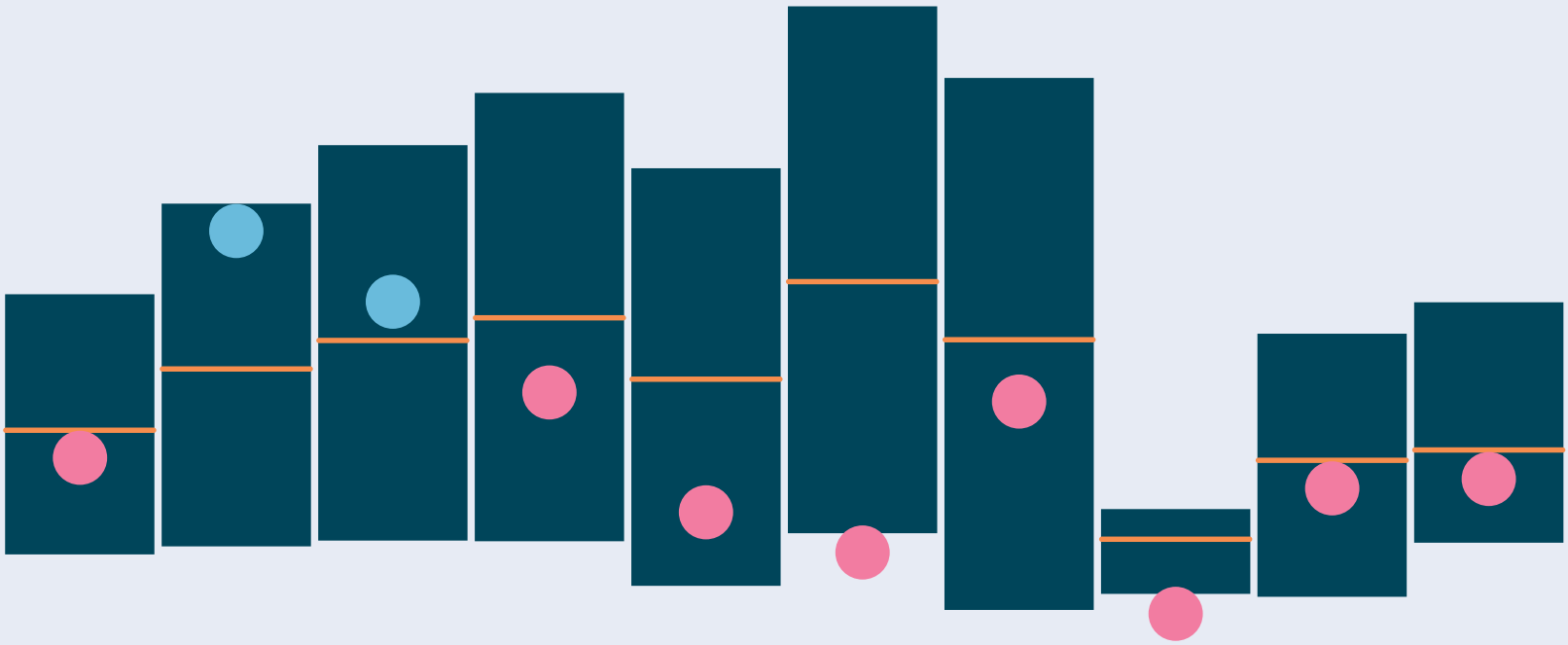
INVESTOR SOLUTIONS

BNY MELLON

10-YEAR CAPITAL MARKET ASSUMPTIONS 2024 EDITION

The Path to Normalization



BNY Mellon Investor Solutions

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Summary

THE PATH TO NORMALIZATION

Every year BNY Mellon develops Capital Market Assumptions (CMAs) for 46 asset classes across equities, fixed income and alternatives. The CMAs cover a 10-year forward investment time horizon and incorporate the macroeconomic forecasts generated by the BNY Mellon Investment Management Global Economic and Investment Analysis Group. The return and risk assumptions are intended to guide investors in the development of long-term strategic asset allocations.

Key Takeaways

- After a tumultuous period of monetary policy tightening, evidence of slowing inflation is gaining traction across many economies. Central banks are expected to start lowering interest rates in 2024, however we expect interest rates to remain at higher levels than over the decade or so following the Global Financial Crisis.
- Many assumptions now reflect moderately higher returns and volatility, in part driven by the current high-rate environment.
- U.S. equity returns are expected to improve on higher valuation adjustments, where the economy is well-positioned to benefit from growth, including new technological innovations, such as AI.
- Bonds should benefit from higher current yields and the potential for an easier rate path as inflation eases and the output gap widens.
- Alternatives may outperform as the rise in economic distress and asset price dislocations from higher interest rates increases the opportunity set for hedge funds and private asset managers to generate alpha.

As CMAs are the key starting point in designing the model portfolios we create for our clients, we invest a great deal of intellectual rigor into their formulation. In the pages that follow, we cover their long-term accuracy, our methodology and the latest economic forces that drive these critical assumptions.

Moderately Higher Returns for Several Key Assets

We see moderately higher returns for several key assets compared to last year's edition. For U.S. equities, an improved economic outlook compared to the 2023 edition has raised our assumption for ten year returns to 7.4%, from 6.5% previously. Artificial Intelligence (AI) has been a significant investment theme this year, and we believe that U.S. equities will be first in line to harness the productivity-enhancing benefits of the new technology. Non-U.S. equities, by contrast, appear less well positioned to profit from AI, while we also see materially lower emerging market (EM) equity returns compared to last year's edition due to higher economic uncertainty and deglobalization trends in key emerging markets.

We see a **6.4%** expected return over the next 10 years for the traditional 60/40 portfolio.

It has been a grueling three years for fixed income investors, but higher starting yields reduce the risk of further disappointments. A macroeconomic backdrop in which U.S. inflation has moderated substantially raises the likelihood of gradually lower interest rates, and thus fixed-income yields, in the years ahead. Accordingly, we see U.S. aggregate bond returns of 4.8% over the next ten years, compared to 4.1% last year. Better return prospects from U.S. equities and fixed income accordingly mean that we see 6.4% returns over the next ten years in prospect from the traditional U.S. 60% Stock / 40% Bond Portfolio[1], up from the 5.5% assumption last year.

While the economic outlook is less bearish than it was twelve months ago, a softening in economic activity in the early part of 2024 still appears likely. An economic slowdown may lead to spread widening, and hence lower returns, in high-yield bonds. But a rise in economic distress and resulting asset price dislocations also raises the chances that hedge funds and private equity managers will generate alpha in a more attractively valued market. The opportunities offered by alternatives will be an increasingly important focus for investors' portfolios over the coming decade.

FIGURE 1 **Snapshot of 2024 vs. 2023 10-Year Capital Market Return Assumptions**

ASSET CLASS	*2024 10-Year CMAS* EXPECTED RETURN	*2023 10-Year CMAS* EXPECTED RETURN
EQUITY MARKETS		
U.S. Equity	7.4%	6.5%
Int'l. Dev. Mkt. Ex-U.S. Equity	6.3%	6.9%
Emerging Markets Equity	7.3%	9.3%
FIXED INCOME		
U.S. Aggregate Bonds	4.8%	4.1%
U.S. High Yield Credit	5.8%	6.2%
U.S. Intermed. Municipal Bond	3.6%	2.8%
Global Aggregate Ex-U.S.	2.5%	3.0%
EM Sovereign Local Bond	2.9%	4.0%
ALTERNATIVES		
Absolute Return	5.0%	4.3%
Hedge Funds	5.5%	4.9%
Commodities	2.2%	2.9%
Private Equity	8.8%	8.2%
BENCHMARKS		
Global Balanced Multi-Asset Portfolio [2]	6.2%	5.9%
U.S. 60% Stock / 40% Bond Portfolio [1]	6.4%	5.5%
U.S. Fed Policy Rate (10y forward avg.)	2.9%	2.5%
U.S. CPI (10y forward avg.)	2.2%	2.9%

Source: BNY Mellon Investor Solutions. Data as of September 30, 2023.

1 Assumes a hypothetical stock/bond portfolio with weights of 60% U.S. large cap equity and 40% U.S. aggregate investment grade bonds.

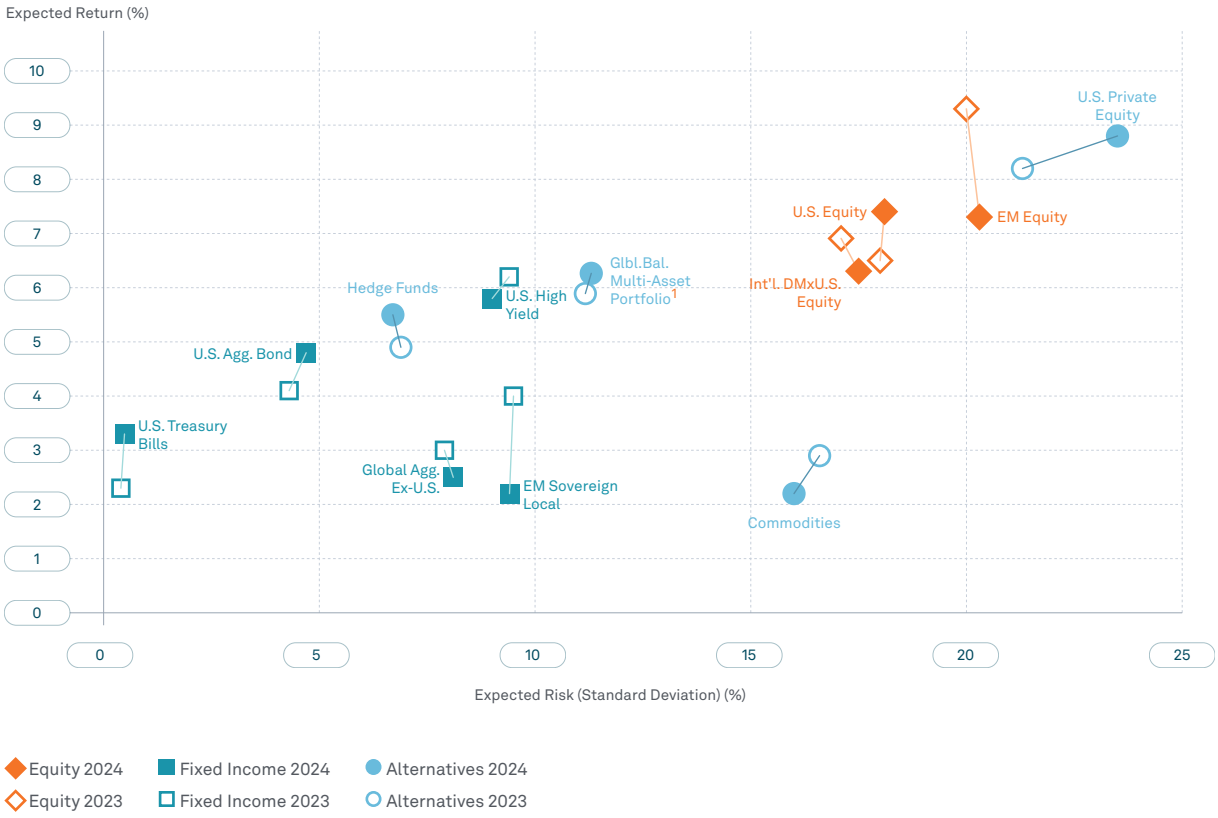
2 Assumes a hypothetical balanced portfolio with weights of 20% U.S. large cap equity, 7% U.S. mid cap equity, 4% U.S. small cap equity, 16% international developed equity, 6% emerging equity, 2% U.S. REIT, 25% U.S. Aggregate fixed income, 5% U.S. high yield and 15% hedge funds.

