DECEMBER 2022

2023 ECONOMIC AND MARKET OUTLOOK

A MULTI-ASSET PERSPECTIVE

Steady through the cycle: The new recession playbook

The post-pandemic economic cycle is turning. Slowing growth means corporate earnings will moderate and interest rates will peak, contributing to a trough in asset prices.

Strong corporate and household balance sheets should bolster economic outcomes but may also make future policy support less likely. As a result, recession is our base case for 2023. But this economic cycle is different from recent history, providing investors with ample opportunity.

Inflation will moderate, but not to the last cycle's averages. This changes the meaning of "safe" assets for investors and gives us high-conviction ideas for the year ahead.

New York Life Investments

2022 was a year of transition. After two years of stop-and-start pandemic closures, many countries holistically reopened. The pandemic era's unprecedented policy support, coupled with disruptions in energy supply, prompted inflation to surge globally. The resulting interest rate hikes have stoked a year of market volatility.

These themes are set to mature over the course of 2023. Inflation should moderate as interest rates peak, and economic activity is expected to trough, likely in the form of recession. The timing of these events holds important implications for asset allocation, particularly the decision of when to add risk as the cycle bottoms, and where and how to do so.

Structural factors with the potential to alter the economy over the next 5-10 years are also at play. The pandemic's ripple effects have sparked once-in-a-century shifts in areas including the job market, real estate, government financing, and global supply chains. Most importantly, we have likely bid farewell to the last decade's norm of low inflation and easy financial conditions, adding uncertainty to the shape of next year's slowdown and recovery path.

As we look ahead to next year, one thing appears certain: *this cycle is not like the last.*

What sets this cycle apart: three drivers

Three key drivers differentiate this cycle from those of the previous 30 years:

Inflation is likely to "stick" around

Policy support won't save the day

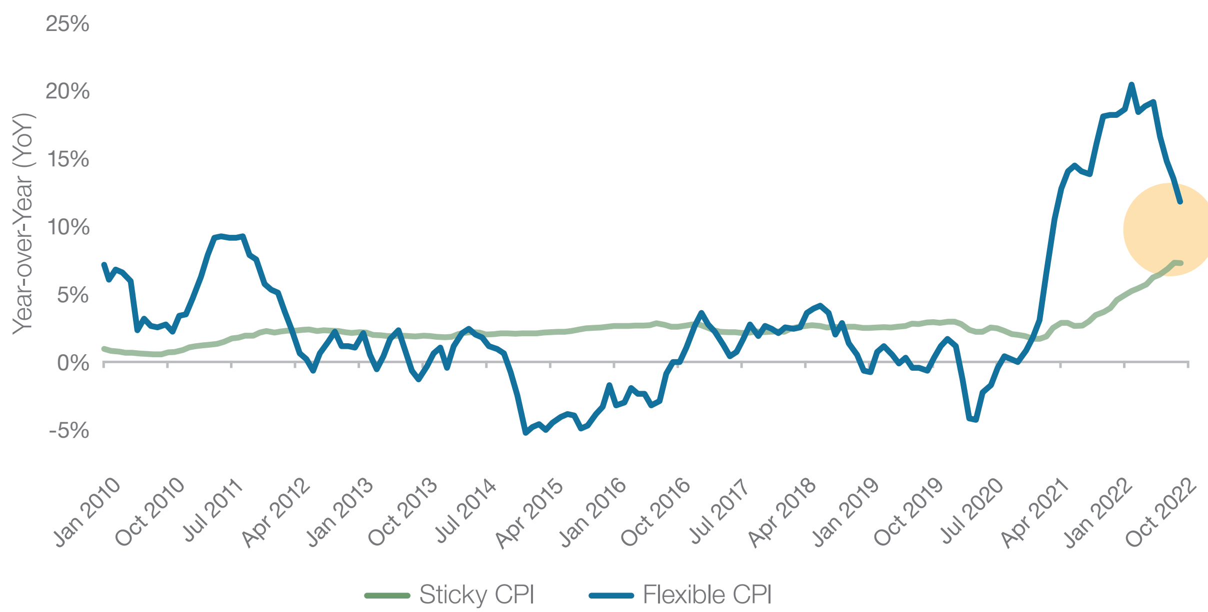
The geopolitical risk premium is elevated

Inflation is likely to “stick” around

Inflation has been largely absent from the U.S. economy since the 1990s; now we expect it to drive the policy outlook and asset allocation choices for the next several years.

The source of price pressures has evolved over time, from stay-at-home goods and services, to gasoline and energy costs, to today’s largest contributors: housing and core services. This shift reflects the broader trend in which volatile prices, such as food and energy, have receded, while the same does not hold for “sticky” prices. Sticky prices adjust every few months at most and include rent, transportation, insurance, and health care costs.

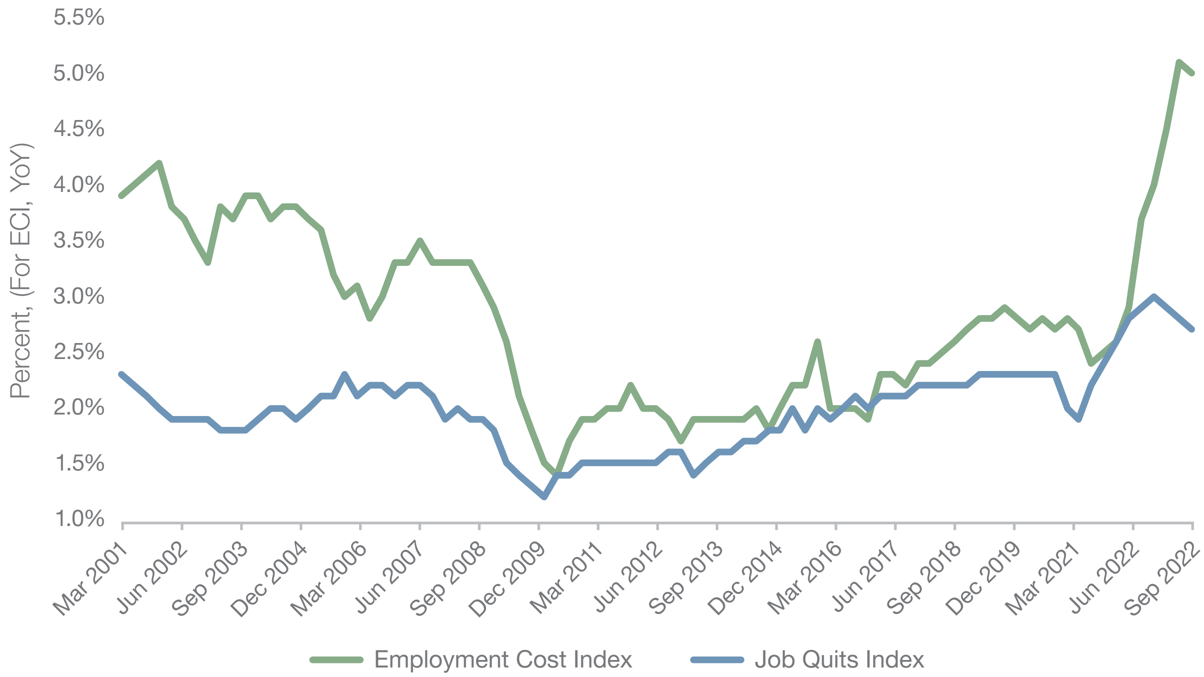
Sticky prices—namely for shelter—may not have peaked



Sources: New York Life Investments Multi-Asset Solutions, Bloomberg Finance LP, Federal Reserve Bank of Atlanta, November 2022. Index definitions can be found at the back of this document.

What will it take for inflation to fall to tolerable levels and stay there? In a word: *time*—time for restrictive interest rates to filter through and slow the economy; time for policy to soften the labor market and relieve upward pressure on wages. We’ve seen signs of progress to date, but in order for inflation to decline durably, the labor market needs to crack. Historically, the jobs market has only weakened as economic growth slows and corporate earnings come under pressure. We expect this squeeze to transpire in the first half of 2023.

