69% | ↓ |
| **VOLATILITY** | | |
| Chicago Board Options Exchange Volatility Index<br>PRIOR Month: 31.62 | 25.88 | ↓ |
| **OIL** | | |
| WTI Cushing crude oil prices<br>PRIOR Month: $79.49 | $86.53 | ↑ |
| **CURRENCIES** | | |
| Sterling vs. U.S. dollar | $1.15 | ↑ |
| Euro vs. U.S. dollar | $0.99 | ↑ |
| U.S. dollar vs. yen | ¥148.74 | ↑ |

Sources: Bloomberg, FactSet, Lipper

In China, Xi Jinping began his third five-year term as general secretary of the Communist Party in late October—breaking precedent for 10-year term limits and neglecting to name a clear successor to the Politburo Standing Committee. Xi's retention of the Party leadership ensures he will continue to serve as president of the People's Republic of China for another five years.

Russia resumed mass bombardment of Ukraine with missiles and drones in October as gains from Ukraine's counteroffensive mounted along its southern and eastern fronts. Ukraine claimed that the attacks, which appeared to target electricity infrastructure, took out roughly one-third of the country's power stations and led to rolling blackouts.

# Economic data

## US

- The Commerce Department's personal-consumption expenditures price index (PCE), which is the Federal Reserve's (Fed) preferred inflation measure, held at 0.3% in September and 6.2% year over year.
- Manufacturing growth in the U.S. held near a standstill during October as a slowdown in new orders eased while headcount reduction came to a halt.[4,5]
- U.S. services activity remained volatile, contracting in October after recovering to a near-breakeven pace in the prior month.[6]
- Job openings rose from 10.28 million in August to 10.72 million in September. The number of unemployed Americans measured 5.75 million in September, meaning there were about 1.9 jobs available for every jobseeker.
- The overall U.S. economy grew at a 2.6% annualized rate during the third quarter after contracting by an annualized 0.6% in the second quarter.

## UK

- Consumer prices in the U.K. increased by 0.5% during September and 10.1% over the prior year—setting a new 40-year high for the year-over-year inflation rate.[7]
- U.K. manufacturing activity contracted for a third straight month in October after growth began to slow in May.[8]
- Activity in the U.K. services sector began to contract in October after expanding at a modest-but-healthy pace through the summer and levelling off in September.[9]
- The UK's claimant count (which calculates the number of people claiming Jobseeker's Allowance) increased in September—by about 25,500—after breaking a 17-month streak of declines in August. Total claimants held firm at 3.9% of the population.

[4] S&P Global U.S. Manufacturing PMI. 1 November 2022.
[5] October 2022 Manufacturing ISM Report On Business. 1 November 2022.
[6] S&P Global Flash U.S. Composite PMI. 24 October 2022.
[7] "U.K. inflation rises to 10.1% on back of soaring food prices." The Guardian. 19 October 2022.
[8] S&P Global / CIPS U.K. Manufacturing PMI. 1 November 2022.
[9] S&P Global / CIPS Flash U.K. Composite PMI. 24 October 2022.

## Eurozone

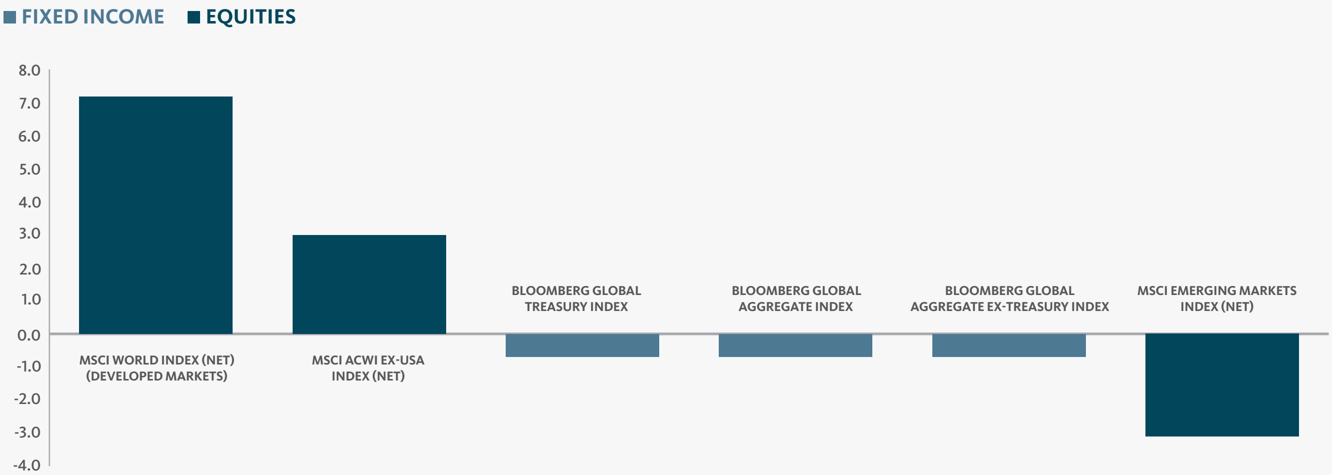
- Eurozone consumer prices increased by 1.5% in October and 10.7% over the prior year—the highest year-over-year inflation figure since Eurostat began tracking data in 1997.[10]
- A contraction in eurozone manufacturing activity that began in July deepened in October.[11]
- Eurozone services activity declined further in October after entering contraction territory in the prior month.[12]
- Eurozone economic growth slowed in the third quarter to 0.2% from 0.7% in the second quarter and to 2.4% from 4.3% in the year over year.