Note

The portfolio presented herein is not representative of a specific strategy managed by BNY Mellon Investor Solutions, LLC as of the date of this publication and is not intended to constitute an advertisement of a specific BNY Mellon Investor Solutions, LLC product or service; instead, all information, content and materials are for general informational purposes only.

As Figure 1 shows, there have been notable moves (positive and negative) for U.S. private equity, emerging market (EM) equity and commodities compared to last year's edition. It can be helpful for investors to consider their assets in risk/return terms, with a stable anchor of low-risk fixed income holdings balancing the greater risk and reward of equities.

FIGURE 2 **Risk/Return of 2024 vs. 2023 10-Year Capital Market Return Assumptions**



Source: BNY Mellon Investor Solutions. Data as of September 30, 2023.

Cash, in the form of 3-6 month Treasury bills, is looking unusually attractive given its very low risks, with a ten year expected return of 3.3%, up from 2.3% last year. However, cash rates are likely to fall from current elevated levels, making now a good time to consider longer-duration fixed income.

For investors who can take the risk, a $1M investment in a Global Balanced Multi-Asset Portfolio could outperform Treasury Bills by about

$441,000

in the next 10 years if our return expectations come to pass.

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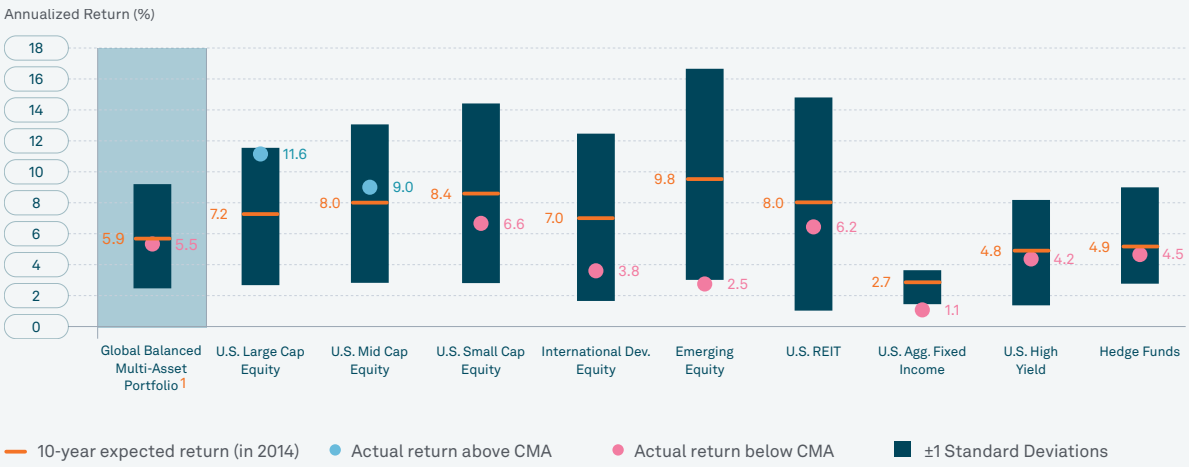
[1] Refer to footnote (2) on page 4 for definition of the Global Balanced Multi-Asset Portfolio.

A Time-Tested Approach That Approximates Real-World Results

For decades, BNY Mellon has developed CMAs to guide our institutional and high net worth clients in structuring their long-term asset allocations. Time is the ultimate arbiter of the accuracy of our long-term CMAs, as it allows us to validate our prior return assumptions against realized market returns in the subsequent ten years.

In the most recently completed 10-year period, we have found that our 10-year expected returns (published in 2014) were a relatively accurate assumption, with observed returns for nearly all major asset classes within one standard deviation of our ex-ante assumption. Two exceptions where our assumptions were too optimistic were Emerging Market Equities (where the consumer demographic super-cycle thesis failed to take hold) and U.S. Aggregate Fixed Income (where a rate hike cycle not seen in decades crushed fixed income returns in the final year of the forecast window).

FIGURE 3 **2014 Capital Market Return Assumptions vs. Actual 10-Year Returns**



Source: BNY Mellon Investor Solutions, Bloomberg. Data as of September 30, 2023.

Realized returns for U.S. equities were generally higher than expected, whereas realized returns for fixed income were quite close to assumptions. Hedge funds slightly outperformed expectations (although there is significant dispersion of individual hedge fund returns around the broad HFRI Index).

An investor could review the individual asset class results shown in figure 3 with disappointment as almost all returns were below expectations, excluding U.S. large and mid cap equities. We hold the opposite perspective. In our view, these results underscore the paramount importance of a diversified portfolio. For clarity, we define the Global Balanced Multi-Asset Portfolio[1] based on our estimate of "typical" institutional investment weightings, comprised of 55% equity, 30% fixed income and 15% alternatives. Note how returns of the Global Balanced Multi-Asset Portfolio were extremely close between expected and realized. In addition, we note the remarkable outperformance of U.S. equities over the last decade. While outside the scope of Capital Markets Assumptions, we have observed that many U.S.-based investors have held an overweight position in U.S. equities for much of this period.

Note

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[1] Refer to footnote (2) on page 4 for definition of the Global Balanced Multi-Asset Portfolio.

Considering a "Robust" Approach to Portfolio Allocations

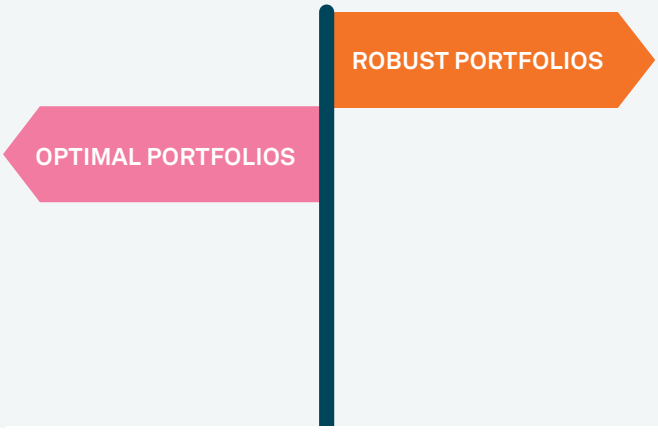
Capital markets assumptions serve as a key component of investors' strategic asset allocation (SAA). However, forecasting is an inherently uncertain endeavor, with uncertainty increasing as time horizons lengthen.

Thus, when designing a portfolio to weather the extremes of a coming market cycle, we propose investors consider a "robust" portfolio, rather than an "optimal" one. This means focusing on portfolio resilience under adverse outcomes and uncertain assumptions, rather than attempting to maximize expected performance under the precarious assumption that the future will play out exactly as predicted.

Our Unique Approach to Portfolio Construction

Investor Solutions' proprietary approach to portfolio construction, robust strategic asset allocation (RSAA), aims to reduce the level of uncertainty in delivering investment objectives relative to other portfolio allocation options. The quality of "robustness" is a comparative measure of one portfolio versus another, rather than an absolute characteristic, and it's quantified by a portfolio's expected performances under a given percentile of hypothetical future market scenarios. Recognizing that no forecast will perfectly reflect reality, a more robust portfolio will exhibit a narrower range of outcomes that are closer to forecast expectations and with less downside skew than an optimal portfolio that will only be ideal if reality perfectly matches the forecast. Robust portfolio allows us to better leverage the value of the planning conversation with our clients by discussing outcomes we have greater confidence in and a lessened impact from the effect of unforeseen drawdowns when markets don't perform as expected.

> "When designing a portfolio to weather the extremes of a coming market cycle, we propose investors consider a *robust* portfolio, rather than an *optimal* one."
>
> — KEITH COLLIER, CFA
> DIRECTOR, ASSET ALLOCATION RESEARCH
> BNY MELLON INVESTOR SOLUTIONS



Our 2024 CMAs represent our best efforts to develop reasonable, economically-informed assumptions for the decade ahead. Given the inherent uncertainty, it's critical to use the insights appropriately to construct a well-diversified portfolio. The highest expected asset class return should not be construed as siren call for a highly concentrated portfolio consisting of that asset class alone, and small differences in expected values should not be interpreted as a preference for one asset class over another. Likewise, year-to-year changes in an asset class's long-term expected performance should not be interpreted as a short-term or tactical forecast for the near future.

Key Themes for the Next Decade

We have identified four key social, economic, technological and environmental themes that we believe will drive capital market returns over the coming decade and beyond: aging populations, higher real interest rates, the productivity benefits of Artificial Intelligence (AI) and the green energy transition.

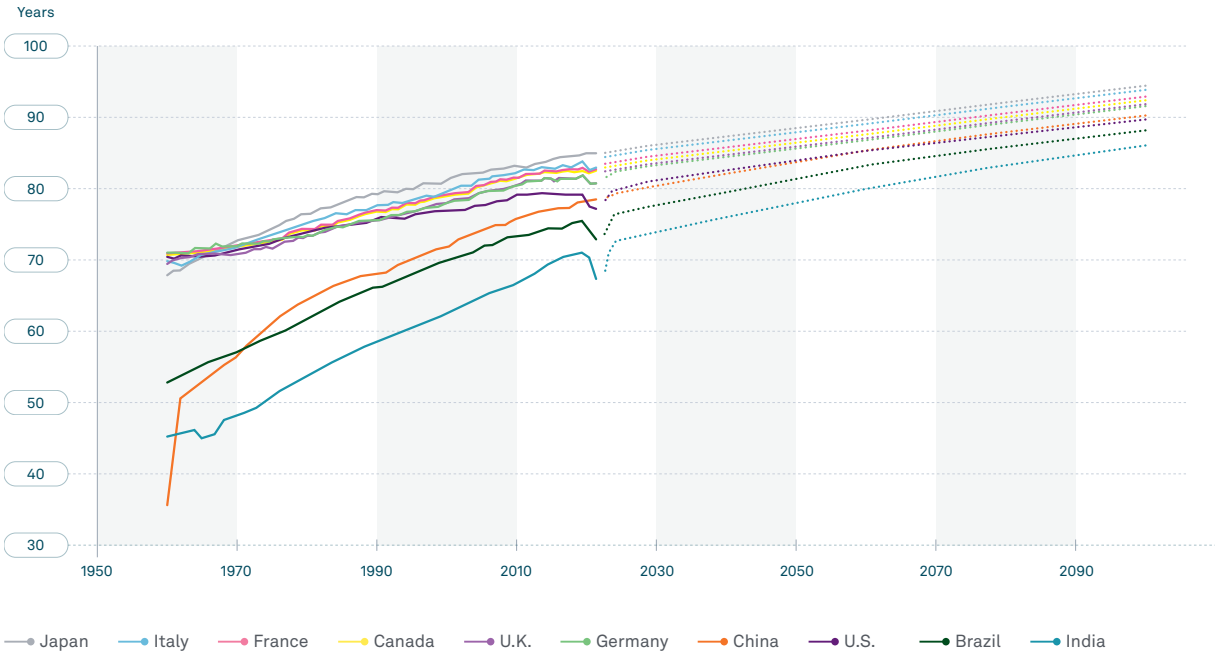
KEY THEMES

1. Accelerating Impact of an Aging Population
2. Higher for Longer (Real) Interest Rates and Deglobalization
3. Productivity and Disinflationary Promises of AI
4. Significant Investment in Lower Carbon Policies

1. Accelerating Impact of an Aging Population

In nearly all major economies, people are living longer (Figure 4). U.S. life expectancy has increased from 70 in 1960 to 77 in 2020. India and China have enjoyed the largest rises in longevity and are now each populated by 1.4 billion people. In major countries around the globe, current fertility rates have settled between 1-2 births per female, down from 2-6 births per female in 1960. Covid marked a temporary aberration, but the combination of rising longevity and declining fertility will continue to raise the average age of populations.

FIGURE 4 **Life Expectancy at Birth, Including UN Projections**



Source: United Nations, World Population Prospects (2022). Data as of 2022.