The labor market has yet to weaken and is contributing to inflation



Sources: New York Life Investments Multi-Asset Solutions, Bloomberg Finance LP, Bureau of Labor Statistics, November 2022. Index definitions can be found at the back of this document.

It's not just the cycle: moderately higher inflation for the medium term

Though we believe price pressures will peak in 2023, several post-pandemic shifts contribute to our view that inflation may remain above the Fed's target for several years. Structural changes in worker mobility have impacted shelter costs and wages, while disruptions to energy supply (war) and demand (green energy transition) upset the balance of prices. The last cycle's inflation average was about 1.8%, and this cycle may see firmer inflation on average. It could be years before inflation stabilizes below 4.0%.

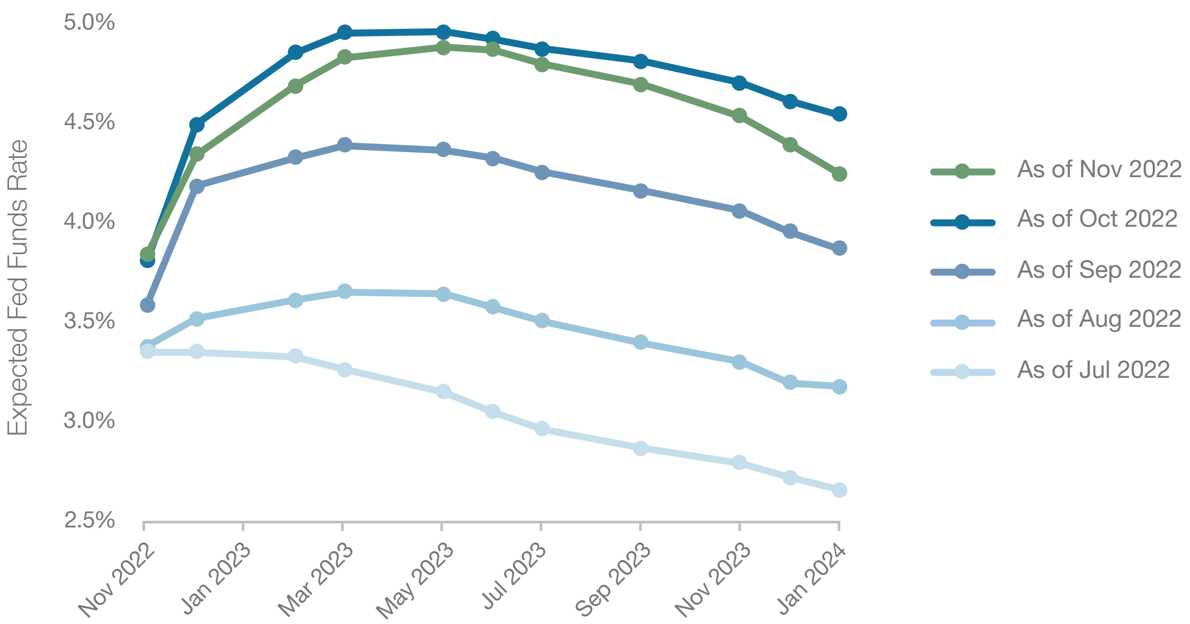
Policy support won't save the day

Stubborn inflation may limit policymakers' ability to support growth next year, even as the U.S. teeters on the brink of recession.

Fed may pause, not pivot

Some investors expect that slowing growth in 2023 will result in a "Fed Pivot"—a reversal of its policy tightening. This is indeed the typical policy response to recession, but inflation may not slow quickly or decisively enough to allow a true policy pivot toward interest rate cuts. Instead, Fed officials may pause interest rate hikes. Even if inflation slows sufficiently to allow some easing, as is currently signaled by the Fed Funds Futures curve, we expect policy rates to remain in restrictive territory—we consider interest rates above the neutral rate of 2.5% to be restrictive—for the majority, if not all, of 2023. Fed officials have signaled that recession and higher unemployment are not just side-effects of tighter policy, but part of their stated goal to bring inflation down.

Even if inflation allows mild easing, policy is set to remain restrictive for the whole of 2023

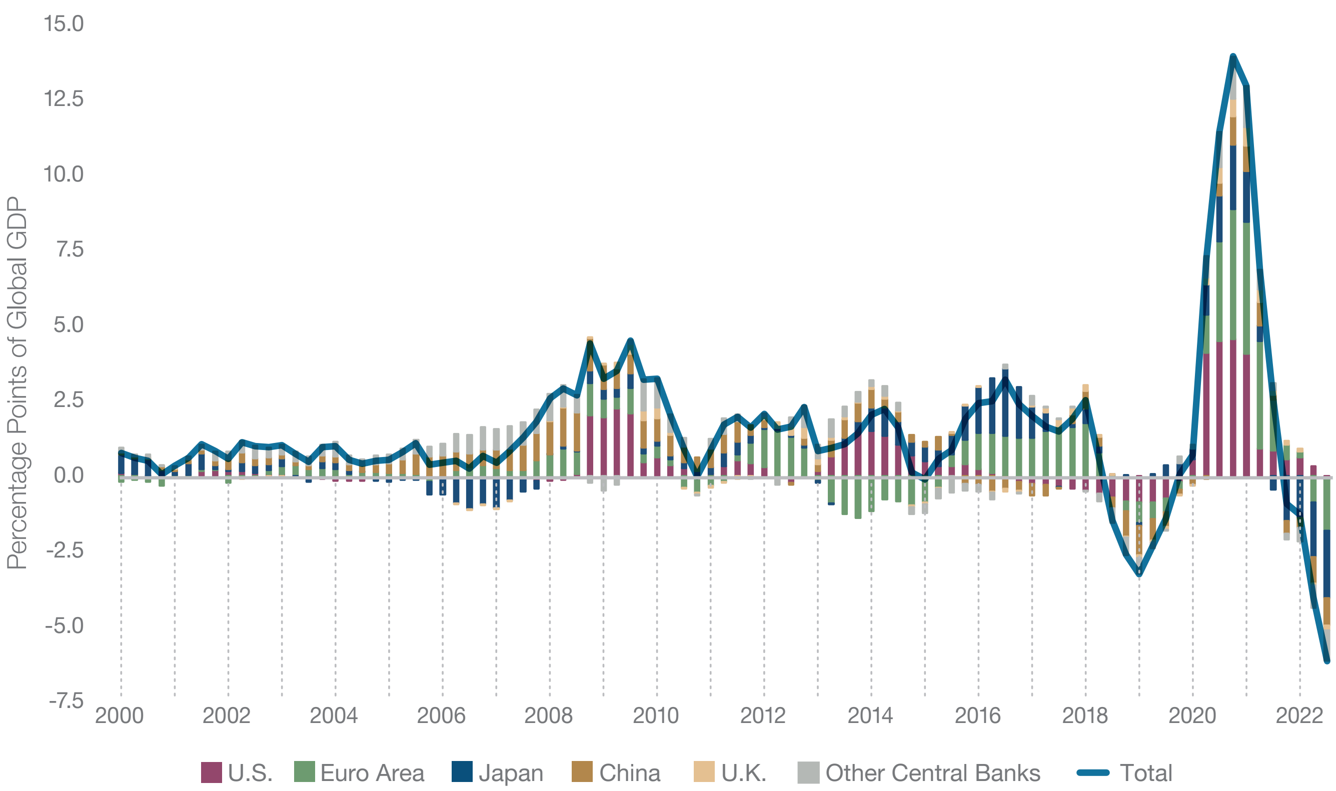


Sources: New York Life Investments Multi-Asset Solutions, Bloomberg Finance LP, November 2022. Index definitions can be found at the back of this document.