## Central banks

- The Federal Open Market Committee (FOMC) increased the federal-funds rate by 0.75% at the beginning of November—the fourth consecutive increase of its size—making the target range 3.75% to 4.00%. The central bank also settled into an accelerated pace of balance-sheet reduction starting in September, allowing Treasury and mortgage holdings to mature without being replaced at maximum respective monthly paces of $60 billion and $35 billion.
- The Bank of England's (BOE) Monetary Policy Committee did not meet in October after hiking its benchmark rate by 0.50% in both August and September, bringing the bank rate to 2.25%. In late September, the BOE announced a temporary bond-buying program to help ease concerns about financial stability as long-term rates skyrocketed in response to the new government's mini-budget.[13]

[10] "Eurozone Inflation Rate Rises to 10.7% as Recession Looms." The Wall Street Journal. 31 October 2022.
[11] S&P Global Eurozone Manufacturing PMI. 2 November 2022.
[12] S&P Global Flash Eurozone Composite PMI. 24 October 2022.
[13] "Bank of England announces gilt market operation." Bank of England. 28 September 2022.

## Major Index Performance in October 2022 (Percent Return)




Sources: FactSet, Lipper

- The European Central Bank (ECB) increased all three of its benchmark rates by 0.75% each at its late-October meeting, its second straight hike of that magnitude. The central bank also announced in late October that the applicable rates for its third targeted longer-term refinancing operation, or TLTRO III, would align with its deposit facility rate beginning November 23. The lending facility was originally established to foster credit availability but has essentially enabled bank subsidies as interest rates have risen, prompting the ECB's action.
- The Bank of Japan's (BOJ) short-term interest rate remained -0.1%, and the 10-year Japanese government-bond (JGB) yield target held near 0% at the central bank's late-October meeting. The BOJ continued to offer purchases of 10-year JGBs at 0.25% in order to keep yields within its acceptable range. In September, the central bank was compelled to intervene in currency markets for the first time since 1998 to limit the yen's slide.[14]