In just thirty years, the number of over-65s is expected to double. Almost half of 5-year-olds today in the U.S. are expected to reach age 100. Japan has long been recognized as the "oldest" major economy, with an Old Age Dependency Ratio (OADR – defined as the number of people aged 65 and over per 100 individuals of working age 20 to 64) expected to reach 80% by 2050. Other economies are catching up. China's OADR has been increasing, rising from 8% in 1960 to 19% in 2020. That trend is expected to accelerate rapidly in the coming decades as the impact of the one-child policy is felt, with a projected OADR of 48% by 2050, among the highest of major economies. The trajectory of the U.S. OADR in contrast is less steep, moving from 17% in 1960 to 28% in 2020, and projected to reach 40% by 2050.

U.S. life expectancy:

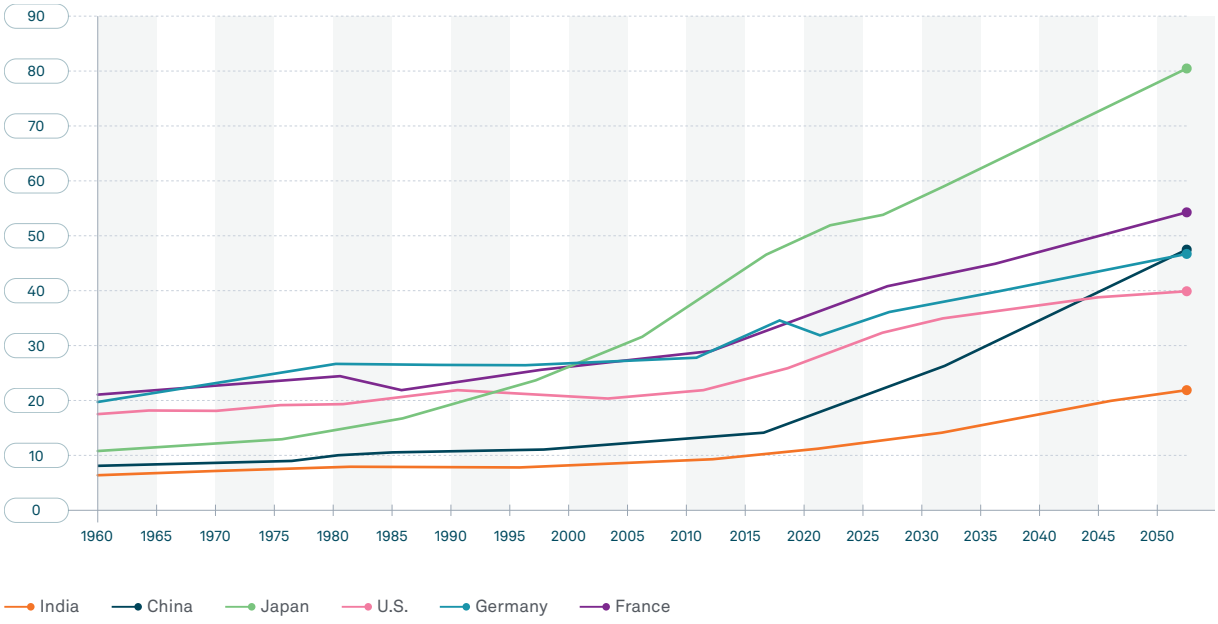
70 years in 1960

77 years in 2020

Why does this matter? A rising OADR increases social welfare costs: in the U.S., Social Security is expected to be exhausted within 10 years and Medicare within eight years. These were two of the biggest government budget line items in 2022 at over $1 trillion and over $900 billion, respectively. In 2022, Social Security spending in the U.S. was 5% of GDP, China spent 5% of GDP on its public pension, U.K. spent 6%, India spent 1%, Japan spent over 9% and France spent 14%. Without changes to behavior or policy, all countries should expect to see increases in retirement and healthcare funding and spending.

As populations age, we would expect a reduction in demand for goods and services, slower economic growth and lower inflation. Working-age people will need to pay more to support healthcare and retirement costs, which will likely strain government fiscal budgets. Household savings will likely increase in order to plan for longer retirement time horizons.

FIGURE 5 **Old Age Dependency Ratio (OADR)**



Source: United Nations, World Population Prospects (2022). Data as of 2022.

2. Higher for Longer (Real) Interest Rates

After three decades of stable prices, the effects of the Covid pandemic and the Russia-Ukraine war have reawakened dormant inflation, with annual inflation peaking at 9.1% in the U.S. in June 2022.

Initially dismissed as a passing post-pandemic anomaly, headline and core inflation have proven stickier than many expected across developed economies. Although our long-term view is for easing inflation in the U.S. and globally over the next ten years – and we've seen downward progress closer to target levels in the U.S. in recent months – it currently remains above the Federal Reserve's 2% target and could reignite on higher oil prices, labor force dynamics, geopolitics, trade and other risks. Other economies, such as parts of Europe and the U.K., are yet to match the U.S. inflation decline.

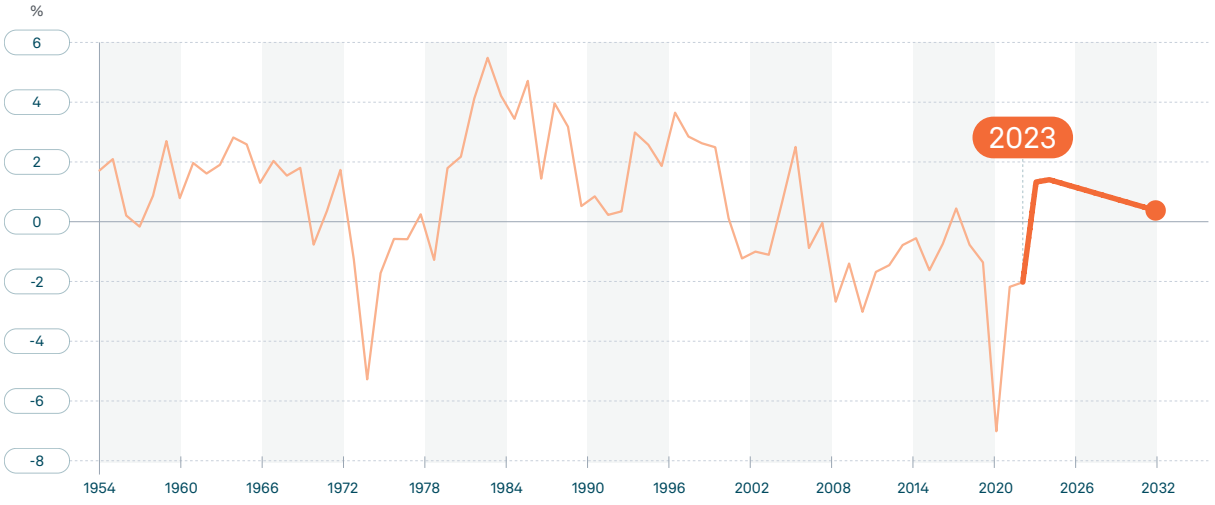
The stickiness of price pressures has prompted central bankers to vow that interest rates will remain higher for longer. Although several key central banks have paused their interest rate hiking cycles in recent months, interest rates may stay elevated for some time rather than being cut quickly as in previous rate cycles. Huw Pill, chief economist at the Bank of England, has said that investors should expect interest rate charts to resemble "Table Mountain," the famously flat-topped mountain in Cape Town, South Africa.

Higher interest rates partly reflect the need to compensate investors for the heightened risk of further bouts of inflation ahead. However, they also reflect a rise in the real (inflation-adjusted) interest rate that borrowers must pay to lenders. The yield on the U.S. 10-year Treasury Inflation-Protected Securities (TIPS), a common proxy for real interest rates, has risen from barely above 0% at the start of 2020 to more than 2.4% as of October 2023. This means that higher interest rates are not a mere inflationary mirage – they reflect a real tightening in credit conditions across the global economy.

As Figure 6 shows, we expect real interest rates, as shown by the chart of consensus economic forecasts below, and key nominal rates such as the U.S. 2-year and 10-year Treasuries, to remain elevated relative to the post Global Financial Crisis (GFC) era. For investors, it's important to remember that these rates are still low relative to history. In nominal terms, adjusting for our U.S. inflation expectation of 2.2%, this equates to an average nominal Fed Funds rate of 2.9% over the next ten years.

FIGURE 6 **After 16 Years of Negative Real Rates, Forecasts Show Positive Real Rates Ahead**

U.S. 3m Treasury Bill Rate Minus CPI y/y Inflation Rate



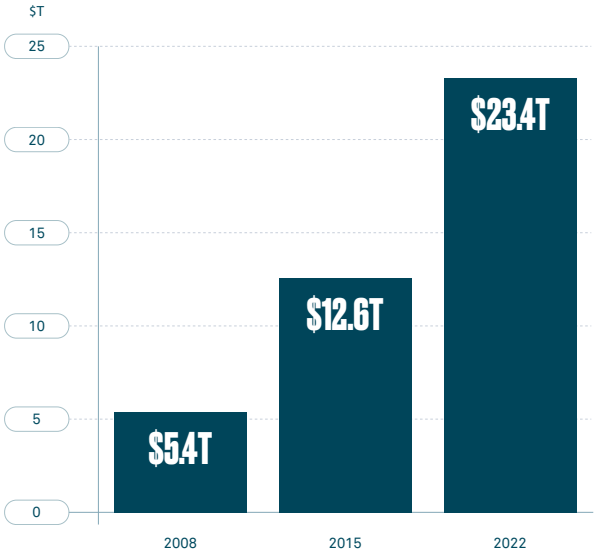
Source: Consensus economic forecasts – Consensus Economics Inc. Data as of September 30, 2023.

We believe that sustained economic growth, higher debt levels and deglobalization (explored on next page) will continue to support higher real interest rates over the next decade.

Deglobalization

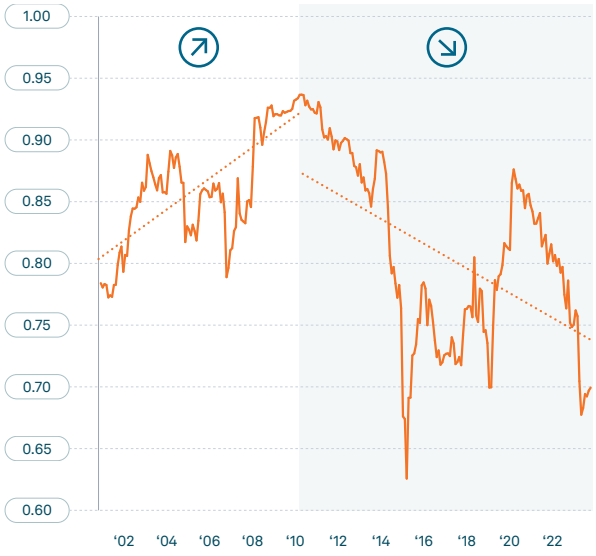
Since 2008, deglobalization has accelerated as emerging economies have continued to move from primarily export-driven markets to more robust consumer economies. In more recent years, heightened geopolitical risks and concerns over economic alignment of interests has led to a reassessment of dependence on foreign-supplied critical inputs. These trends are putting pressure on companies to create more robust supplier networks to protect themselves against supply shocks and disruption due to wars, global pandemics, perceived unfair trade practices and national security threats. We expect these actions to reduce trade volumes and trigger protectionist measures. These reshoring and onshoring booms will likely increase corporate operating costs and lead investors to demand a higher inflation risk premium, thus adding further sources of risk around sustained real interest rates.

FIGURE 7 **Growth of Outstanding Debt (U.S. Treasury Securities)**



Source: SIFMA - Securities Industry and Financial Markets Association. Data as of September 30, 2023.

