Bonds are Back

U.S. | 1Q 2023
As of January 20, 2023
Bond returns tend to be strong after down years

Bloomberg U.S. Aggregate intra-year declines vs. calendar year returns
Despite average intra-year drops of 3.3%, annual returns positive in 42 of 47 years

Source: Bloomberg, FactSet, J.P. Morgan Asset Management.
Returns are based on total return. Intra-year drops refer to the largest market drops from a peak to a trough during the year. For illustrative purposes only. Returns shown are calendar year returns from 1976 to 2022, over which time period the average annual return was 6.6%. Returns from 1976 to 1989 are calculated on a monthly basis; daily data are used afterwards.
Inflation is showing clear signs of moderating further

CPI and core CPI
% change vs. prior year, seasonally adjusted

-3% 0% 3% 6% 9% 12% 15%

Recession

<table>
<thead>
<tr>
<th></th>
<th>50-yr. avg.</th>
<th>Nov. 2022</th>
<th>Dec. 2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headline CPI</td>
<td>4.0%</td>
<td>7.1%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Core CPI</td>
<td>3.9%</td>
<td>6.0%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Food CPI</td>
<td>4.1%</td>
<td>10.7%</td>
<td>10.4%</td>
</tr>
<tr>
<td>Energy CPI</td>
<td>4.7%</td>
<td>13.0%</td>
<td>7.0%</td>
</tr>
<tr>
<td>Headline PCE deflator</td>
<td>3.5%</td>
<td>5.5%</td>
<td>-</td>
</tr>
<tr>
<td>Core PCE deflator</td>
<td>3.3%</td>
<td>4.7%</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: BLS, FactSet, J.P. Morgan Asset Management.
CPI used is CPI-U and values shown are % change vs. one year ago. Core CPI is defined as CPI excluding food and energy prices. The Personal Consumption Expenditure (PCE) deflator employs an evolving chain-weighted basket of consumer expenditures instead of the fixed-weight basket used in CPI calculations.

Slow growth and falling inflation suggests the Fed can be less aggressive

Federal funds rate expectations
FOMC and market expectations for the federal funds rate

<table>
<thead>
<tr>
<th>FOMC December 2022 forecasts</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
<th>Long run*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in real GDP, 4Q to 4Q</td>
<td>0.5</td>
<td>0.5</td>
<td>1.6</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>Unemployment rate, 4Q</td>
<td>3.7</td>
<td>4.6</td>
<td>4.6</td>
<td>4.5</td>
<td>4.0</td>
</tr>
<tr>
<td>Headline PCE inflation, 4Q to 4Q</td>
<td>5.6</td>
<td>3.1</td>
<td>2.5</td>
<td>2.1</td>
<td>2.0</td>
</tr>
<tr>
<td>Core PCE inflation, 4Q to 4Q</td>
<td>4.8</td>
<td>3.5</td>
<td>2.5</td>
<td>2.1</td>
<td></td>
</tr>
</tbody>
</table>

Market expectations are based off of the respective Federal Funds Futures contracts for December expiry. *Long-run projections are the rates of growth, unemployment and inflation to which a policymaker expects the economy to converge over the next five to six years in absence of further shocks and under appropriate monetary policy. Forecasts are not a reliable indicator of future performance. Forecasts, projections and other forward-looking statements are based upon current beliefs and expectations. They are for illustrative purposes only and serve as an indication of what may occur. Given the inherent uncertainties and risks associated with forecasts, projections or other forward-looking statements, actual events, results or performance may differ materially from those reflected or contemplated.

Valuations have reset across the board, particularly in bonds

Asset class valuations
Z-scores based on 20-year average valuation measures

Source: Bloomberg, BLS, CME, FactSet, MSCI, Russell, Standard & Poor’s, J.P. Morgan Asset Management.
Bond yields are attractive relative to recent history

Yield-to-worst across fixed income sectors
Percent, past 10 years

Source: Bloomberg, FactSet, J.P. Morgan Credit Research, J.P. Morgan Asset Management. Indices used are Bloomberg except for emerging market debt and leveraged loans: EMD ($) J.P. Morgan EMIGLOBAL Diversified Index; EMD (LCL): J.P. Morgan GBI-EM Global Diversified Index; EM Corp.: J.P. Morgan CEMBI Broad Diversified; Leveraged loans: JPM Leveraged Loan Index; Euro IG: Bloomberg Euro Aggregate Corporate Index; Euro HY: Bloomberg Pan-European High Yield Index. Yield-to-worst is the lowest possible yield that can be received on a bond apart from the company defaulting. All sectors shown are yield-to-worst except for Municipals, which is based on the tax-equivalent yield-to-worst assuming a top-incometax bracket rate of 37% plus a Medicare tax rate of 3.8%.