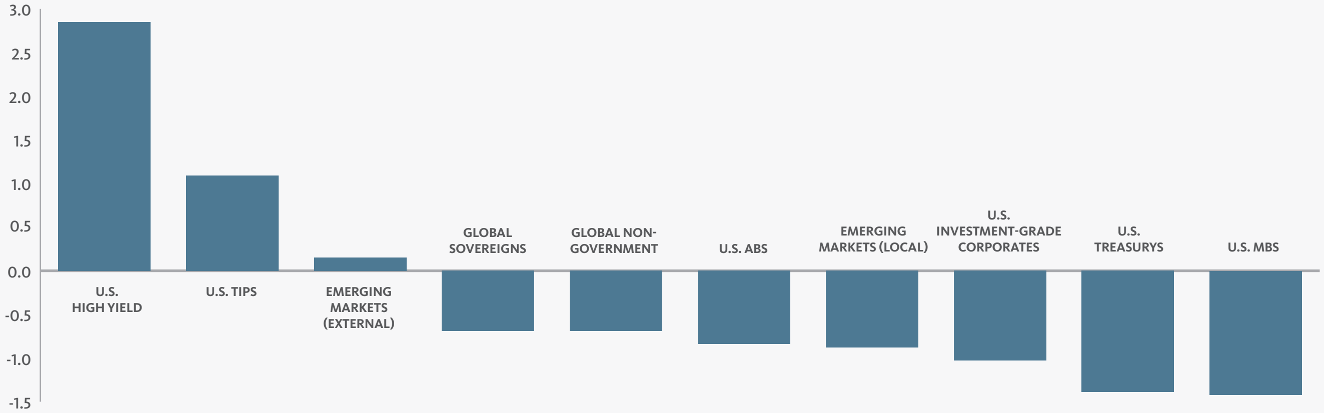
## SEI's view

Russia's assault on Ukraine and its energy blackmail against Europe (and, by extension, the rest of the world) are not exactly new; nor is the aggressive response of central banks to high global inflation or the severe COVID-19-related slowdown in China. All have simply increased in intensity. Most important (from an economic perspective) is that monetary-policy makers now must finally acknowledge the major inflation problem on their hands, one that is neither transitory nor likely to be resolved without pain.

In our opinion, investors should be prepared to see a federal-funds rate that could exceed 5%. Other central banks are following the Fed's lead, talking tough and implementing outsized policy-rate increases.

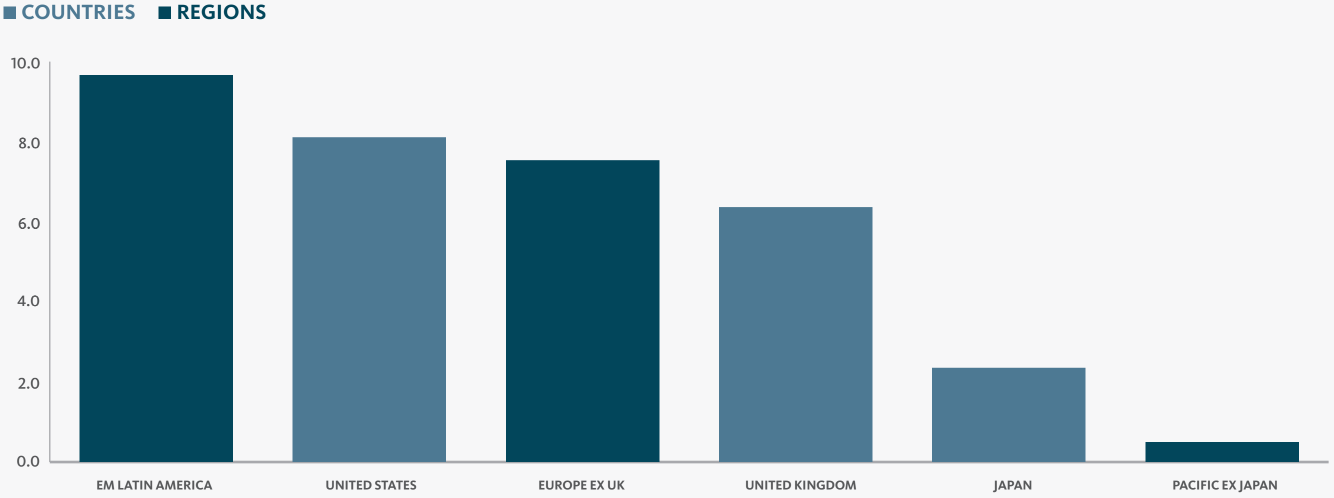
[14] "Japan Intervenes to Support Yen for the First Time Since 1998." Bloomberg. 22 September 2022.

## Fixed-Income Performance in October 2022 (Percent Return)




Sources: FactSet, Lipper. See "Corresponding Indexes for Fixed-Income Performance Exhibit" in the Index Descriptions section for more information.

## Regional Equity Performance in October 2022 (Percent Return)




Sources: FactSet, Lipper. See "Corresponding Indexes for Regional Equity Performance Exhibit" in the Index Descriptions section for more information.

Europe will continue to be the area most under pressure due to Russia's suspension of natural gas exports. Although storage facilities within the EU are now nearly 95% full, the continent still needs a steady flow of gas to get through the high-usage winter months.[15] Governments may be forced to impose disruptive energy-saving restrictions on businesses and citizens. Heavy users of electricity, from aluminum smelters to glassmakers, have already been shutting down.

The U.K. announced plans to cap electricity costs that amount to 6.5% of gross domestic product (GDP). Other countries that allocated funds for energy-related aid in excess of 3% of GDP include Croatia, Greece, Italy, and Latvia. It would not be surprising to see more energy-related fiscal relief. Deficits could balloon in the same way as they did in the early months of the COVID-19 crisis as policy makers do what they must to protect their populations.