FIGURE 8 **Correlation Between Developed and Emerging Market Equities**



MSCI World Total Return Index USD, MSCI EM Total Return Index USD. Source: BNY Mellon Investor Solutions, Factset, Bloomberg. Data as of September 30, 2023.

Investors should consider how these trends might change the investment landscape. One result of rising geopolitical tensions is that buyers in certain key emerging markets may be less willing to hold U.S. Treasuries than in recent decades, in an already challenging context of rising government debt levels (see Figure 7). While we think that bond yields are close to the peak for this cycle, these factors will tend to cause structurally higher yields for government debt. Investors may thus need to consider reduced allocations towards government debt and a greater weighting towards opportunities in corporate credit and diversifiers such as private credit and other alternatives.

A second implication of deglobalization is for the developed versus emerging market split within portfolios. Given decoupling (lower) correlation (see Figure 8), this will have implications for the balance between bonds and equities and will impact the return on assets with traditionally higher levels of leverage in their capital structure such as real estate and infrastructure. While our return assumption in Emerging Market equities has come down from prior years, the trend of lower correlations from Emerging Markets suggests the potential for a diversification benefit that can mitigate overall portfolio volatility.

3. Productivity and Disinflationary Promises of AI

2023 was the year that Artificial Intelligence (AI) hit primetime. Excitement about the technology has powered the share prices of top AI industry players to unprecedented heights and dominated discussions among growth investors. Far from a mere passing fad, we think that the advent of AI has the potential to significantly impact global GDP and global inflation over the next decade. While AI technologies have already demonstrated early promise to automate tasks, the full extent of its impacts on productivity, global growth and disinflation are yet to be realized. Our sense is that ten years from now, we will be astounded by the pace of progress and the wealth of new job roles, products and services that are still yet to be invented.

AI's primary economic effects will come through increased productivity. AI-powered automation has the potential to streamline operations, reduce costs and enhance efficiency in industries ranging from manufacturing and logistics to finance and healthcare. By automating repetitive and time-consuming tasks, AI frees up human resources to focus on more value-added activities. As a result, businesses can produce more output with the same or fewer resources, leading to greater economic growth. AI could also have a creative role to play - its ability to learn from vast amounts of data and generate insights may also help drive innovation and contribute to productivity gains across sectors.

By 2030, AI is expected to boost global GDP by nearly **$16 Trillion.**

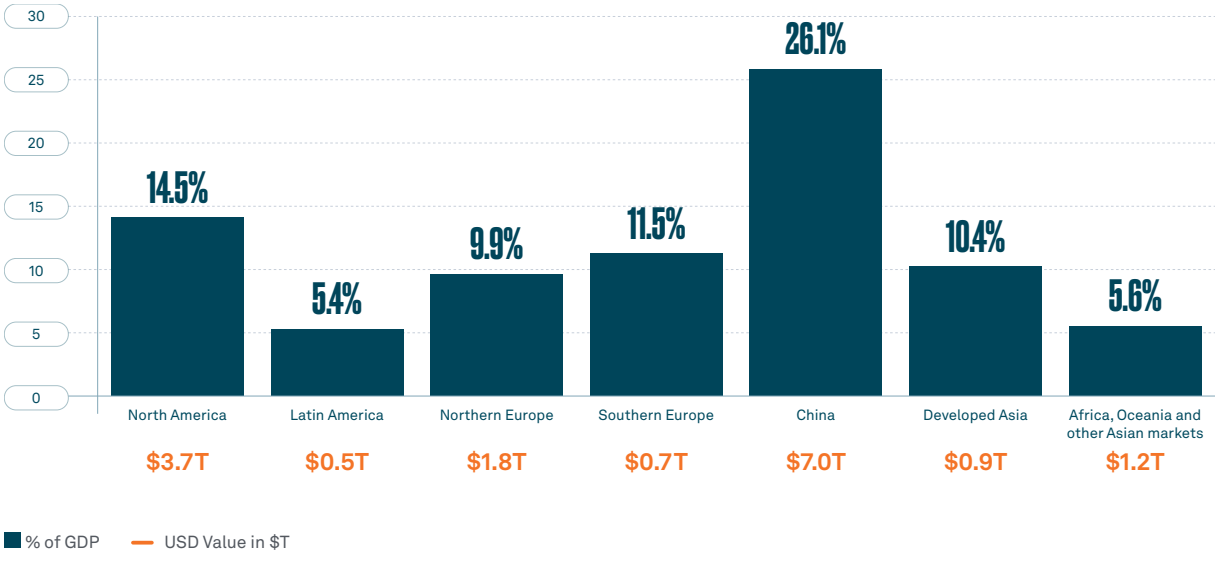
In the long run, AI is likely to have a disinflationary impact on the global economy. The technology's automation capabilities could lead to cost reductions for businesses, enabling them to lower prices and potentially mitigate inflationary pressures. However, in the short run, the adoption and implementation of AI technologies will require significant upfront investments by businesses for development of AI systems, training of algorithms, workforce re-skilling and infrastructure upgrades.

Amid signs of political pushback and disquiet in the media, the realization of AI's potential benefits will require careful consideration of ethical and societal implications, as well as appropriate policies to address potential disruptions in the labor market. However, if responsibly managed, we are confident that AI can help deliver positive and inclusive outcomes for global GDP and inflation in the coming decade.

It is worth noting that the exact impacts of AI on GDP and inflation are difficult to accurately estimate and are likely to vary across different countries. As Figure 9 shows, the specific impacts of the technology may vary across regions depending on factors such as the level of AI adoption, investment in research and development, availability of skilled talent and regulatory frameworks.

FIGURE 9 **The Global Impact of AI on GDP by 2030**

GDP Growth Impact (in % of GDP)



Source: PwC Analysis, "Sizing the Prize" (2017). Data as of September 5, 2017.

4. Significant Investment in Lower Carbon Policies

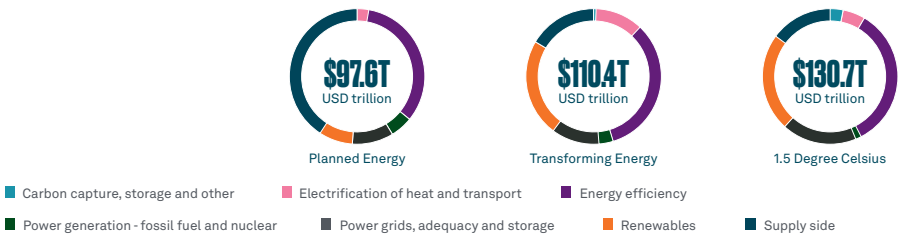
Sustainability and carbon emission reductions are becoming a significant priority for many governments, regulators and corporations. Only in the last few years have financial regulators and financial markets begun to fully appreciate the scale of capital deployment that will be required to fulfill government pledges to de-carbonize the world economy.

According to the International Renewable Energy Agency (IRENA)[1], investment of between $100 and $130 trillion (roughly one year of 2023 global GDP) will be necessary in order to achieve a net zero carbon emissions outcome by 2050. Figure 10 shows several possible energy transition scenarios. Key areas for investment will include renewables, energy efficiency measures and improvements to power grids to support greater electrification and energy storage.

The energy transition will create new opportunities. Mining activity, for example, is expected to increase significantly as demand for metals and minerals used for transition-related technology (such as lithium, cobalt and copper) soars. However, the transition also represents a business headwind for certain industries. The energy sector, in particular oil and gas exploration and production, will be particularly exposed to transition risk amid rising electrification and greater barriers to securing exploration permits.

The sums required for the energy transition will come in the form of both direct government investments and incentives designed to harness private sector capital. One notable example of the trend is the 2022 U.S. Inflation Reduction Act (IRA), which includes significant support for lower emission air and energy initiatives, new energy technologies and repurposing coal power plants into wind/solar energy storage sites. These programs may have an inflationary impact in the near to medium term. Rising government spending and inflation are another reason to expect higher nominal interest rates ahead.

FIGURE 10 **Net Zero by 2050 Will Require Significant Investment (by scenario)**



Source: International Renewable Energy Agency (IRENA): "Global Renewables Outlook: Energy transformation 2050" (2020) and IRENA "World Energy Transitions Outlook: 1.5°C Pathway" (2021). Data as of June, 2021.

Risk Considerations

In the 2023 Global Risks Report of the World Economic Forum (WEF), more than half of the risks[2] are natural ecosystem-related. Another WEF study[3] highlights that roughly $44 trillion of economic value generation is moderately or highly dependent on nature and its services, hence exposed to nature loss.

According to a report by the World Bank[4], a collapse in biodiversity such as wild pollination, provision of food from marine fisheries and timber from native forests, could result in a significant decline in global GDP: $2.7 trillion (or 2.3%) by 2030. Relative impacts are most pronounced in low-income and lower-middle-income countries, where drops in GDP by 2030 may exceed 10 percent.

[1] Global Assessment Report on Biodiversity and Ecosystem Services 2019: https://www.ipbes.net/global-assessment

[2] World Economic Forum: Global Risks Perception Survey 2022-23 https://www3.weforum.org/docs/WEF_Global_Risks_Report_2023.pdf

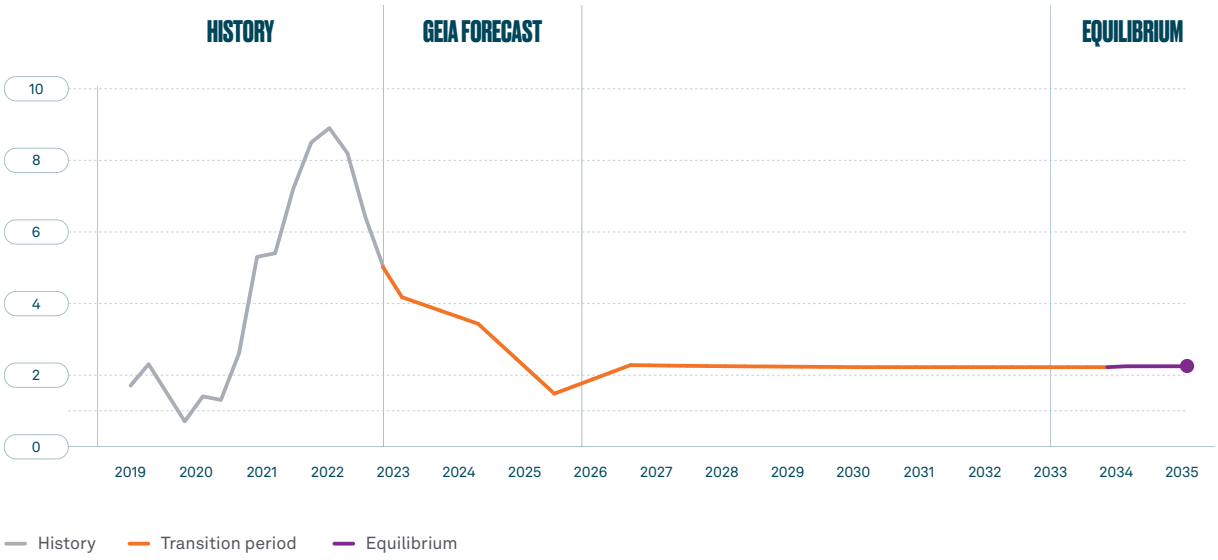
[3] World Economic Forum New Nature Economy Report 2020 https://www3.weforum.org/docs/WEF_New_Nature_Economy_Report_2020.pdf

[4] World Bank: https://openknowledge.worldbank.org/entities/publication/fcc11682-c752-51c4-a59f-0ab5cd40dc6f

Economic Forecasts Underlying our Capital Market Assumptions

Our macroeconomic projections are central to our building-block approach used for generating expected returns of major asset classes. Our ten-year projections for GDP growth, inflation and short-term rates begin with three-year forecasts based on a range of outcomes developed by the BNY Mellon Investment Management Global Economic and Investment Analysis (GEIA) team. We then assume, as illustrated in Figure 11, that these factors will converge toward their steady-state equilibrium based on long-term consensus expectations.