Firehose of policy support has become a liquidity drain

The global response to the pandemic involved large-scale national debt issuance to fund economic backstops to households (stimulus checks) and businesses (payroll support grants and loan forgiveness). Facilitating this spending, central banks engaged in Quantitative Easing (QE), by which they purchased vast amounts of government debt, creating an excess of liquidity. While this powerful policy combination may have spared the global economy its worst-case pandemic scenarios, we are feeling its main side effect—inflation—two years later. This imbalance is slowly being corrected through a reduction of the Fed's balance sheet, or Quantitative Tightening (QT). The resulting liquidity drain has already been felt in some areas of the bond market. For 2023, the Fed faces a balancing act: tightening policy to prevent inflation on one hand, and preserving proper market functioning on the other. As long as inflation is high, we expect it to remain a key priority.

The global liquidity influx is in the process of draining



Sources: New York Life Investments Multi-Asset Solutions, Macrobond, Central Banks of the U.S., United Kingdom, Euro Area, Japan, China; International Monetary Fund, November 2022. Observations within 2022 are based on International Monetary Fund World Economic Outlook estimates of global GDP.

Government can't spend its way out of this one

Amid the pandemic shock, fiscal spending played an important role in keeping U.S. consumers and businesses afloat. This is unlikely to recur in 2023 for two reasons. First, fiscal spending is understood to be a key culprit in the current inflationary environment; we see little appetite to re-stoke the flames of price growth. Second, debt sustainability is a growing concern. A split Congress with narrow majorities in both Houses is unlikely to overcome it.

It's not just the cycle: the "Fed put" is dead until inflation is

The Fed's reaction function—how it weighs the sometimes-conflicting inflation and economic risks of its mandate—may have changed. The result? The Fed may no longer be interested in putting a floor under market prices.

Stubbornly low inflation in the last economic cycle allowed the Fed to maintain low and stable interest rates and provide further support with balance sheet expansion (QE). The resulting decade of easy money euphoria incentivized the use of leverage and rewarded risk-taking in the markets. Asset classes such as growth equities and cryptocurrencies emerged as the "winners" from the risk-on attitude of the decade. Low yield and regulation in the traditional financial sector likewise encouraged a boom in private equity, private credit, and venture capital.

The post-pandemic era is off to a very different start as the Fed focuses on price stability. A decade of easy money is now moving in the opposite direction. We still see substantial opportunities in impacted asset classes, but strong credit analysis, experience across cycles, and active portfolio management may be necessary to avoid pitfalls as the "Fed put" moves into the rear-view mirror.

The post-pandemic era is off to a very different start

	Post-Global Financial Crisis	Start of post-pandemic era
Financing conditions: interest rates	Zero Interest Rate Policy (ZIRP)	Restrictive
Inflation	Below-target	Above-target
Liquidity: Fed balance sheet	Expanding: QE	Contracting: QT
U.S. public debt	Rising	Slower rise
Economic growth	At or above trend	Below trend
Equities	Bull market	Bear market
Core bonds	Bull market	Bear market

Source: New York Life Investments Multi-Asset Solutions, November 2022. Definitions can be found at the back of this document.

The geopolitical risk premium is elevated

It seems that some form of geopolitical risk is always hanging over the world, the economy, and the markets. But this cycle is different because risk has become reality, with key implications for regional preference in a global portfolio. As risks rise for companies and investors, the prices or return premia they expect in return may rise too. These risks have implications for both inflation and economic growth.

Geopolitical events entrench in markets when they exacerbate pre-existing economic trends or change existing structural relationships. Russia's invasion of Ukraine has done both, by inflaming a global inflation trend and upending global energy structures. As a result, Europe faces a severe industrial downturn, and the accompanying growth pressures challenge the European Central Bank (ECB)'s attempts to fight inflation.

China also remains at the forefront of international risk considerations. And while tensions with Taiwan persist, two key policies have done more to dampen economic and investor activity: Zero Covid and anti-trust. Throughout 2022, challenging Covid lockdowns curtailed industrial activity and consumer demand. At the same time, anti-trust measures have harmed investor confidence in both public and private markets. A reversal of one or both of these policies has the potential to buoy investor confidence not just in China, but in emerging markets as a whole. We should note, however, that such policy change could also be inflationary.

It's not just the cycle: from globalization to self-reliance

The driving force behind decades of globalization has been the reduction of costs. But as the past two years have made painfully clear, "globalized" supply chains can still create concentrated sources of risk. For example, global semiconductor manufacturing is concentrated in Taiwan and Korea, exposing countless technologies to geopolitical risk. India is home to nearly 60% of global vaccine production, leaving many countries with limited means to respond to the pandemic on their own. These pockets of risk boil down to the smallest of components — from disposable gloves and glass vials to batteries — but contribute to a much larger reality: for sensitive industries, including tech, medicine, food, defense, and energy, globalization can create national vulnerability. An increased degree of self-reliance will come with higher costs; industry re-shoring and creation of supply chain redundancies are very likely to contribute to higher inflation over the medium term.

A necessary correction: how the recession shapes up

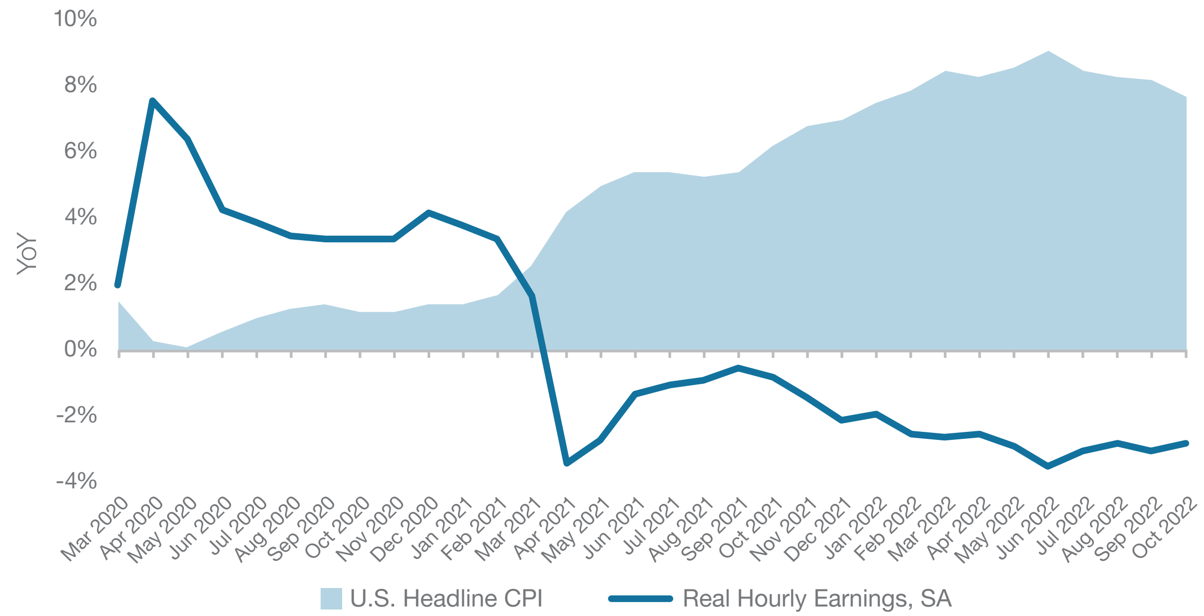
The rising risk of recession has loomed over investors for the better part of a year. Rightly so: the pairing of persistent inflation and a policy pullback has made a recession overwhelmingly likely. But over the past few months, one of the top questions we've received from clients is "wait, aren't we already in a recession?"

From 2022's stagflation-lite crunch...

In our April 2022 outlook, we posited that a year of high inflation was all but guaranteed—the question was whether economic growth could hold up. Negative real (inflation-adjusted) growth would comprise a **stagflation** scenario. And though GDP numbers for 2022 have been muddled by wild swings in inventories (see page 12), the U.S. has clearly entered stagflation territory. Because the degree of inflation and growth slowdown are milder than in the 1970s stagflation era, we might term today's environment **stagflation-lite**.

Regardless of the terminology, households are feeling the crunch. Incomes have not kept pace with the cost of living for well over a year, and though consumer spending has been relatively resilient, savings rates have plummeted—as consumers tap their savings to cover spending needs—and sentiment is at all-time lows.