All indexes are unmanaged and an individual cannot invest directly in an index. Index returns do not include fees or expenses.

Equities:

The Dow Jones Industrial Average is a price-weighted average of 30 actively traded blue-chip U.S. stocks.

The MSCI ACWI (All Country World Index) is a free-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets.

The MSCI EAFE Index (Europe, Australasia, Far East) is a free-adjusted market capitalization index that is designed to measure the equity market performance of developed markets, excluding the US & Canada.

The MSCI Emerging Markets Index is a free-adjusted market capitalization index that is designed to measure equity market performance in the global emerging markets.

The MSCI World Index is an unmanaged index consisting of publicly issued US stocks.

The MSCI Pacific Index is a free-adjusted market capitalization index that is designed to measure equity market performance in the Pacific region.

The Russell 1000 Index® measures the performance of the 1,000 largest companies in the Russell 3000.

The Russell 1000 Growth Index® measures the performance of those Russell 1000 companies with higher price-to-book ratios and higher forecasted growth values.

The Russell 1000 Value Index® measures the performance of those Russell 1000 companies with lower price-to-book ratios and lower forecasted growth values.

The Russell 2000 Index® measures the performance of the 2,000 smallest companies in the Russell 3000 Index.

The Russell 2000 Growth Index® measures the performance of those Russell 2000 companies with higher price-to-book ratios and higher forecasted growth values.


The Russell Midcap Growth Index® measures the performance of the 800 smallest companies in the Russell 1000 Index.

The Russell Midcap Value Index® measures the performance of those Russell Midcap companies with lower price-to-book ratios and lower forecasted growth values. The stocks are also members of the Russell 1000 Value Index.

The Russell Midcap Value Index® measures the performance of those Russell Midcap companies with lower price-to-book ratios and lower forecasted growth values. The stocks are also members of the Russell 1000 Value Index.

The S&P 500 Index® is widely regarded as the best single gauge of the U.S. equities market. The index includes a representative sample of 500 leading companies in leading industries of the U.S. economy. The S&P 500 Index focuses on the large-cap segment of the market; however, since it includes a significant portion of the total value of the market, it also represents the market.

Fixed income:

The Bloomberg 1-3 Month U.S. Treasury Bill Index includes all publicly issued zero-coupon US Treasury Bills that have a remaining maturity of less than 3 months and more than 1 month, are rated investment grade, and have $250 million or more of outstanding face value. In addition, the securities must be denominated in U.S. dollars and must be fixed rate and non convertible.

The Bloomberg Global High Yield Index is a multi-currency flagship measure of the global high yield debt market. The index represents the union of the US High Yield, the Pan-European High Yield, and Emerging Markets (EM) Hard Currency High Yield Indices. The high yield and emerging markets sub-components are mutually exclusive. Until January 1, 2011, the index also included CMBS high yield securities.

The Bloomberg Municipal Index: consists of a broad selection of investment-grade general obligation and revenue bonds of maturities ranging from one year to 30 years. It is an unmanaged index representative of the tax-exempt bond market.

The Bloomberg US Dollar Floating Rate Note (FRN) Index provides a measure of the U.S. dollar denominated floating rate note market.

The Bloomberg US Corporate Investment Grade Index is an unmanaged index consisting of publicly issued US Corporate and specified foreign debentures and secured notes that are rated investment grade (Baa3/BBB+ or higher) by at least two ratings agencies, have at least one year to final maturity and have at least $250 million par amount outstanding. To qualify, bonds must be SEC-registered.

The Bloomberg US High Yield Index covers the universe of fixed rate, non-investment grade debt. Eurobonds and debt issues from countries designated as emerging markets (sovereign rating of Baa1/BBB+/BBB+ and below using the middle of Moody’s, S&P, and Fitch) are excluded, but Canadian and global bonds (SEC registered) of issuers in non-EMG countries are included.