FIGURE 11 **Historical and Projected U.S. Consumer Price Index (CPI), Four Quarter Percentage Changes**



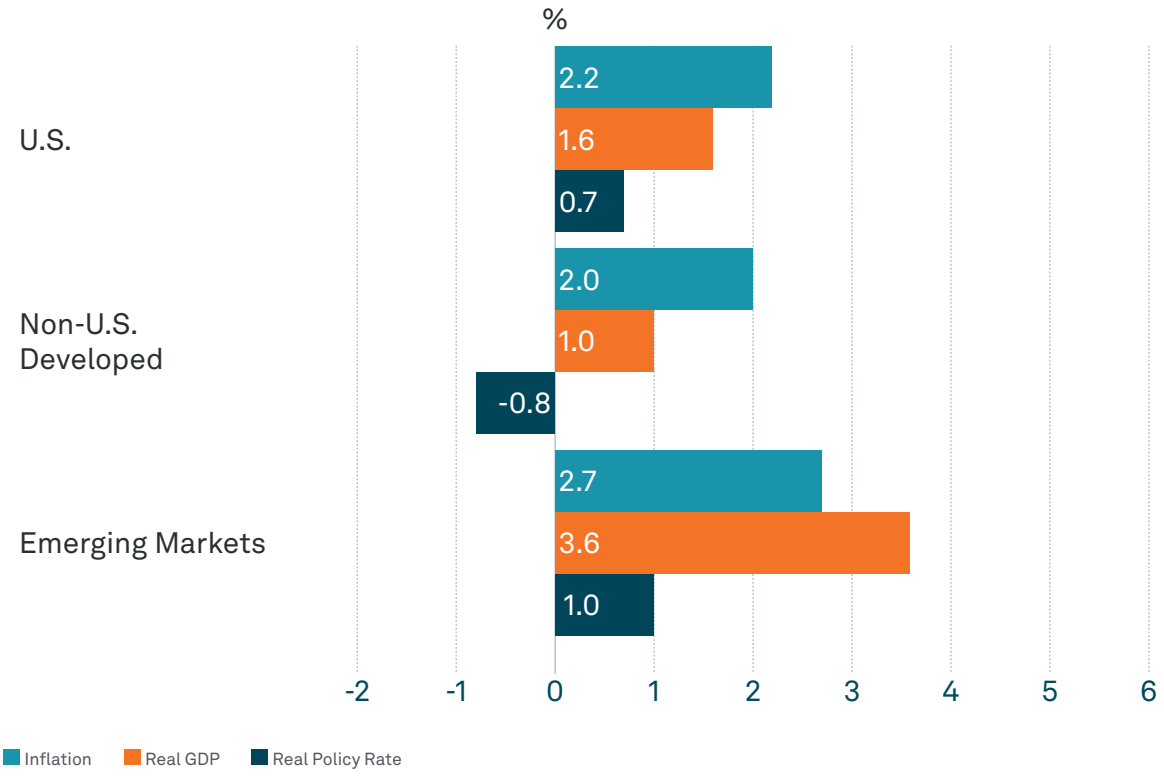
Source: BNY Mellon Investor Solutions, BNY Mellon Investment Management Global Economic and Investment Analysis GEIA Team: Vantage Point, Q4 2023. Data as of September 30, 2023.

Determining Our Overall Expected Return Scenario

The economic projections underpinning our asset class return assumptions are based on three economic scenarios outlined in BNY Mellon Investment Management's 2023 Q4 Vantage Point publication. We develop return expectations under each of these scenarios, then weight the returns by their scenario probability to determine an "overall" expected return for each regional equity market. This approach allows us to not only form assumptions for asset performance under the expected (base) case, but also understand how regional markets may respond under various outlier scenarios.

Three of the most critical economic drivers for developing our return assumptions are inflation, real GDP growth and real short-term interest rates. Inflation and real GDP growth are key drivers of the expected earnings growth for equities. Projections of interest rates and rate term structures are greatly influential in projecting fixed income yields and returns. Figure 12 outlines our projections for the overall probability-weighted case.

FIGURE 12 **10-Year Annualized Projections of Inflation, Real GDP Growth and Real Policy Rates**

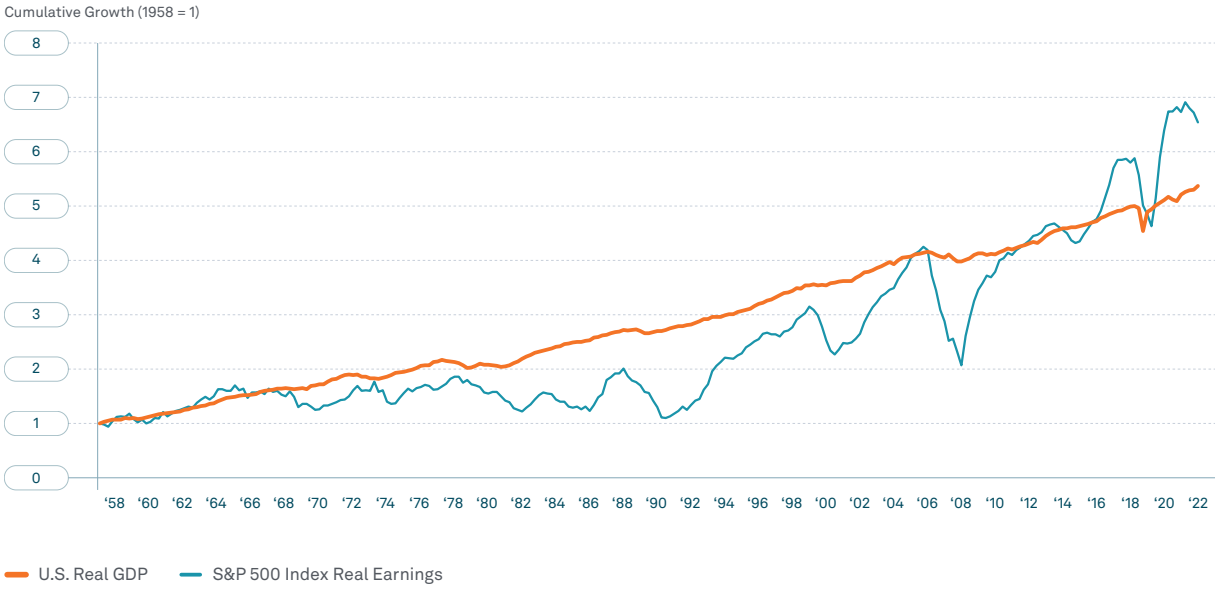


Source: BNY Mellon Investor Solutions. Data as of September 30, 2023.

Equity Earnings Track GDP Forecasts

Our equity assumptions incorporate the net sum effect of inflation, real earnings growth, income return, valuation reversion and currency, accumulated over our ten-year estimation horizon. Earnings growth is a key building block in creating assumptions for equity returns, and we find that projections of real GDP growth are a useful proxy to inform our assumptions. As Figure 13 illustrates, there has historically been a reasonably strong relationship between corporate earnings growth and GDP growth over a long-term time horizon.

FIGURE 13 **U.S. GDP vs. Cumulative Corporate Earnings Growth**



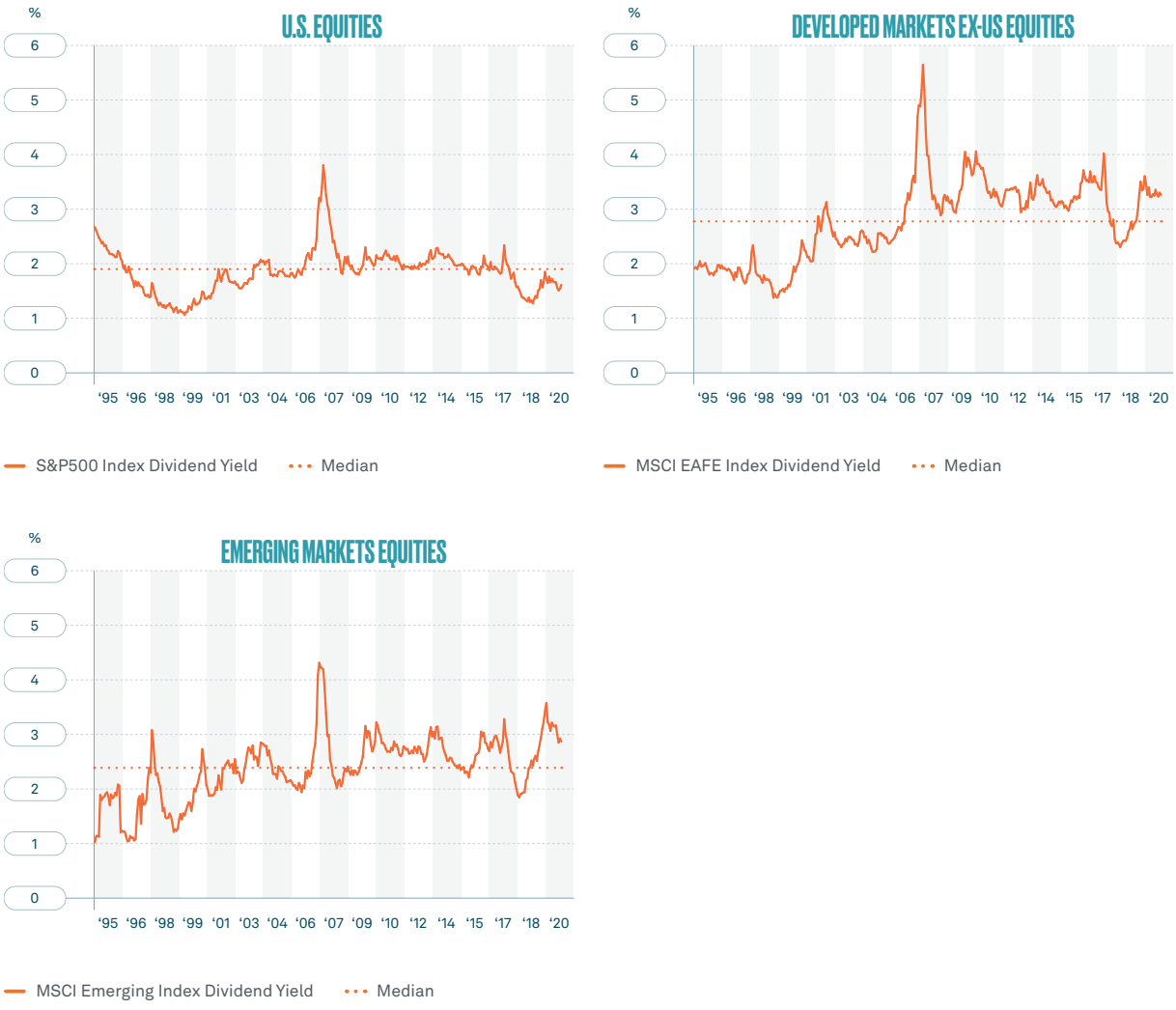
Source: BNY Mellon Investor Solutions, Bloomberg. Data as of September 30, 2023.

Over the next 10 years, we anticipate real earnings growth of 1.6% (3.8% nominal) in the U.S., 1.0% (3.0% nominal) in the developed markets outside of the U.S. and 3.6% (6.3% nominal) in emerging markets.

Mean Reversion in Dividend Yields

Over the next 10 years, we expect dividend yields to be a blend of historical median and current dividend yields in the market. We anticipate dividend yields of 1.7% in the U.S., 2.7% in the developed markets outside of the U.S. and 2.2% in emerging markets. These figures are in line with the long-term median dividend yields as shown in Figure 14 and current dividend yields.