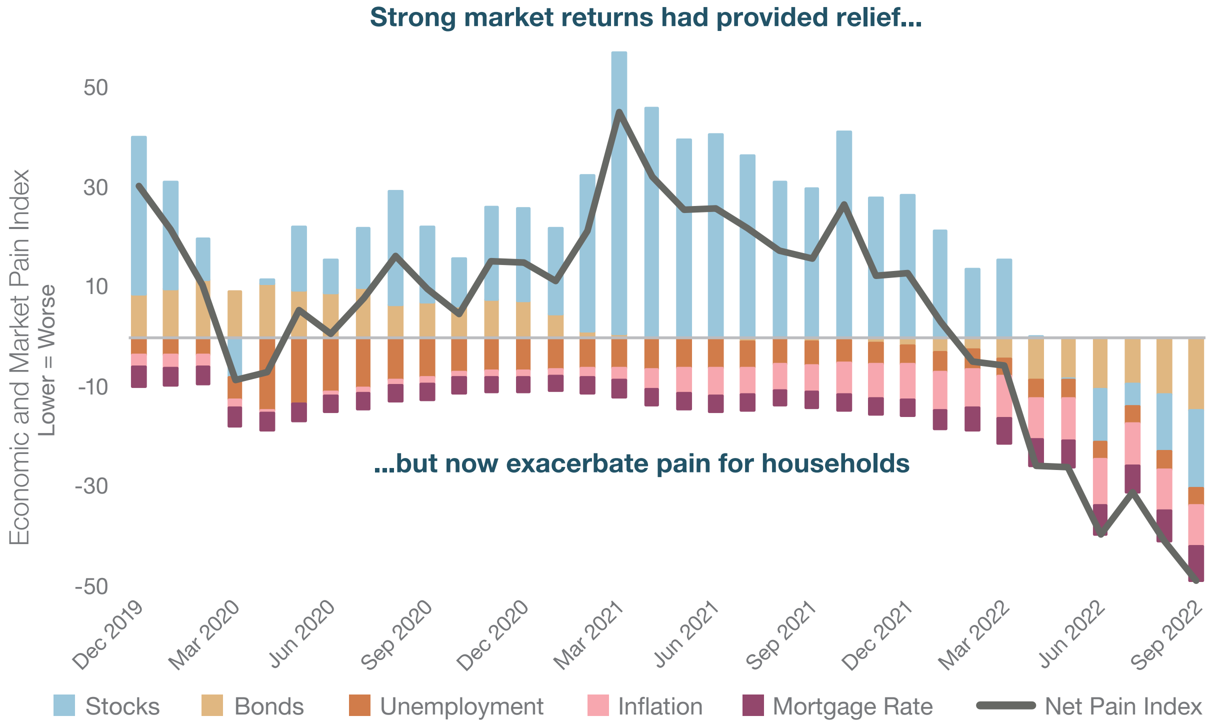
Wage growth is well above trend, but still below inflation



Sources: New York Life Investments Multi-Asset Solutions, Bloomberg Finance LP, Bureau of Labor Statistics, November 2022. "SA" refers to seasonal adjustment. Index definitions can be found at the back of this document.

We expect the mix of economic and market "pain" to continue shifting as we head into 2023. While inflation and interest rates should moderate by the latter half of the year, this relief may not fully offset the pain of rising unemployment. Therefore, the equity and bond markets remain the "swing vote" of the cycle's cumulative pressure on households—with downswings worsening and rallies offsetting the pain.

U.S. economic and market pain has worsened steadily over the past year



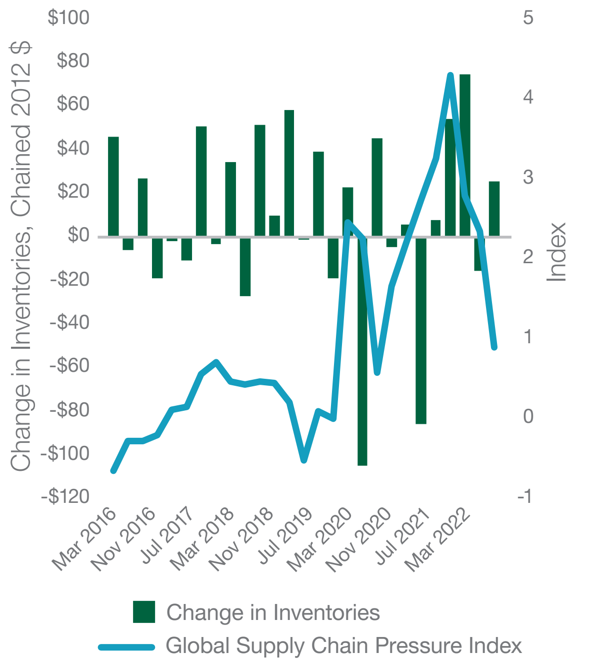
Sources: New York Life Investments Multi-Asset Solutions, Bloomberg Finance LP, November 2022. Bonds = 12-month rolling total return of Bloomberg U.S. Aggregate Bond Total Return Index. Stocks = 12-month rolling total return of S&P 500 Index. Unemployment is in % terms. Inflation is in % year-over-year terms. Mortgage Rate = 30-year fixed rate, %, per Bankrate.com. Net Pain Index = total effect of unemployment, CPI, mortgage rates, and stock and bond performance to provide a sense of the impact of the economic cycle on households. A lower index level indicates higher levels of pain for households. Index definitions can be found at the back of this document. Past performance is no guarantee of future results, which will vary. It is not possible to invest directly in an index.

Companies, meanwhile, are still coping with some facets of pandemic whiplash in addition to rising prices. After defying inflation for most of the year, corporate profit margins and earnings are just starting to turn — but remain close to record highs after the surge in profits during the pandemic. It's evident that companies are doing an excellent job of passing costs on to customers and managing their bottom lines. The supply side, however, has proven less manageable. Supply chain stress dominated 2020 and 2021, impeding companies' ability to build up inventories and contributing to inventory deficits and backlogs in sectors including vehicles, durables, and even food supplies. An easing of supply chain stress has then led some sectors into a purchasing glut just as consumer demand for goods like furniture and electronics has begun to slow. For many companies, inventory gluts are now contributing to margin pressure.

Might an earnings recession prompt the next leg down for the market?

Sources: New York Life Investments Multi-Asset Solutions, Bloomberg Finance LP, November 2022. Index definitions can be found at the back of this document.

Supply chain pressures have eased, but inventory management is still an uphill battle



Sources: New York Life Investments Multi-Asset Solutions, Bloomberg Finance LP, Federal Reserve Bank of New York, Bureau of Economic Analysis, November 2022. Index definitions can be found at the back of this document.

From an investment perspective, a stagflation-lite scenario creates a fine needle to thread with positioning, which must be sufficiently risk-on to achieve returns that can match inflation, but also be sufficiently resilient to growth pressures. In our view, this approach applies as long as inflation is high—regardless of whether growth stagnates (stagflation-lite) or contracts (recession).

... to shallow recession

In investing, recession is often considered the worst possible outcome. But recessions serve an important purpose: the correction of economic imbalances, like excess leverage and unruly inflation.

It's over-leverage that is often associated with deep, severe recessions. But in this cycle, balance sheets appear remarkably healthy and debt levels are low compared to history; we see no need for households or listed corporates to deleverage. This supports a potential point of comfort for investors: we expect the recession to be relatively shallow.