The Bloomberg US Mortgage Backed Securities Index is an unmanaged index that measures the performance of investment grade fixed-rate mortgage backed pass-through securities of GNMA, FNMA and FHLMC.

The Bloomberg US TIPS Index consists of Inflation-Protetion securities issued by the U.S. Treasury.

The J.P. Morgan Emerging Market Bond Global Index (EMBI) includes U.S. dollar denominated Brady bonds, Eurobonds, traded loans and local market debt instruments issued by sovereign and quasi-sovereign entities.

The J.P. Morgan Domestic High Yield Index is designed to mirror the investable universe of the U.S. dollar domestic high yield corporate debt market.

The J.P. Morgan Corporate Emerging Markets Bond Index Broad Diversified (CEMBI Broad Diversified) is an expansion of the J.P. Morgan Corporate Emerging Markets Bond Index (CEMBI). The CEMBI is a market capitalization weighted index consisting of U.S. dollar denominated emerging market corporate bonds.

The J.P. Morgan Emerging Markets Bond Index Global Diversified (EMBI Global Diversified) tracks total returns for U.S. dollar-denominated debt instruments issued by emerging market sovereign and quasi-sovereign entities: Brady bonds, loans, Eurobonds. The index limits the exposure of some of the larger countries.

The J.P. Morgan GBI EM Global Diversified tracks the performance of local currency debt issued by emerging market governments, whose debt is accessible by most of the international investor base.

The U.S. Treasury Index is a component of the U.S. Government index.
### J.P. Morgan Asset Management – Definitions

**Other asset classes:**

- **The Alcentra MLP Index** is a composite of the 50 most prominent energy Master Limited Partnerships (MLPs) that provides investors with an unbiased, comprehensive benchmark for the asset class.
- The **Bloomberg Commodity Index** and related sub-indices are composed of futures contracts on physical commodities and represents 23 separate commodities traded on various futures exchanges, with the exception of aluminum, nickel, and zinc.
- The **Cambridge Associates U.S. Global Buyout and Growth Index®** is based on data compiled from 1,768 global (U.S. & ex-U.S.) buyout and growth equity funds, including fully liquidated partnerships, formed between 1986 and 2013.
- The **CSI/Tremont Hedge Fund Index** is compiled by Credit Suisse/Tremont Index, LLC. It is an asset-weighted hedge fund index and includes only funds, as opposed to separate accounts. The index uses the Credit Suisse/Tremont database, which tracks over 4,500 funds, and consists only of funds with a minimum of US$50 million under management, a 12-month track record, and audited financial statements. It is calculated and rebalanced on a monthly basis, and shown net of all performance fees and expenses. It is the exclusive property of Credit Suisse/Tremont Index, LLC.
- The **HFRI Monthly Indices (HFRI)** are equally weighted performance indexes, utilized by numerous hedge fund managers as a benchmark for their own hedge funds. The HFRI are broken down into 4 main strategies, each with multiple sub-strategies. All single-manager HFRI index constituents are included in the HFRI Fund Weighted Composite, which accounts for over 2,200 funds listed on the internal HFRI database.
- The **NAREIT EQUITY REIT Index** is designed to provide the most comprehensive assessment of overall industry performance, and includes all tax-qualified real estate investment trusts (REITs) that are listed on the NYSE, the American Stock Exchange or the NASDAQ National Market List.
- The **NFI-ODCE (short for NCREIF Fund Index®-Open End Diversified Core Equity)** is an index of investment returns reporting on both a historical and current basis the results of 33 open-end commingled funds pursuing a core investment strategy, some of which have performance histories dating back to the 1970s. The NFI-ODCE index is capitalization-weighted and is reported gross of fees. Measurement is time-weighted.