FIGURE 14 Historical Dividend Yield

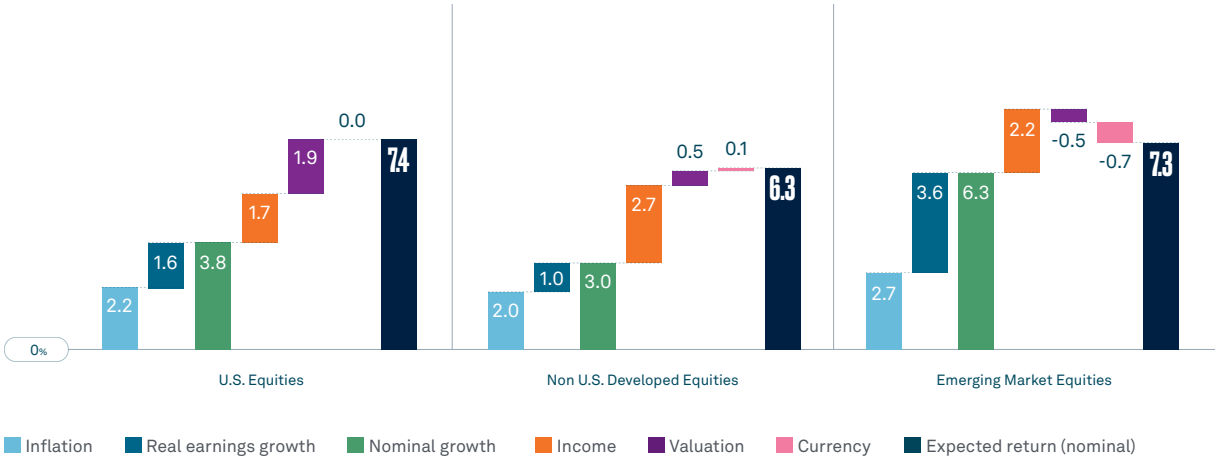


Source: BNY Mellon Investor Solutions, Bloomberg. Data as of September 30, 2023.

Once the primary equity building blocks of inflation, real earnings growth and income are established, we then adjust long-term returns for valuation and currency projections. We make a moderate adjustment by region for intermediate-term valuation reversion expectations and long-term currency forecasts (in non-U.S. regions). Figure 15 illustrates the equity market building blocks and return expectations for each region for the probability-weighted expected case.

In the U.S., we assume a total expected return of 7.4%, consisting of 2.2% from inflation, 1.6% real earnings growth, 1.7% income and a 2.0% valuation increase. This represents an increase from last year's assumption of 6.5%, which has been driven mainly by an improved valuation picture and resilient U.S. economic growth relative to other global regions. The tech-heavy sector exposure within the U.S. is well-poised to drive multiple expansion as we have become more optimistic about the potential for productivity-enhancing AI adoption in the decade ahead. For developed countries excluding the U.S., we assume a total expected return of 6.3% consisting of 2.0% from inflation, 1.0% real earnings growth, 2.7% from income, 0.5% valuation increase and currency appreciation of 0.1%.

FIGURE 15 **2024 10-Year Equity Market Nominal Expected Return Building Blocks (probability-weighted economic scenarios)**



Source: BNY Mellon Investor Solutions. Data as of September 30, 2023.

Percentage values represent a decomposition of the total return forecast. Numbers may not sum completely due to interaction effects, compounding and rounding.

For emerging markets, we assume a total expected return of 7.3%, driven by 2.7% from inflation, 3.6% real earnings growth, 2.2% from income, -0.5% valuation reduction and currency depreciation of -0.7%. This is a marked decrease from the assumption of 9.3% in last year's outlook. The lower return assumption reflects softer inflationary effects (2.7%, compared to 3.1% in last year's outlook) as robust growth fails to reassert itself and volatility rises in key emerging economies. Softening commodity prices present an additional risk factor for growth in export-led markets. We are also significantly less positive on emerging market equity valuations as higher bond yields tempt capital back towards developed markets.

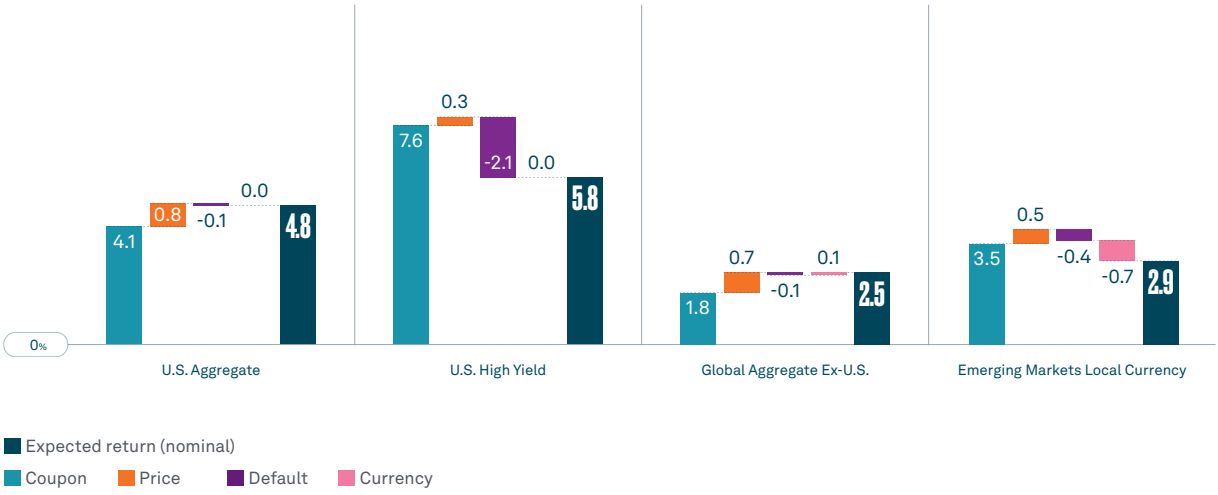
Fixed Income Returns Improve

Our fixed income return assumptions are derived from yield forecasts at the appropriate duration for the asset class under consideration. We consider those forward yields and forecast an appropriate risk spread to adjust for perceived risk over the risk-free rate. We then estimate the return contribution from price changes based on projected changes in these nominal yields, given the approximate duration and convexity of the asset class. Finally, we reduce returns due to anticipated defaults and make further adjustments for expected currency effects.

To forecast short-term interest rates, yield curve slope and credit spreads in the intermediate term (out to three years), we rely on the projections of our Global Economics and Investment Analysis (GEIA) team. Beyond the intermediate term, we assume these factors will converge to market consensus expectations or long-term historical averages.

Over the long-term, we assume credit spreads converge to historical long-term averages with an adjustment to eliminate skew from outlier events such as the global financial crisis. Summarized in Figure 16 are the results of our fixed income return projections along with underlying components of return. In general, we project notably higher returns for most fixed income asset classes primarily due to higher yields in late 2023 compared to our previous assumptions made in late 2022. In U.S. Aggregate, we expect a return of 4.8% over the next 10 years. For U.S. high yield, we see an expected return of 5.8%; this marks a slight decrease from last year's projection (6.2%) due to forecasted wider spreads as the U.S. economy slows during the first part of 2024. Emerging markets local currency debt is down somewhat compared to the prior year's assumption with an expected return of 2.9%. This reflects negative currency effects as higher interest rates lead to sustained strength in the U.S. dollar, and thus lower returns on emerging market local currency debt for dollar-based investors.

FIGURE 16 **2024 10-Year Fixed Income Market Nominal Expected Return Building Blocks (probability-weighted economic scenarios)**

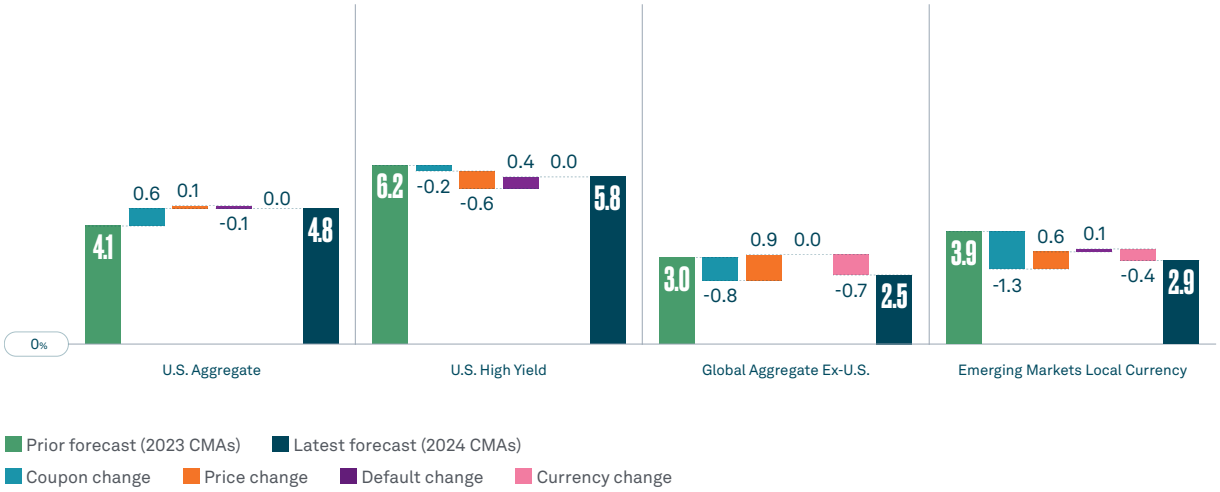


Source: BNY Mellon Investor Solutions. Data as of September 30, 2023.

Percentage values represent a decomposition of the total return forecast.

Numbers may not sum completely due to interaction effects, compounding and rounding.

FIGURE 17 **Changes in Fixed Income Expected Return Building Blocks (probability-weighted economic scenarios)**



Source: BNY Mellon Investor Solutions. Data as of September 30, 2023.

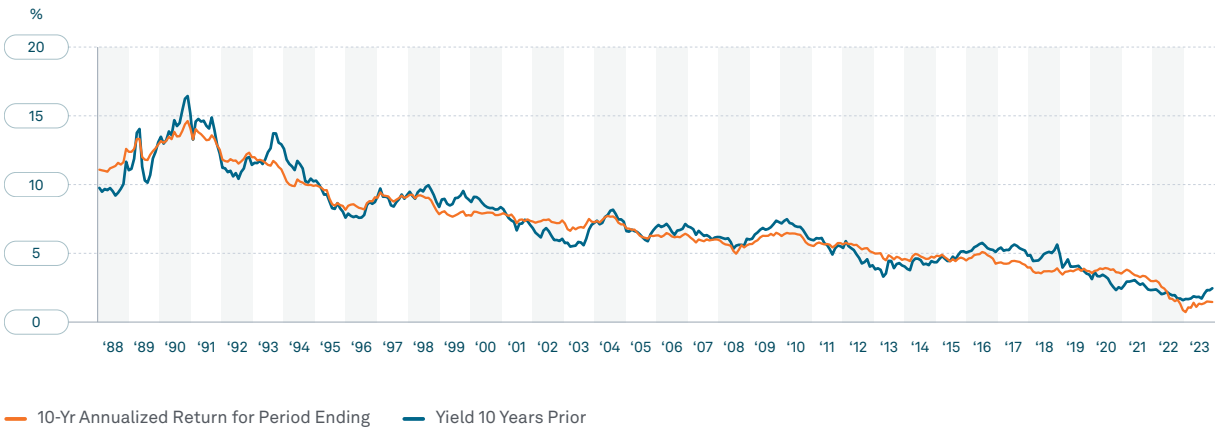
Percentage values represent a decomposition of the total return forecast.

Numbers may not sum completely due to interaction effects, compounding and rounding.