Central bankers are mandated to lean hard against the rising trend in prices—even though doing so goes against their own governments' stimulus efforts. Unfortunately, they're running just to keep up with the Fed. Interest-rate differentials versus the U.S. are still wide, with only Canada on par with the U.S.[16]

The large differential in favor of the U.S. along with the perception that it's better positioned economically are two major reasons behind the U.S. dollar's extraordinary appreciation this year. Although a declining currency may give a competitive boost to domestic firms that export goods and services to the U.S. market, it exacerbates inflationary pressures stemming from imports priced in U.S. dollars—most importantly, oil and liquefied natural gas.

Several large U.S. multinational companies have warned that U.S. dollar strength is beginning to exert a negative impact on revenues, suggesting that the currency's value has risen well beyond its purchasing-power parity (PPP) level. But discrepancies can last for a long time between PPP and market-based exchange rates.

Central bankers are mandated to lean hard against the rising trend in prices—even though doing so goes against their own governments' stimulus efforts.

[15] "94.8% of EU gas storage is filled." Reuters. 30 October 2022.
[16] According to data from Bloomberg.

Still, it would not be surprising to see at least a temporary reversal in the U.S. currency's trend. Given a catalyst—coordinated government action to weaken the dollar or a surprisingly weak U.S. unemployment report, for example—traders might cover their long positions in a major way, causing the dollar to fall abruptly.

The rise in U.S. hourly compensation has been extensive; annualized gains exceeded 6% even when measured over a three-year span. This is the sharpest increase in almost four decades.[17] Similar to the 1970s experience, compensation gains have been accelerating despite slowing productivity growth. This divergence is concerning. The difference between the change in compensation and the change in productivity equals the change in unit labor costs.

Although unit labor costs are more volatile than inflation, there is still a strong positive correlation between the two.

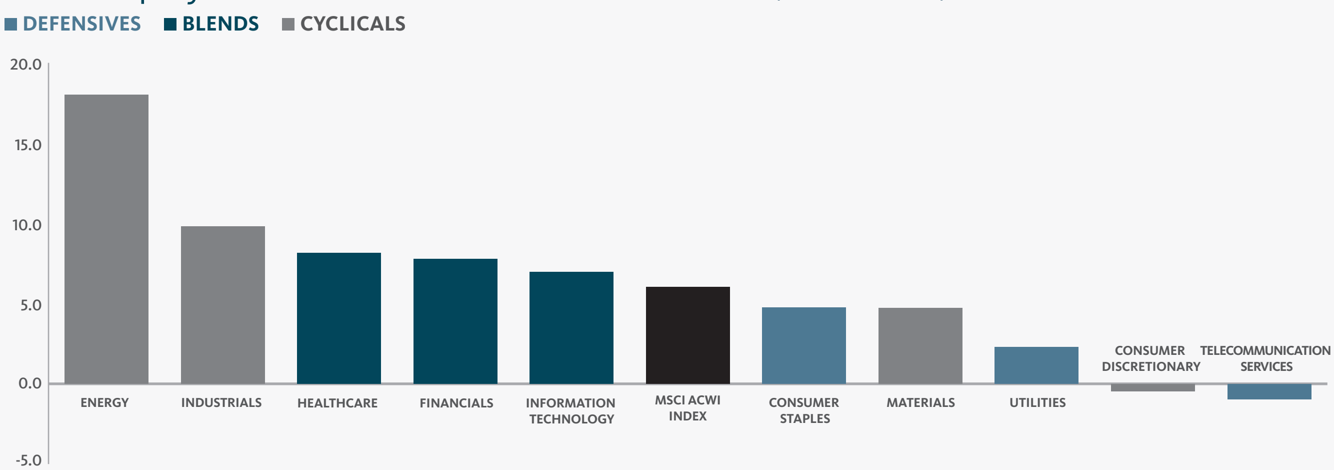
Unfortunately, history shows that it usually takes an outright recession to tame inflation, especially when it gets this intense. Fed Chair Jerome Powell's hope for a soft landing appears to be an exercise in wishful thinking. Unit labor costs jumped in the year over year through August at a rate that far exceeded inflation—and we see no reason to expect a major reversal in the near term, even if the economy stumbles into a bona fide recession.