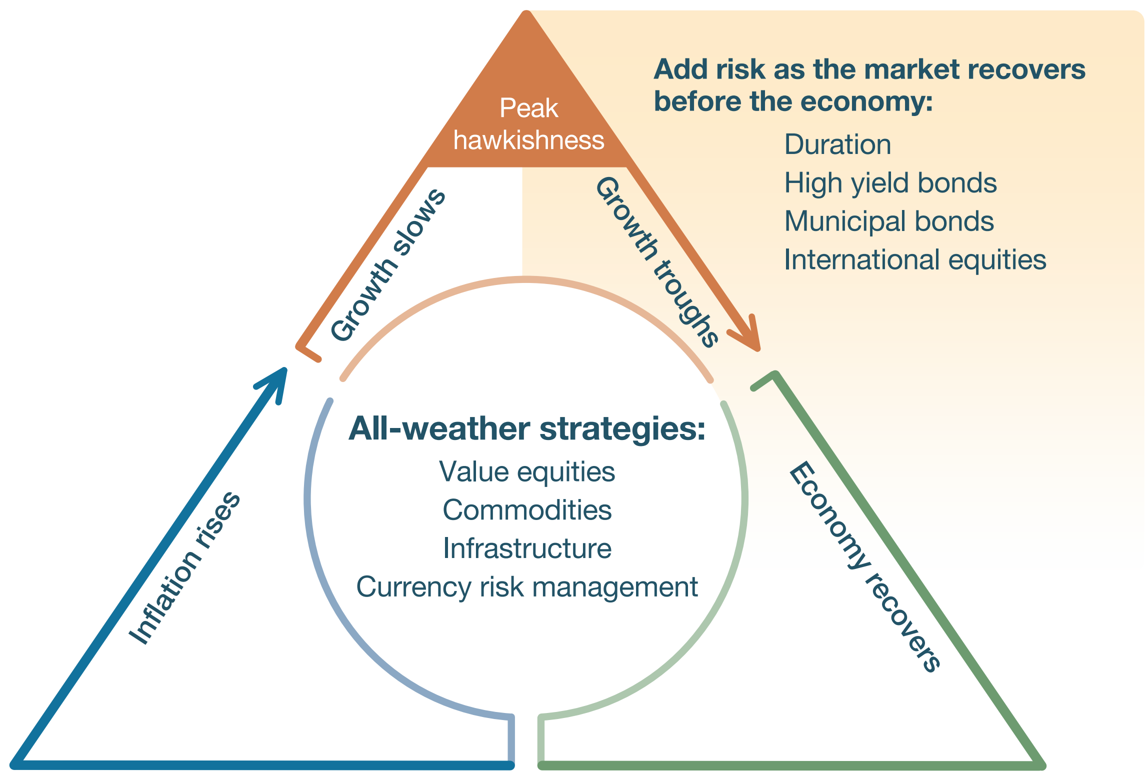
Debt ratios for both households and listed companies are near 20-year lows

Sources: New York Life Investments Multi-Asset Solutions, Bloomberg Finance LP, November 2022. Index definitions can be found at the back of this document.

The new recession playbook

Volatility and risk premia are likely to remain elevated as long as the Fed is fighting inflation in a growth slowdown. Buying opportunities abound in this environment, but an awareness of which asset classes and themes benefit at each point in the cycle can help investors optimize their allocation choices.

Asset allocation for every point in the coming cycle



Source: New York Life Investments Multi-Asset Solutions, December 2022. For illustrative and information purposes only. Definitions can be found at the back of this document.

All-weather strategies

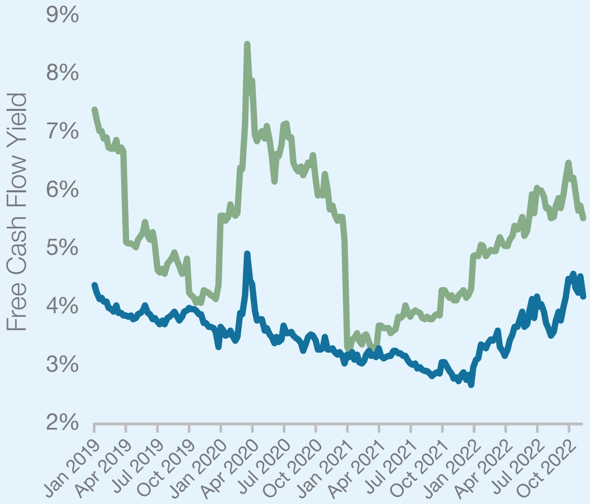
Value equities

Value equities deliver on three of our favorite themes for a cycle defined by above-trend inflation and below-trend growth: **defensiveness**, **quality**, and **income**.

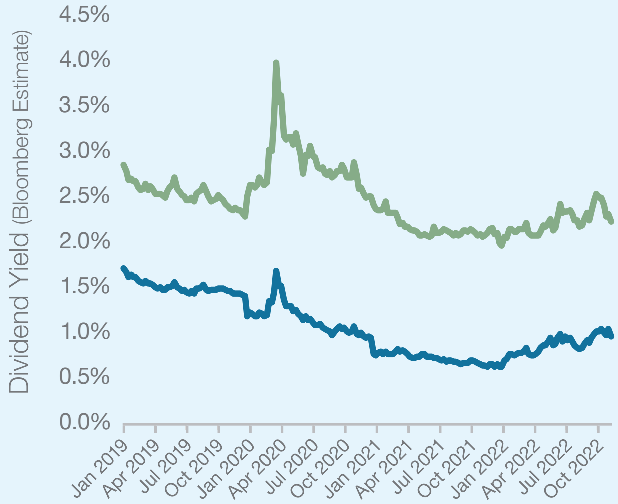
Value equities include the four most traditional "defensive" sectors, whose earnings are less correlated to economic cycles: Real Estate, Utilities, Staples, and Health Care. Not only have these sectors tended to be more resilient in downturns; cash flows from these sectors are often positively correlated with inflation.

Quality can be defined by several metrics, including (low) earnings variability, (high) profitability and healthy interest coverage. Value equities far outshine growth when it comes to earnings variability. Growth companies tend to have high profit margins, but value equities still perform better when it comes to post-pandemic free cash flow yield. This supports value equities' ability to deliver a higher dividend yield to shareholders.

Value equities' free cash flow yield…



…supports their dividend yield over growth equities



S&P Value Index　S&P Growth Index

Sources: New York Life Investments Multi-Asset Solutions, Bloomberg Finance LP, November 2022. Index definitions can be found at the back of this document.

A note on growth equities

For a structural equity allocation, we say "value, growth, a little of both." But when it comes to adding risk as the cycle bottoms, we encourage some caution in growth equities. As in 2022, they face two ongoing sources of pressure.

First, the **earnings outlook** remains muddled. During the pandemic, many growth companies pulled several years' worth of earnings forward as they benefited from stay-at-home and work-from-home trends. Earnings expectations have fallen accordingly, but companies that can innovate, launch new products, or benefit from new trends may be able to compensate for this disruption— and are likely to outperform.

Second, **valuation pressure** is unlikely to reverse. Growth companies' valuations tend to feel particular heat from higher interest rates as their (generally) asset-lite models tend to be valued as a multiple of earnings, sales volumes, or future growth potential rather than hard assets. Growth equities may see some relief from a pause in Fed hikes, but this may be limited or short-lived as the Fed keeps interest rates in restrictive territory over the year.

Accordingly, we look for higher quality, cash flow-generative companies in this space.

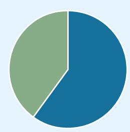
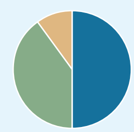
Infrastructure equities

Infrastructure equities remain a compelling way to diversify core exposure while also offering a unique solution to qualms about investing in real assets as financing costs rise. Infrastructure's cash flows are often linked to inflation, while on the cost side, inflation protection is often written into long-term contracts.

In our view, infrastructure is also a structural and global investment theme. Regardless of how global energy insecurity is resolved over time, its building blocks lie in both traditional and green energy infrastructure, including essential utility, transportation, and digital assets. What's more, allocating to global infrastructure capabilities could allow investors to maintain some geographic diversification without relying too heavily on high-risk geographies.

How to implement infrastructure equity as a satellite exposure: Infrastructure equities exhibit less volatility historically than the overall equity market. Therefore, holding a larger allocation is possible without exceeding the desired risk limit. For a multi-asset investor looking to add infrastructure risk, our analysis supports a portfolio allocation of up to 15%, depending on the portfolio's risk profile. The table below compares a traditional, hypothetical 60/40 portfolio with a modified portfolio that includes a 10% infrastructure satellite.