Comparing Fixed Income Returns to Yields

One technique to affirm our expected return assumptions for fixed income is to compare the returns to current yields in the market. Regardless of where projections indicate yields may go in the future, current yield has historically been a relatively strong indicator of future returns within fixed income. To demonstrate this point, Figure 18 shows rolling 10-year annualized returns of the Bloomberg Barclays U.S. Aggregate Index and compares those returns to the yield of the index at the start of the prior 10-year period. We have witnessed significant rate movements over the past 30 years, yet the return of the U.S. bond market over 10 years is consistent with the yield of the market at the start of the period. Rarely is the difference more than ±1%. Given current yields around the mid 5% range, one should be skeptical of expected returns for U.S. bonds being significantly different than 4% to 6% based on a 10-year horizon. Our expected return for U.S. Aggregate is 4.8% over a 10-year horizon.

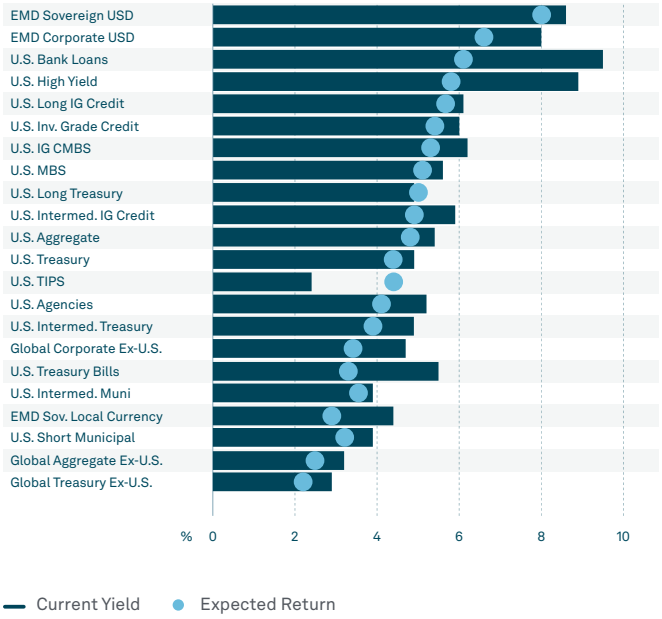
FIGURE 18 **U.S. Aggregate Index Returns vs. Starting Yields**



Source: BNY Mellon Investor Solutions; Bloomberg. Data as of September 20, 2023.

In Figure 19, we extend the heuristic above to a range of fixed income asset classes by comparing current yields to our current expected return assumptions. For most asset classes, the expected return is generally consistent with the current yield. Two significant exceptions are U.S. high yield credit and bank loans, where default risk expectations suggest a return materially below the current yield. Note that the current yield on U.S. TIPS tends to represent a real yield and does not reflect future but uncertain CPI adjustments to par value and coupon payments.

FIGURE 19 **Current Fixed Income Yields vs. Expected Returns**



Source: BNY Mellon Investor Solutions. Data as of September 30, 2023.

Alternatives to Benefit from Continued Uncertainty

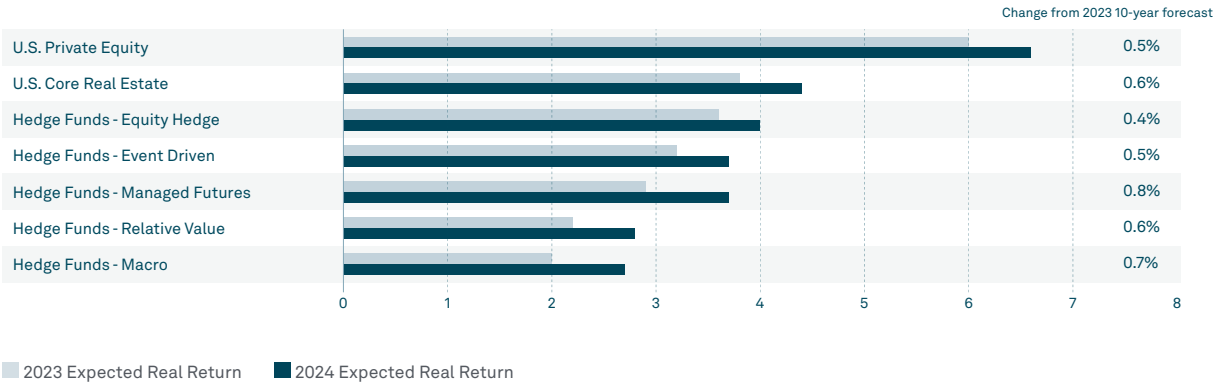
While traditional asset classes have economically intuitive return drivers, alternative assets pose unique challenges for return assumptions. Alpha opportunity has historically been a key advantage of alternative investment, but alpha is, by definition, unforecastable. Further, given the broad range of opportunity sets and proprietary investment approaches within alternatives, the dispersion of returns and volatility across these investment classes is highly manager-specific and predicated on manager skill. Our expectations here relate only generally to the various benchmark indexes that aggregate the managers in each space, recognizing that most alternatives benchmarks are not directly investable in a diversified passive form. We believe expected returns for alternative asset classes will generally be in line with publicly traded markets on a risk-adjusted basis, plus incremental returns from alpha expectation (active management skill) and an illiquidity premium.

To calculate risk-adjusted return, we first determine the beta of the alternative investment benchmark relative to public markets based on our expectations of return, standard deviation and correlation. We apply the beta to the expected return of the most relevant public-market proxy to determine the systematic component of expected return for the alternative benchmark. For private assets, we add an additional return premium to compensate for the illiquidity of the investment. For hedge funds and other alpha-oriented investment classes, we add an additional return premium – an "alpha estimate" – proportional to the residual risk of the benchmark index not captured by the beta-adjusted systematic risk of public markets. Thus, we are assuming that a skilled manager is able to convert some fraction of that residual risk into return (alpha). While each manager will demonstrate their own level of skill, we impute a baseline alpha for the aggregate asset class by assuming an information ratio of 0.3 multiplied by the residual risk.

Alternatives Offer Attractive Real Returns with Diversification

Figure 20 provides a summary of expected real returns (expected return in excess of 10-year annualized expected U.S. inflation) for various alternative assets. The Figure also compares how expected real returns on alternatives have changed from our 2023 10-year assumptions with our current inflation expectation applied. We point this out because we believe alternatives should continue to play an important role going forward for long-term investors. While the traditional risk anchors of fixed income are improved over recent years due to higher current yields, investors should continue to evaluate alternative strategies to complement lingering growth and rate risks in traditional assets. Taking advantage of illiquidity premiums in areas such as private equity may improve equity and credit diversification and boost long-term potential returns.

FIGURE 20 **Real Expected Return in Alternative Assets**



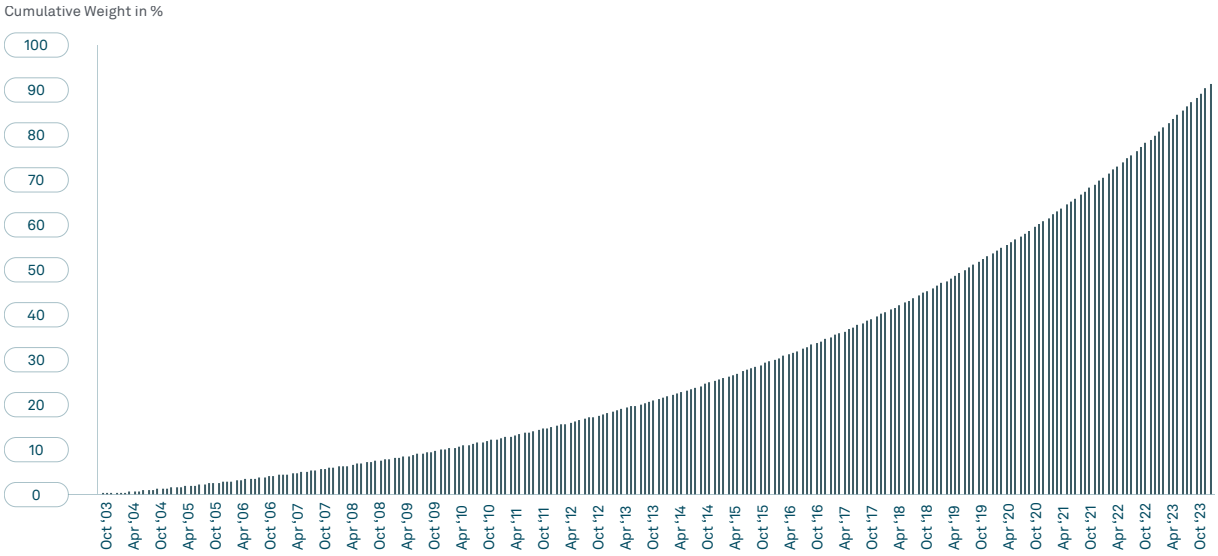
Source: BNY Mellon Investor Solutions. Data as of September 30, 2023.

Volatility and Correlations

In general, our volatility and correlation assumptions are based on reversion to long-term historical experience with additional emphasis on near-term history. This approach enables us to formulate a balanced view of both timely changes and historical norms in the profile of asset risk and the structure of cross-asset relationships.

To determine expected standard deviations and correlations, we utilized exponential weighting of the last 20 years of monthly returns (see Figure 21). This approach ensures an appropriate covariance matrix and dampens the memory effect of a moving estimation window on a year-by-year basis. For private assets not priced in liquid markets, we adjust their serial correlation and less frequent periodicity to an imputed equivalent at monthly frequency. This adjustment – which typically has the effect of increasing the volatility of illiquid assets – is necessary to enable relevant cross comparisons with their market-priced counterparts.

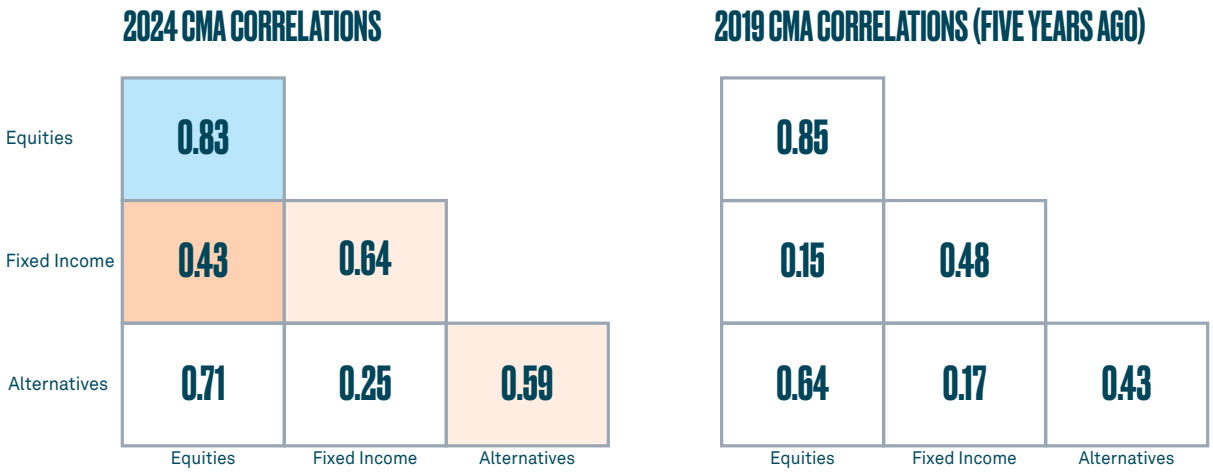
FIGURE 21 **Historical Weighting for Standard Deviations and Correlations**



Source: BNY Mellon Investor Solutions. Data as of September 30, 2023.

Figure 22 compares trends in median correlation within and across asset class groups. Over the past five years, equities have generally maintained their high correlation to each other, while equity-fixed income correlations have shot up dramatically. Alts correlations have drifted higher, but they remain a useful diversifier especially with regard to mitigating fixed income risk.