**Definitions:**

- **Investing in alternative assets** involves higher risks than traditional investments and is suitable only for sophisticated investors. Alternative investments involve greater risks than traditional investments and should not be deemed a complete investment program. They are not tax efficient and an investor should consult with his/her tax advisor prior to investing. Alternative investments have higher fees than traditional investments and they may also be highly leveraged and engage in speculative investment techniques, which may magnify the potential for investment loss or gain. The value of the investment may fall as well as rise and investors may get back less than they invested.
- **Bonds** are subject to interest rate risks. Bond prices generally fall when interest rates rise.
- **Investments in commodities** may have greater volatility than investments in traditional securities, particularly if the instruments involve leverage. The value of commodity-linked derivative instruments may be affected by changes in overall market movements, commodity index volatility, changes in interest rates, or factors affecting a particular industry or commodity, such as drought, floods, weather, livestock disease, embargoes, tariffs and international economic, political and regulatory developments. Use of leveraged commodity-linked derivatives creates an opportunity for increased return but, at the same time, creates the possibility for greater loss.
- **Derivatives** may be riskier than other types of investments because they may be more sensitive to changes in economic or market conditions than other types of investments and could result in losses that significantly exceed the original investment. The use of derivatives may not be successful, resulting in investment losses, and the cost of such strategies may reduce investment returns.
- **Distressed Restructuring Strategies** employ an investment process focused on corporate fixed income instruments, primarily on corporate credit instruments of companies trading at significant discounts to their value at issuance or obliged (par value) at maturity as a result of either formal bankruptcy proceeding or financial market perception of near term proceedings.

**Investments in emerging markets** can be more volatile. The normal risks of investing in foreign countries are heightened when investing in emerging markets. In addition, the small size of securities markets and the low trading volume may lead to a lack of liquidity, which leads to increased volatility. Also, emerging markets may not provide adequate legal protection for private or foreign investment or private property.

- The price of **equity** securities may rise, or fall because of changes in the broad market or changes in a company’s financial condition, sometimes rapidly or unpredictably. These price movements may result from factors affecting individual companies, sectors or industries, or the securities market as a whole, such as changes in economic or political conditions. Equity securities are subject to “stock market risk” meaning that stock prices in general may decline over short or extended periods of time.
- **Equity market neutral strategies** employ sophisticated quantitative techniques of analyzing price data to ascertain information about future price movement and relationships between securities, select securities for purchase and sale. Equity Market Neutral Strategies typically maintain characteristic net equity market exposure no greater than 10% long or short.
- **Global macro strategies** trade a broad range of strategies in which the investment process is predicated on movements in economic variables and the impact these have on equity, fixed income, hard currency and commodity markets.
- **International investing** involves a greater degree of risk and increased volatility. Changes in currency exchange rates and differences in accounting and taxation policies outside the U.S. can raise or lower returns. Some overseas markets may not be as politically and economically stable as the United States and other nations.
- There is no guarantee that the use of **long and short positions** will succeed in limiting an investor’s exposure to domestic stock market movements, capitalization, sector swings or other risk factors. Using long and short selling strategies may have higher portfolio turnover rates. Short selling involves certain risks, including additional costs associated with covering short positions and a possibility of unlimited loss on certain short sale positions.
- **Merger arbitrage strategies** which employ an investment process primarily focused on opportunities in equity and equity related instruments of companies which are currently engaged in a corporate transaction.
- **Mid-capitalization** investing typically carries more risk than investing in well-established “blue-chip” companies. Historically, mid-cap companies’ stock has experienced a greater degree of market volatility than the average stock.
- **Price to forward earnings** is a measure of the price-to-earnings ratio (P/E) using forecasted earnings. **Price to book value** compares a stock’s market value to its book value. **Price to cash flow** is a measure of the market’s expectations of a firm’s future financial health. **Price to dividends** is the ratio of the price of a share on a stock exchange to the dividends per share paid in the previous year, used as a measure of a company’s potential as an investment.
- **Real estate investments** may be subject to a higher degree of market risk because of concentration in a specific industry, sector or geographical sector. Real estate investments may be subject to risks including, but not limited to, declines in the value of real estate, risks related to general and economic conditions, changes in the value of the underlying property owned by the trust and defaults by borrower.
- **Relative Value Strategies** maintain positions in which the investment thesis is predicated on realization of a valuation discrepancy in the relationship between multiple securities.
- **Small-capitalization** investing typically carries more risk than investing in well-established “blue-chip” companies since smaller companies generally have a higher risk of failure. Historically, smaller companies’ stock has experienced a greater degree of market volatility than the average stock.
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