Adding infrastructure to the 60/40 portfolio model

	 Traditional 60/40	 Sample infrastructure satellite portfolio
Equities	60%	50%
Bonds	40%	40%
Infrastructure	0%	10%
Model portfolio metrics (January 1998—October 2022)		
Sharpe ratio	0.74	0.76
Volatility	9.5%	9.1%
Average drawdown	-4.5%	-4.3%

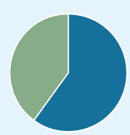
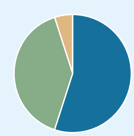
Equities are represented by the S&P 500 Index. Bonds are represented by the Bloomberg U.S. Aggregate Bond Total Return Index. Infrastructure is represented by the Dow Jones Brookfield Global Infrastructure Total Return Index. It is not possible to invest directly in an index. Sharpe ratio and volatility are provided on an annualized basis. Portfolio metrics assume annual rebalancing. Index definitions can be found at the back of this document.

Commodities

If this were a typical economic cycle, commodities would be considered a high-beta play on economic growth and would not be our preferred asset class to hold on the way down. But in this cycle, commodities have a variety of tailwinds at their back. In the near term, energy supply disruptions have kept prices high. On the structural side, energy independence—or dependence only on allies—may become a key point of national interest for Western economies. A push toward energy independence is bullish for commodities in the medium term, whether this goal is accomplished through investment in traditional capacity (bullish energy), green capacity (bullish metal and mineral inputs), or a combination. And it's not just Europe driving the commodity story: should China lift its Covid lockdowns, a normalization of its industrial demand may spark a fresh wave of commodity strength.

How to implement commodities as a satellite exposure: For those investors looking to add commodity risk, the next questions that come to mind are "how much?" and "what should I sell to buy commodities?" To address these questions, we analyzed a number of model portfolios dating back to 1970, which ensured we captured historically high-inflation periods. We found that for a multi-asset investor, an allocation between 1% and 7% to commodities, depending on the portfolio's risk profile, has improved risk-adjusted investment returns while reducing the volatility of those returns. To maintain a consistent level of portfolio volatility, investors should consider sourcing a commodity position from their equity holdings. Our methodology assumes a 5% risk limit, which allows a reasonable margin of error in tactical bets and reduces the probability of shortfalls. The table below compares a traditional, hypothetical 60/40 portfolio with a modified portfolio that includes a 5% commodity satellite.

Adding commodities to the 60/40 portfolio model

	 Traditional 60/40	 Sample commodities satellite portfolio
Equities	60%	55%
Bonds	40%	40%
Commodities	0%	5%
Model portfolio metrics (January 1998—October 2022)		
Sharpe ratio	0.96	1.02
Volatility	9.3%	9.3%
Average drawdown	-4.2%	-3.7%

Equities are represented by the S&P 500 Index. Bonds are represented by the Bloomberg U.S. Aggregate Bond Total Return Index. Commodities are represented by the Bloomberg Commodity Total Return Index. It is not possible to invest directly in an index. Sharpe ratio and volatility are provided on an annualized basis. Portfolio metrics assume annual rebalancing. Index definitions can be found at the back of this document.

Currency risk management

The strong dollar, supported by tight monetary policy, wreaked havoc on global currencies in 2022. Not only did foreign exchange suffer in relative performance terms, but the contraction of global liquidity contributed to a steady rise in currency volatility in both developed and emerging markets throughout the year.

We are cautious on the outlook for adding currency risk—though this does not necessarily mean international exposure is out of the question. Hedged or partially hedged international strategies may suit investors that would like to diversify their business cycle exposure outside the U.S., without being forced to take a position on currency performance.

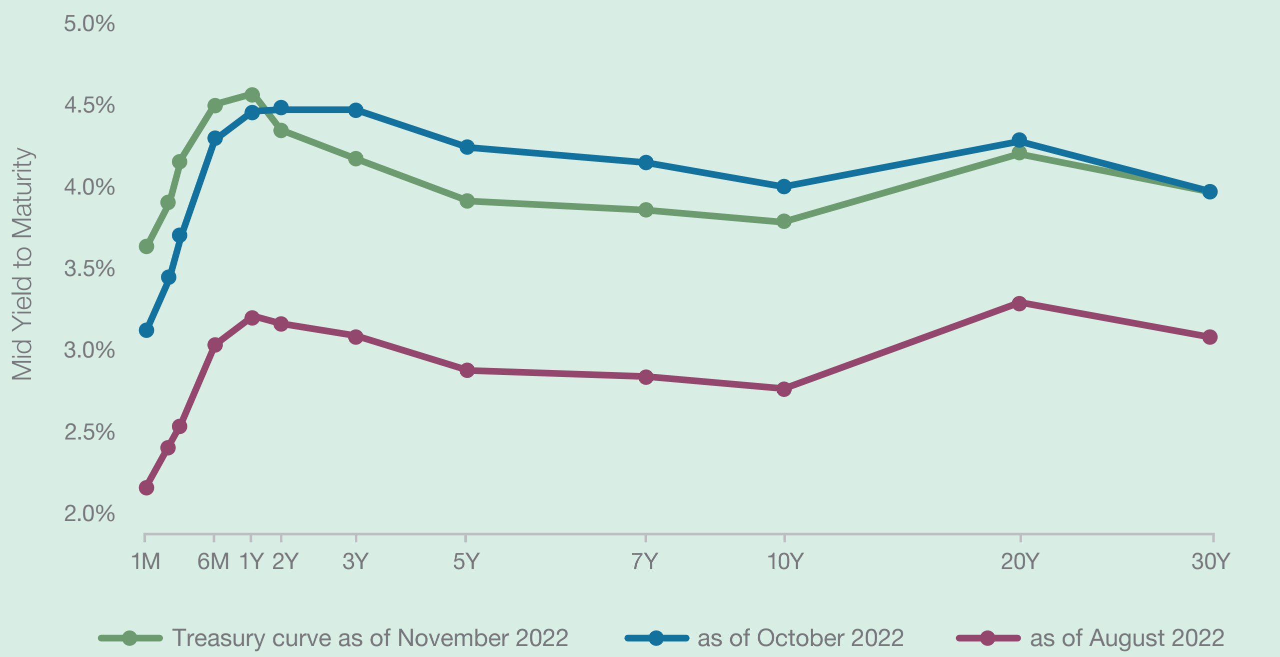
High conviction additions as the cycle turns

Many asset classes present exciting opportunities as the economic cycle evolves in the coming months.

Duration

When deciding to add duration, we look to the yield curve. Simply put, yield curve inversion creates little incentive to add interest rate sensitivity by investing further out on the curve. Until we feel quite sure inflation has peaked—which would require a definitive peak in core costs such as rent, over a period of several months—our duration bet stays on the short side of neutral.