U.S. companies have been able to push their higher employment and supply costs onto consumers. While economy-wide profit margins have remained above almost all cyclical peaks since 1947, we suspect that margins are on the cusp of a substantial erosion. It's typical for profit margins to decline well before an economic recession materializes.[18]

If the economy does fall into recession and profits decline, it will probably force analysts to mark down earnings estimates aggressively in order to catch up with reality. Investors are not waiting for those earnings revisions. They have been pushing equities lower in reaction to the Fed's aggressive shift and in anticipation of a recession, both in the U.S. and globally.

[17] According to SEI's analysis of data from the U.S. Bureau of Economic Analysis.
[18] According to SEI's analysis of data from the U.S. Bureau of Economic Analysis.

## Global Equity Sector Performance in October 2022 (Percent Return)




Sources: FactSet, Lipper. MSCI ACWI Index Components (as defined by SEI).

Fed policymakers project a federal-funds rate in the 4.4%-to-4.9% range next year, but the actual result may still be higher. Unless the central bank is ready to engineer a severe recession, we think PCE price inflation could run in a 3%-to-4% range instead of the pace of less than 2% recorded over much of the past 25 years.

Several asset classes looked extremely oversold by the end of the third quarter, including equities, bonds, currencies, and commodities. The U.S. dollar's sharp climb has reversed most of this year's appreciation in the commodities complex. If the currency breaks to the downside, commodities should break to the upside.

We maintain a positive outlook on commodities despite the demand destruction occurring in Europe and other parts of the globe. Years of underinvestment in fossil fuels and metals mines will likely lead to periodic shortages over the next few years.

The Chinese central government has allowed Hong Kong and Macau to open up. This might be a harbinger of what will happen on mainland China as President Xi begins his unprecedented third term as General Secretary of the Communist Party National Congress. Xi's position may seem unassailable, but we suspect he is looking for a way out of his zero-COVID-19 policy. The loosening of restrictions and return to stronger economic growth is the only logical way out.

Other emerging economies would be big beneficiaries of a revival in Chinese economic activity. Yet U.S. dollar strength is a central factor for investors in emerging-market equities. The relative total-return performance of the MSCI Emerging Market Index versus the MSCI World Index peaked in 2010, more-or-less concurrent with the trough in the trade-weighted value of the U.S. dollar. (Trade-weighting measures the value of the dollar versus other major currencies.) As the U.S. currency grew stronger, emerging-market equities weakened further—and, as of September 30, gave up almost all gains achieved between 2000 and 2010 versus advanced-country stock markets.

The rate-hiking cycle began far sooner in less-developed economies, during the latter months of 2020. It was not until this year that advanced economies began a general up-cycle in policy rates; in response, interest-rate hikes in the emerging world have accelerated significantly, in both frequency and magnitude. Three-month government bond yields are in double digits in Brazil, Colombia, Hungary, and Turkey, with only Brazil's comfortably above the inflation rate. Turkey, by contrast, is facing an inflation rate of more than 85%.[19] Little wonder that the Brazilian real has maintained its value against the U.S. dollar this year while the Turkish lira declined by almost 30%.

While the effort to tame inflation may prove successful, a global recession will likely result—with Europe and the U.K. more vulnerable than the U.S. to a downturn.

Short-term gyrations notwithstanding, the primary trend in risk assets still appears negative. Inflation in the U.S. has probably peaked, but we do not expect it to fall as rapidly or as far as the Fed projects. The central bank may still be underestimating the extent to which it needs to tighten policy in order to slow the economy and produce slack in the labor markets.

While the effort to tame inflation may prove successful, a global recession will likely result—with Europe and the U.K. more vulnerable than the U.S. to a downturn.

[19] "Turkey's inflation hits 24-year high of 85.5% after rate cuts." Reuters. 3 November 2022.

## Glossary of Financial Terms

**Anti-fragmentation tool:** An anti-fragmentation tool refers to the ECB's plans to mitigate widening spreads between German government bond yields and those of economically weaker EU members.

**Asset Purchase Programme (APP):** The ECB's APP is part of a package of non-standard monetary policy measures that also includes targeted longer-term refinancing operations, and which was initiated in mid-2014 to support the monetary policy transmission mechanism and provide the amount of policy accommodation needed to ensure price stability.

**Balance sheet:** The balance sheet, as it relates to a central bank, refers to assets—for example, government bonds or mortgages-backed securities—that it has accumulated to support the transmission of monetary policy.

**Bear market:** A bear market refers to a market environment in which prices are generally falling (or are expected to fall) and investor confidence is low.