U.S. yield curve inversion has steadily deepened since March 2021



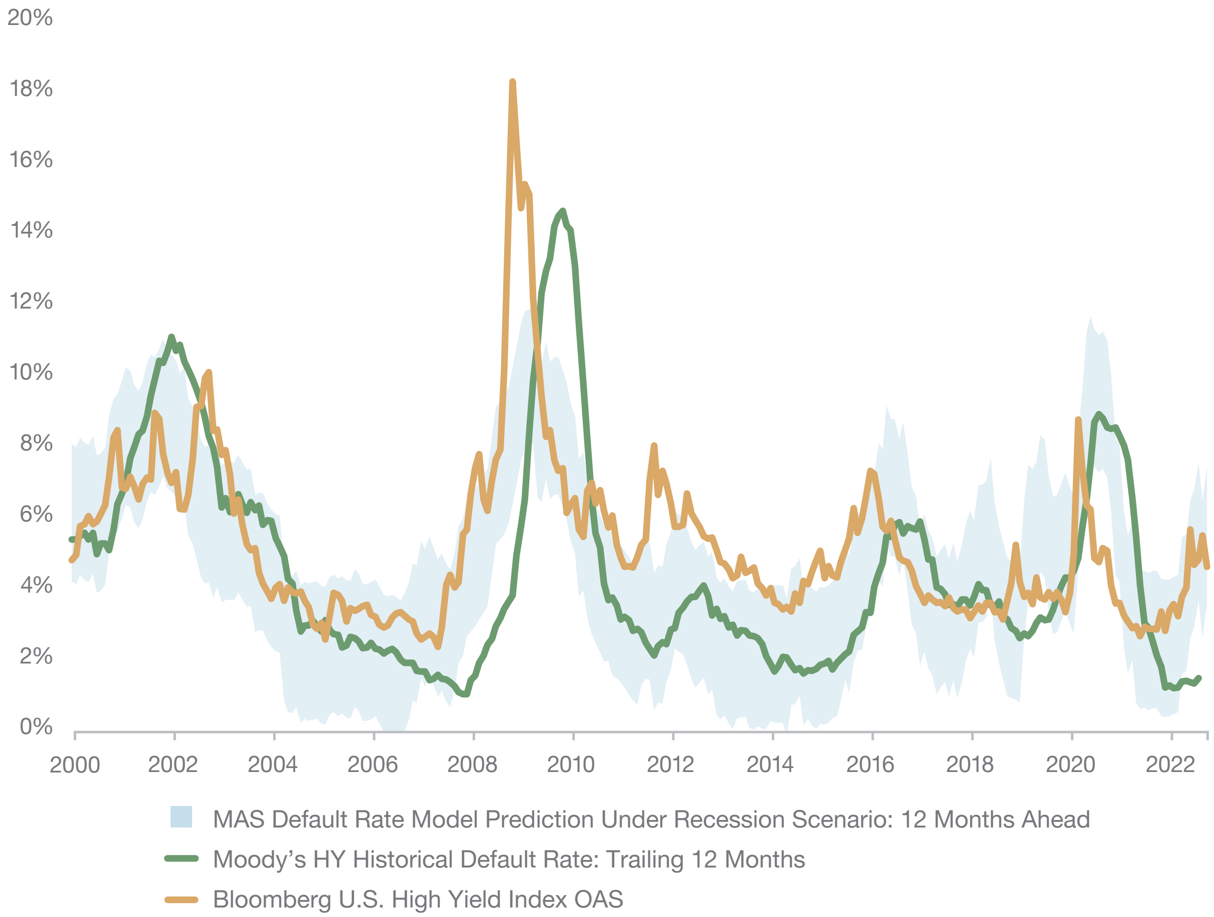
Sources: New York Life Investments Multi-Asset Solutions, Bloomberg Finance LP, November 2022. Index definitions can be found at the back of this document.

High conviction additions as the cycle turns

High yield corporate bonds (HY)

As interest rates near a peak, our focus shifts from duration to credit quality. We noted in our midyear *Outlook* that high yield corporate bonds, though inherently non-investment grade, had increased in quality over time, with over 60% of the HY benchmark concentrated in BB bonds (the highest possible credit rating for the asset class). The relative quality of the segment helps to allay our concerns about contracting liquidity conditions and rising financing costs: we do not expect default rates and spreads to blow out. Instead, we expect a modest but meaningful uptick in defaults consistent with previous liquidity crunches (2016, 2018), but not with the meltdown of the Global Financial Crisis. In the meantime, attractive pricing and yield help to compensate investors for risk taken. As policy tightening peaks, our risk appetite for this segment is likely to increase.

Our team's default model points to an uptick in HY defaults and wider spreads, assuming approximately 50% chance of recession in the coming 12 months

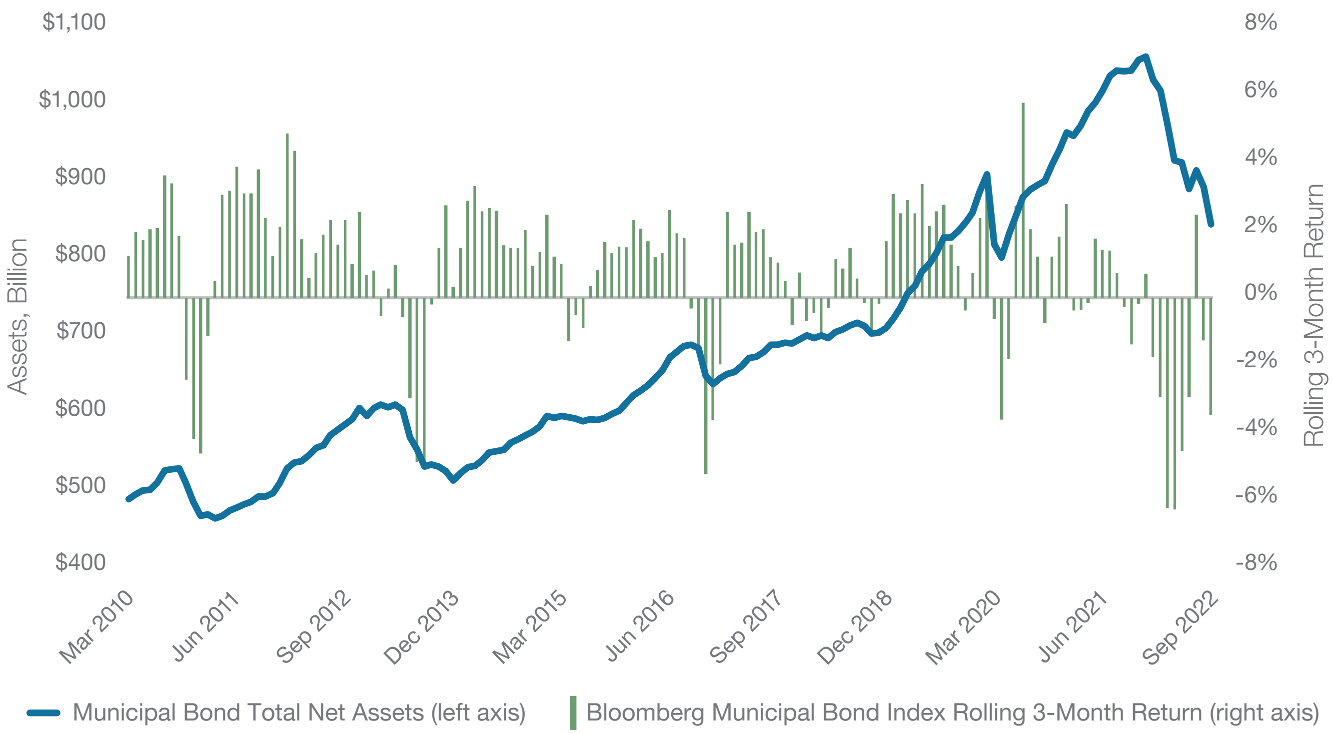


Sources: New York Life Investments Multi-Asset Solutions (MAS), Moody's, September 2022. The MAS team default rate model is a machine-learning model that aims to predict the expected default rate among the speculative-grade debt of U.S. companies as captured in the Moody's speculative-grade historical default rate. The MAS model predicts the default rate in the coming 12-month period, while the Moody's historical rate covers the trailing 12-month period. The default rate model is based on the MAS team's recession model, which estimates the chance of recession in the coming 12-month period using a variety of economic indicators based on historical patterns. Index definitions can be found at the back of this document.

Municipal bonds (munis)

Munis presented investors with a conundrum in 2022, as healthy municipal balance sheets were met with the most severe outflow cycle ever seen in the asset class. Municipal cash flows also offer an inflation resilience story: state and local tax collections have risen sharply since 2019 (+29% YoY in Q2 2022). As sentiment in the muni market bottoms, we expect healthy credit quality to shine through.

Munis faced their largest-ever outflow cycle in 2022. A turning point ahead?



Sources: New York Life Investments, Morningstar, November 2022. 3-month rolling index return shows the rolling 3-month return of the Bloomberg Municipal Bond Index. Past performance is no guarantee of future results, which will vary. It is not possible to invest directly in an index. Index definitions can be found at the back of this document.

The Multi-Asset Solutions team is New York Life Investments' specialist in multi-asset investing.

The team leverages the depth and breadth of New York Life Investments' platform to seek to deliver strong investment opportunities across multi-asset strategies, market intelligence and insights, and customized solutions to its strategic partners.

Jae Yoon
Chief Investment Officer

Jonathan Swaney
Senior Portfolio Manager

Poul Kristensen
Chief Economist, Portfolio Manager

Amit Soni
Portfolio Manager

Lauren Goodwin
Director of Portfolio Strategy

Julia Hermann
Multi-Asset Portfolio Strategist

Michael LoGalbo
Multi-Asset Portfolio Strategist

INDEX DEFINITIONS

5-year Real U.S. Treasury Yield subtracts the average expected inflation over the coming 5-year period.

5-year U.S. Treasury Yield is the average of the yield paid on actively traded U.S. Treasury bonds with a 5-year maturity.

10- and 30-year AAA Tax Exempt Muni Yields are based on Bloomberg's baseline curve for tax-exempt municipal bonds, populated with U.S. municipals with an average rating of AAA from Moody's and S&P.

10-year Real U.S. Treasury Yield subtracts the average expected inflation over the coming 10-year period.

10-year U.S. Treasury Yield is the average of the yield paid on actively traded U.S. Treasury bonds with a 10-year maturity.

30-year U.S. Treasury Yield is the average of the yield paid on actively traded U.S. Treasury bonds with a 30-year maturity.

Bloomberg Commodity Total Return Index is composed of futures contracts and reflects the returns on a fully collateralized investment in the Bloomberg Commodity Index, which broadly reflects futures price movements of major commodities in energy, materials, and agriculture.

Bloomberg Municipal Bond Index covers the USD-denominated long-term tax-exempt bond market. The index has four main sectors: state and local general obligation bonds, revenue bonds, insured bonds and pre-refunded bonds.

Bloomberg U.S. Aggregate Bond Total Return Index measures the performance of publicly issued U.S. dollar-denominated investment-grade debt, including the reinvestment of coupons.

Bloomberg U.S. High Yield Corporate average option-adjusted spread (OAS) measures the spread between the index's coupon rate and the Treasury return for the same tenor, adjusted for embedded options.

Chicago Board Options Exchange (CBOE) Volatility Index (VIX) is a calculation designed to produce a measure of constant, 30-day expected volatility of the U.S. stock market, derived from real-time, mid-quote prices of S&P 500 Index call and put options.

Credit Suisse Leveraged Loan Total Return Index tracks the investable market of the U.S. dollar denominated leveraged loan market, including the reinvestment of coupon payments.

Dow Jones Brookfield Global Infrastructure Total Return Index measures a global index of companies with >70% of cash flows derived from infrastructure lines of business. Components must pass screens for country domicile, minimum float market cap and trading volume.

Federal Funds Futures are financial futures contracts based on the federal funds rate and traded on the Chicago Mercantile Exchange.

Federal Funds Rate is the rate banks charge each other for overnight unsecured loans of reserves on deposit with the U.S. Federal Reserve. It is the effective policy interest rate for the Federal Reserve.

Federal Reserve Put is also known as the "Fed Put." A put option is a contract allowing its buyer the right to sell shares of an asset back to the issuer. The Fed Put refers to the expectation that the Fed will step in to support markets if prices fall excessively.

Global Supply Chain Pressure Index integrates transportation cost data and manufacturing indicators to provide a gauge of global supply chain conditions.

ICE Bank of America (BofA) U.S. High Yield Index Spread measures the difference between yields of bonds in the high yield category and a spot Treasury curve.

Inter-Continental Exchange (ICE) Bank of America (BofA) U.S. High Yield Index tracks the performance of U.S. dollar-denominated below investment-grade rated corporate debt publicly issued in the U.S. domestic market.

Moody's High Yield Historical Default Rate describes the default rate among high-yield issuers as defined by Moody's credit ratings.

Purchasing Managers' Index (PMI) is an economic sentiment indicator from a survey-based index of the prevailing direction of economic trends in the manufacturing and service sectors.

Russell 2000 Small Cap Index is comprised of the smallest 2000 U.S. companies of the Russell 3000 index.

S&P 500 Growth Index measures the performance of companies from the S&P 500 that fit Growth style characteristics of valuation and earnings.

S&P 500 Index measures the performance of 500 U.S.-listed large-cap companies. The total return of this index includes the reinvestment of dividends in addition to price performance.

S&P 500 Value Index measures the performance of companies from the S&P 500 that fit Value style characteristics of valuation and earnings.

S&P 600 Small Cap Index measures 600 U.S. stocks with small market capitalization.

Treasury Inflation-Protected Securities (TIPS) are Treasury bonds indexed to an inflationary gauge to protect investors from the decline in the purchasing power of their money.

U.S. Treasury Actives Curve refers to the yields of actively traded U.S. Treasuries over various tenors, charted together as a curve.

DEFINITIONS

A **bear market** refers to a period of risk-off market sentiment accompanied by a price drawdown of 20% or more in the referenced asset class.

Beta is the measure of volatility, or systematic risk, of a security or portfolio compared to the market as a whole. **High beta** securities or strategies would therefore exhibit higher volatility than the market as a whole.

A **bull market** refers to a period of risk-on market sentiment accompanied by meaningful positive price action in the referenced asset class.

Consumer Price Index (CPI) is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services. This is also referred to as Headline CPI.

Corporate earnings are the net benefits of a corporation's operation.

Dollar Cost Averaging is the practice of investing a fixed dollar amount on a regular basis, regardless of the share price.

Duration measures the sensitivity of a bond's price to a given change in interest rates. Higher duration indicates greater price sensitivity to changes in interest rates. Short duration indicates lesser price sensitivity.

Earnings growth is the annual compound annual growth rate (CAGR) of earnings from investments.

Earnings momentum measures the year-over-year, quarter-over-quarter, or month-over-month rate of change in corporate earnings.

Earnings per Share (EPS) is a company's net profit divided by the number of common shares it has outstanding.

Employment Cost Index (ECI) is a quarterly measure of the change in the price of labor, defined as compensation per employee hour worked.

Flexible consumer price index (CPI): published by the Atlanta Federal Reserve, a weighted basket of items whose prices are more flexible, including food, energy, vehicles, apparel and more.

High Yield and Speculative Grade are largely interchangeable terms that describe non-investment grade debt issuance with a credit rating of BB or below.

Job Quits Rate measures voluntary separations by employees, with the exception of retirements.

National Bureau of Economic Research (NBER) traditionally defines recession as a significant decline in economic activity that is spread across the economy and that lasts more than a few months.

Producer Price Inflation (PPI) measures changes in the selling prices received by domestic producers for their output.

Quantitative Easing (QE) refers to the enlargement of the Federal Reserve's balance sheet holdings of Treasuries, mortgage-backed securities, and other instruments, through the purchase of these instruments.

Quantitative Tightening (QT) refers to the reduction of the Federal Reserve's balance sheet holdings of Treasuries, mortgage-backed securities, and other instruments, through the allowed expiry of these instruments.

Satellite exposure represents an actively managed portion of a portfolio in which a portfolio manager's skill provides an opportunity to earn greater returns than the broad market benchmark, as opposed to the "core" portion of a portfolio which may be passively managed.

Sharpe Ratio: a measure that compares the return of an investment to its risk. Calculation: average return minus the risk-free return, divided by the standard deviation of return on an investment.

Sticky-price consumer price index (CPI): published by the Atlanta Federal Reserve, a weighted basket of goods and services included in the CPI that change price relatively infrequently (greater than 4.3 months). Items in this basket include shelter prices, transportation, insurance, medical care, education and more.

Yield to Maturity is the percentage rate of return for a bond assuming that the investor holds the asset until its maturity date.

Zero Interest Rate Policy (ZIRP) refers to the Federal Reserve's policy of monetary accommodation by anchoring the lower bound of the Fed Funds policy rate to zero (upper rate of 0.25%).

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