**Commercial paper:** Commercial paper is a type of short-term loan that is not backed by collateral and does not tend to pay interest.

**European Commission:** The European Commission is the executive branch of the European Union. It operates as a cabinet government, with 27 members of the Commission headed by a President.

**Fiscal policy:** Fiscal policy relates to decisions about government revenues and outlays, like taxation and economic stimulus.

**Gilt:** Gilts are sovereign debt securities issued by the U.K. government.

**Group of 7 (G7):** The G7 is an inter-governmental forum for the leaders of major advanced democratic nations that includes Canada, France, Germany, Italy, Japan, the U.K. and the U.S.

**Hawk:** Hawk refers to a central-bank policy advisor who has a negative view of inflation and its economic impact, and thus tends to favor higher interest rates.

**Inflation:** Inflation refers to rising prices.

**Monetary policy:** Monetary policy relates to decisions by central banks to influence the amount of money and credit in the economy by managing the level of benchmark interest rates and the purchase or sale of securities. Central banks typically make policy decisions based on their mandates to target specific levels or ranges for inflation and employment.

**Mortgage-Backed Securities:** Mortgage-backed securities (MBS) are pools of mortgage loans packaged together and sold to the public. They are usually structured in tranches that vary by risk and expected return.

**NATO:** The North Atlantic Treaty Organization (NATO) is an intergovernmental military alliance among 28 European countries and 2 North American countries.

**Pandemic Emergency Purchase Programme (PEPP):** PEPP is a temporary asset-purchase program of private and public sector securities established by the European Central Bank to counter the risks to monetary-policy transmission and the outlook for the euro area posed by the COVID-19 outbreak.

**Politburo Standing Committee:** The Politburo Standing Committee of the Chinese Communist Party is the top leadership group of the Communist Party, which controls the People's Republic of China under one-party rule.

**Price-to-earnings (PE) ratio:** The PE ratio is equal to the market capitalization of a stock or index divided by trailing (over the prior 12 months) or forward (forecasted over the next 12 months) earnings. The higher the PE ratio, the more the market is willing to pay for each dollar of annual earnings.

**Purchasing power parity (PPP):** Purchasing power parity is the exchange rate at which the currency of one country would have to be converted into that of another country to buy the same amount of goods and services in each country.

**Quantitative easing:** Quantitative easing refers to expansionary efforts by central banks to help increase the supply of money in the economy.

**Recession:** Recession refers to a period of economic decline and is generally defined by a drop in GDP over two successive quarters.

**Summary of Economic Projections:** The Fed's Summary of Economic Projections (SEP) is based on economic projections collected from each member of the Fed Board of Governors and each Fed Bank president on a quarterly basis.

**Targeted longer-term refinancing operations (TLTRO):** The TLTROs are Eurosystem operations that provide financing to credit institutions. By offering banks long-term funding at attractive conditions they preserve favorable borrowing conditions for banks and stimulate bank lending to the real economy.

**Transmission Protection Instrument (TPI):** The European Central Bank established the TPI to ensure the smooth transmission of monetary policy normalization across eurozone countries. According to the ECB, the TPI "can be activated to counter unwarranted, disorderly market dynamics" by making "secondary market purchases of securities issued in jurisdictions experiencing a deterioration in financing conditions."

**Yield:** Yield is a general term for the expected return, in percentage or basis points (one basis point is 0.01%), of a fixed-income investment.

**Yield curve:** The yield curve represents differences in yields across a range of maturities of bonds of the same issuer or credit rating (likelihood of default). A steeper yield curve represents a greater difference between the yields. A flatter curve indicates the yields are closer together.

## Index and Benchmark Descriptions

**All indexes are quoted in gross performance unless otherwise indicated.**

**The Bloomberg 1-10 Year US TIPS Index** measures the performance of inflation-protected public obligations of the U.S. Treasury that have a remaining maturity of 1 to 10 years.

**The Bloomberg Commodity Index** is composed of futures contracts and reflects the returns on a fully collateralized investment in the Index. This combines the returns of the Index with the returns on cash collateral invested in 13-week (3-month) U.S. Treasury bills.

**The Bloomberg US Asset Backed Securities (ABS) Index** measures the performance of ABS with the following collateral types: credit and charge card, auto and utility loans. All securities have an average life of at least one year.

**The Bloomberg Global Aggregate Index** is an unmanaged market-capitalization-weighted benchmark, tracks the performance of investment-grade fixed-income securities denominated in 13 currencies. The Index reflects reinvestment of all distributions and changes in market prices.

**The Bloomberg Global Aggregate ex-Treasury Index** is an unmanaged market index representative of the total-return performance of ex-Treasury major world bond markets.

**The Bloomberg Global Treasury Index** is composed of those securities included in the Bloomberg Global Aggregate Bond Index that are Treasury securities.

**The Bloomberg US Corporate Bond Index** is a broad-based benchmark that measures the investment-grade, fixed-rate, taxable corporate bond market.

**The Bloomberg US Mortgage Backed Securities (MBS) Index** measures the performance of investment-grade, fixed-rate, mortgage-backed, pass-through securities of Government National Mortgage Association (GNMA), Federal National Mortgage Association (FNMA) and Freddie Mac (FHLMC).

**The Bloomberg US Treasury Index** is an unmanaged index composed of U.S. Treasurys.

**The Bloomberg Commodity Index** is composed of futures contracts and reflects the returns on a fully collateralized investment in the Index. This combines the returns of the Index with the returns on cash collateral invested in 13-week (3-month) U.S. Treasury bills.

**The Employment Cost Index** is a quarterly economic series published by the U.S. Bureau of Labor Statistics that details the growth of total employee compensation. The index tracks movement in the cost of labor, as measured by wages and benefits, at all levels of a company.

**The Chicago Board Options Exchange Volatility Index (VIX)** tracks the expected volatility in the S&P 500 Index over the next 30 days. A higher number indicates greater volatility.

**CBOE Volatility Index (VIX Index):** The VIX Index tracks the expected volatility in the S&P 500 Index over the next 30 days. A higher number indicates greater volatility.

**Consumer Price Indexes** measure changes in the price level of a weighted-average market basket of consumer goods and services purchased by households. A consumer price index is a statistical estimate constructed using the prices of a sample of representative items whose prices are collected periodically.

**The Dow Jones Industrial Average** is a widely followed market indicator based on a price-weighted average of 30 blue-chip New York Stock Exchange stocks that are selected by editors of *The Wall Street Journal*.

**The Employment Cost Index** is a quarterly economic series published by the U.S. Bureau of Labor Statistics that details the growth of total employee compensation. The index tracks movement in the cost of labor, as measured by wages and benefits, at all levels of a company.

**The FTSE All-Share Index** represents 98% to 99% of U.K. equity market capitalization. The Index aggregates the FTSE 100, FTSE 250 and FTSE Small Cap Indexes.

**The ICE BofA U.S. High Yield Constrained Index** contains all securities in The ICE BofA U.S. High Yield Index but caps exposure to individual issuers at 2%.

**The ICE BofA U.S. High Yield Index** tracks the performance of below-investment-grade, U.S. dollar-denominated corporate bonds publicly issued in the U.S. domestic market.

**The JPMorgan EMBI Global Diversified Index** tracks the performance of external debt instruments (including U.S. dollar-denominated and other external-currency-denominated Brady bonds, loans, eurobonds and local-market instruments) in the emerging markets.

**JPMorgan GBI-EM Global Diversified Index** tracks the performance of debt instruments issued in domestic currencies by emerging-market governments.

**The MSCI ACWI Index** is a market-capitalization-weighted index composed of over 2,000 companies, representing the market structure of 48 developed- and emerging-market countries in North and South America, Europe, Africa and the Pacific Rim. The Index is calculated with net dividends reinvested in U.S. dollars.

**The MSCI ACWI ex-USA Index** includes both developed- and emerging-market countries, excluding the U.S.

**The MSCI Emerging Markets Index** is a free float-adjusted market-capitalization-weighted index designed to measure the performance of global emerging-market equities.

**The MSCI Emerging Markets Latin America Index** captures large- and mid-cap representation across five emerging-market countries in Latin America.

**The MSCI EMU (European Economic and Monetary Union) Index** is a free float-adjusted market-capitalization-weighted index that is designed to measure the equity market performance of countries within EMU. The Index consists of the following 10 developed-market country indexes: Austria, Belgium, Finland, France, Germany, Ireland, Italy, Netherlands, Portugal and Spain.

**The MSCI Europe ex-UK Index** is a free float-adjusted market-capitalization-weighted index that captures large- and mid-cap representation across developed-market countries in Europe excluding the UK.

**The MSCI Frontier Emerging Markets Index** is a free float-adjusted market capitalization index designed to serve as a benchmark covering all countries from the MSCI Frontier Markets Index and the lower size spectrum of the MSCI Emerging Markets Index.

**The MSCI Japan Index** is designed to measure the performance of the large- and mid-capitalization stocks in Japan.

**The MSCI Pacific ex Japan Index** captures large- and mid-cap representation across four of five developed-market countries in the Pacific region (excluding Japan).

**The MSCI Russia Index** is designed to measure the performance of the large- and mid-cap segments of the Russian market. With 26 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in Russia.

**MSCI United Kingdom Index** is designed to measure the performance of the large- and mid-cap segments of the U.K. market.

**MSCI USA Index** measures the performance of the large- and mid-cap segments of the U.S. market.

**The MSCI World Index** is a free float-adjusted market-capitalization-weighted index designed to measure the equity market performance of developed markets. The Index consists of the following 23 developed-market country indexes: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the U.K. and the U.S.

**The MSCI World ex-USA Index** is a free float-adjusted market-capitalization-weighted index that is designed to measure the equity market performance of developed markets, excluding the U.S.

**The NASDAQ Composite Index** is a market-value-weighted index of all common stocks listed on the National Association of Securities Dealers Automated Quotations (NASDAQ) system.

**The Personal Consumption Expenditures (PCE) Price Index** is the primary inflation index used by the Federal Reserve when making monetary-policy decisions

**Russell 1000 Growth Index** measures the performance of the large-cap growth segment of the U.S. equity universe. It includes those Russell 1000 Index companies with higher price-to-book ratios and higher forecasted growth values.

**The Russell 2000 Growth Index** measures the performance of the small-cap growth segment of the U.S. equity universe. It includes those Russell 2000 Index companies with higher price-to-value ratios and higher forecasted growth values.

**The Russell 1000 Value Index** measures the performance of the large-cap value segment of the U.S. equity universe. It includes those Russell 1000 Index companies with lower price-to-book ratios and lower expected growth values.

**The Russell 2000 Value Index** measures the performance of small-cap value segment of the U.S. equity universe. It includes those Russell 2000 Index companies with lower price-to-book ratios and lower forecasted growth values.

**The Shenzhen Stock Exchange Composite Index** tracks performance of A share stocks (which are denominated in renminbi, the local currency) and B share stocks (which are denominated in Hong Kong dollars, an offshore currency) on China's Shenzhen Stock Exchange.

**The S&P 500 Index** is a market-capitalization-weighted index that consists of 500 publicly-traded large U.S. companies that are considered representative of the broad U.S. stock market.

**The TOPIX, also known as the Tokyo Stock Price Index,** is a capitalization-weighted index of all companies listed on the First Section of the Tokyo Stock Exchange. The Index is supplemented by the subindexes of the 33 industry sectors. The Index calculation excludes temporary issues and preferred stocks, and has a base value of 100 as of January 4, 1968.

**The U.S. Dollar Index (DXY Index)** measures the value of the U.S. dollar relative to a basket of other currencies, including the currencies of some of the US's major trading partners: the euro, Swiss franc, Japanese yen, Canadian dollar, British pound, and Swedish krona.

## Corresponding Indexes for Fixed-Income Performance Exhibit

| | |
|---|---|
| U.S. High Yield | ICE BofA U.S. High Yield Constrained Index |
| Global Sovereigns | Bloomberg Global Treasury Index |
| Global Non-Government | Bloomberg Global Aggregate ex-Treasury Index |
| Emerging Markets (Local) | JPMorgan GBI-EM Global Diversified Index |
| Emerging Markets (External) | JPMorgan EMBI Global Diversified Index |
| U.S. Mortgage-Backed Securities (MBS) | Bloomberg US Mortgage Backed Securities Index |
| U.S. Asset-Backed Securities (ABS) | Bloomberg US Asset Backed Securities Index |
| U.S. Treasurys | Bloomberg US Treasury Index |
| U.S. Treasury Inflation-Protected Securities (TIPS) | Bloomberg 1-10 Year US TIPS Index |
| U.S. Investment-Grade Corporates | Bloomberg US Corporate Bond Index |

## Corresponding Indexes for Regional Equity Performance Exhibit

| | |
|---|---|
| United States | S&P 500 Index |
| United Kingdom | FTSE All-Share Index |
| Pacific ex Japan | MSCI Pacific ex Japan Index (Net) |
| Japan | TOPIX, also known as the Tokyo Stock Price Index |
| Europe ex U.K. | MSCI Europe ex UK Index (Net) |
| EM Latin America | MSCI Emerging Markets Latin America Index (Net) |

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