FIGURE 22 **Summary Median Correlations Within and Across Asset Class Groups (2024 vs. 2019 CMAs)**



Source: BNY Mellon Investor Solutions. Data as of September 30, 2023. Median correlations computed across the full set of covered asset classes within each group. A full correlation matrix is available upon request.

The Use of Capital Market Assumptions

On the following pages, we present the results of the assumption methodologies we've described in the previous sections. These CMAs serve as a useful guide for our internal investment teams across BNY Mellon as well as our clients, partners and academic colleagues. While each year's edition of our 10-year assumptions is highly anticipated, it's important to observe that, for the most part and in most years, the changes are evolutionary not revolutionary. While we always seek to look to new and better ways to make our assumptions more accurate, we are cognizant of the value of continuity in methodology over time. The well-known quote in quantitative finance, attributable to British statistician George Box, that "all models are wrong, but some are useful," is applicable here. By following a consistent, repeatable process each year, we can better understand how the key economic inputs shape the magnitude and direction of changes. This would not be possible if our assumption inputs were confounded each year by a new and changing methodology.

This year, for the first time in our CMA data table, we're displaying confidence bands to illustrate the range of expectations around our return assumptions. Similar to our prior 10 years evaluation in Figure 3 (on page 6), these bands indicate the ±1 standard deviation of annualized 10-year return, equating to roughly 68% of observations under a normal distribution. We provide this in support of our ongoing efforts to advocate for robust portfolios and provide our readers with a realistic acknowledgement of the inherent uncertainty of forecasting.

As consumers of financial data, it's important to not fall victim to the myth of false precision. It's true that a point forecast makes it easy to focus on year by year changes in the expected returns for a single asset class or draw conclusions from small differences. However, in reality, the year-on-year change in the practical range of these outcomes, given the uncertainty of financial market forecasting is actually relatively stable. The range of each assumption also encompasses the wide range of outcomes possible regardless of the particular reference benchmark used to represent the asset class. However, it is the application of these expected returns to a diversified portfolio that is most valuable for a long-term investor. We hope this transparent and intellectually honest approach to long-term forecasting promotes responsible use of CMAs, and helps our readers focus on the key drivers of asset allocation decision-making.

Implications for Investors

We believe that investors could lean into these long-term trends in the following ways:

- Review cash allocations and reduce or eliminate exposures, as we expect it will drag portfolio returns lower, particularly on an after-tax basis.
- Extend duration by adding fixed income exposure at current higher yields. For taxable investors municipal bonds are attractive, however security selection is critically important.
- Accelerate leaning into the AI revolution, which means overweighting U.S. equities as the market best placed to benefit.
- Pivot to private market exposures and alternatives to create a truly diversified portfolio, capture the liquidity premium, and capitalize on dislocations caused by a softening economy.

FIGURE 23 Expected 10-Year Returns and Standard Deviations (USD Edition)

ASSET CLASS	10-YR EXPECTED RETURN RANGE (±1 SD CONFIDENCE INTERVAL)	10-YR CMA RETURN	10-YR CMA VOLATILITY
EQUITY			
U.S. Equity	2.8 – 12.0	7.4%	18.1%
U.S. Large Cap Equity	2.8 – 11.9	7.4%	17.9%
U.S. Mid Cap Equity	2.7 – 12.6	7.7%	19.8%
U.S. Small Cap Equity	2.5 – 13.5	8.0%	22.4%
U.S. Micro Cap Equity	2.0 – 13.3	7.7%	23.2%
Global Equity	2.7 – 11.5	7.1%	17.2%
International Developed Equity	1.8 – 10.8	6.3%	17.5%
International Small Cap Equity	1.6 – 11.4	6.5%	19.3%
Global Emerging Markets Equity	2.2 – 12.4	7.3%	20.3%
U.S. REIT	1.4 – 12.0	6.7%	21.3%
Global REIT	2.0 – 11.7	6.9%	19.3%
FIXED INCOME			
U.S. Aggregate	3.4 – 6.2	4.8%	4.7%
U.S. Treasury	3.0 – 5.9	4.4%	4.8%
U.S. Treasury Bills	3.1 – 3.4	3.3%	0.5%
U.S. Intermediate Treasury	2.9 – 4.9	3.9%	3.3%
U.S. Long Treasury	1.6 – 8.4	5.0%	12.7%
U.S. Investment Grade Credit	3.4 – 7.3	5.4%	6.7%
U.S. Intermediate Inv Grade Credit	3.6 – 6.2	4.9%	4.4%
U.S. Long Investment Grade Credit	2.5 – 8.9	5.7%	11.7%
U.S. TIPS	2.6 – 6.1	4.4%	6.0%
U.S. Agencies	3.2 – 5.1	4.1%	3.1%
U.S. MBS	3.7 – 6.4	5.1%	4.4%
U.S. Investment Grade CMBS	3.4 – 7.2	5.3%	6.4%
U.S. Intermediate Municipal	2.3 – 4.9	3.6%	4.5%
U.S. Short Municipal	2.1 – 4.1	3.1%	3.3%
U.S. High Yield	3.3 – 8.3	5.8%	9.0%
U.S. Bank Loans	4.2 – 8.0	6.1%	6.6%
Global Aggregate Ex-U.S.	0.2 – 4.8	2.5%	8.1%
Global Treasury Ex-U.S.	-0.1 – 4.6	2.2%	8.2%
Global Corporate Ex-U.S.	0.6 – 6.1	3.4%	9.8%
Emerging Mkts Sovereign USD	5.3 – 10.7	8.0%	9.7%
Emerging Mkts Corporate USD	4.0 – 9.2	6.6%	9.2%
Emerging Mkts Sovereign Local	0.2 – 5.5	2.9%	9.4%
ALTERNATIVES			
Absolute Return [1, 2]	3.5 – 6.4	5.0%	4.8%
Hedge Funds [1, 2]	3.6 – 7.4	5.5%	6.7%
Hedge Funds - Equity Hedge [1, 2]	3.6 – 8.9	6.2%	9.4%
Hedge Funds - Event Driven [1, 2]	3.7 – 8.0	5.9%	7.5%
Hedge Funds - Macro [1, 2]	3.5 – 6.4	4.9%	4.9%
Hedge Funds - Relative Value [1, 2]	3.6 – 6.5	5.0%	4.9%
Hedge Funds - Managed Futures [1, 2]	3.0 – 8.7	5.9%	10.3%
Commodities	-1.9 – 8.9	2.2%	16.0%
Global Natural Resources Equity	1.3 – 12.6	6.9%	23.2%
Energy Infrastructure	0.1 – 15.0	7.6%	33.3%
Global Listed Infrastructure [1, 2]	2.0 – 10.3	6.1%	15.8%
Private Equity [1, 2]	3.0 – 14.5	8.8%	23.5%
Private Real Estate [2]	4.1 – 9.0	6.6%	8.7%

Source: BNY Mellon Investor Solutions. Data as of September 30, 2023. Geometric average annualized expected returns before taxes and fees (unless otherwise stated); USD-denominated.

1

Consistent with the Representative Index, returns are net of management fees.

2

The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly.

Source: BNY Mellon Investor Solutions. Data as of September 30, 2023.

FIGURE 24 Expected 10-Year Correlation of selected asset classes

10-YEAR CORRELATION MATRIX		EQUITY				FIXED INCOME										ALTERNATIVES				
		U.S. Equity	International Developed Equity	Emerging Markets Equity	Global REIT	U.S. Aggregate	U.S. Treasury	U.S. Treasury Bills	U.S. Investment Grade Credit	U.S. TIPS	U.S. MBS	U.S. Intermediate Municipal	U.S. High Yield	Global Aggregate Ex-US	Emerging Mkts Sovereign Local	Absolute Return	Commodities	Energy Infrastructure	Private Equity[1]	Private Real Estate[2]
EQUITY	U.S. Equity	1.00	0.87	0.72	0.83	0.32	0.03	-0.12	0.53	0.43	0.29	0.31	0.79	0.47	0.53	0.75	0.48	0.62	0.92	0.42
	International Developed Equity	0.87	1.00	0.91	0.84	0.37	0.06	-0.05	0.58	0.43	0.33	0.37	0.80	0.62	0.74	0.78	0.58	0.57	0.79	0.36
	Emerging Markets Equity	0.72	0.91	1.00	0.73	0.37	0.08	-0.03	0.56	0.41	0.33	0.35	0.72	0.61	0.78	0.72	0.56	0.48	0.66	0.35
	Global REIT	0.83	0.84	0.73	1.00	0.44	0.16	-0.14	0.64	0.54	0.37	0.43	0.80	0.57	0.66	0.69	0.49	0.55	0.75	0.45
FIXED INCOME	U.S. Aggregate	0.32	0.37	0.37	0.44	1.00	0.92	0.09	0.91	0.81	0.93	0.82	0.44	0.75	0.51	0.12	0.01	0.07	0.25	0.23
	U.S. Treasury	0.03	0.06	0.08	0.16	0.92	1.00	0.17	0.70	0.72	0.85	0.69	0.10	0.61	0.31	-0.17	-0.19	-0.20	-0.01	0.08
	U.S. Treasury Bills	-0.12	-0.05	-0.03	-0.14	0.09	0.17	1.00	0.00	-0.02	0.10	0.02	-0.11	0.09	0.03	-0.14	-0.12	-0.16	-0.13	-0.09
	U.S. Investment Grade Credit	0.53	0.58	0.56	0.64	0.91	0.70	0.00	1.00	0.79	0.77	0.80	0.69	0.76	0.63	0.41	0.18	0.34	0.43	0.31
	U.S. TIPS	0.43	0.43	0.41	0.54	0.81	0.72	-0.02	0.79	1.00	0.73	0.68	0.54	0.70	0.55	0.27	0.25	0.22	0.36	0.33
	U.S. MBS	0.29	0.33	0.33	0.37	0.93	0.85	0.10	0.77	0.73	1.00	0.77	0.35	0.69	0.44	0.03	0.02	0.01	0.23	0.21
	U.S. Intermediate Municipal	0.31	0.37	0.35	0.43	0.82	0.69	0.02	0.80	0.68	0.77	1.00	0.48	0.65	0.48	0.16	0.04	0.14	0.26	0.18
	U.S. High Yield	0.79	0.80	0.72	0.80	0.44	0.10	-0.11	0.69	0.54	0.35	0.48	1.00	0.54	0.62	0.74	0.51	0.63	0.70	0.44
	Global Aggregate Ex-U.S.	0.47	0.62	0.61	0.57	0.75	0.61	0.09	0.76	0.70	0.69	0.65	0.54	1.00	0.81	0.31	0.33	0.21	0.40	0.29
	Emerging Mkts Sovereign Local	0.53	0.74	0.78	0.66	0.51	0.31	0.03	0.63	0.55	0.44	0.48	0.62	0.81	1.00	0.46	0.45	0.35	0.45	0.32
ALTERNATIVES	Absolute Return	0.75	0.78	0.72	0.69	0.12	-0.17	-0.14	0.41	0.27	0.03	0.16	0.74	0.31	0.46	1.00	0.55	0.61	0.71	0.33
	Commodities	0.48	0.58	0.56	0.49	0.01	-0.19	-0.12	0.18	0.25	0.02	0.04	0.51	0.33	0.45	0.55	1.00	0.50	0.45	0.33
	Energy Infrastructure	0.62	0.57	0.48	0.55	0.07	-0.20	-0.16	0.34	0.22	0.01	0.14	0.63	0.21	0.35	0.61	0.50	1.00	0.53	0.32
	Private Equity[1]	0.92	0.79	0.66	0.75	0.25	-0.01	-0.13	0.43	0.36	0.23	0.26	0.70	0.40	0.45	0.71	0.45	0.53	1.00	0.42
	Private Real Estate[2]	0.42	0.36	0.35	0.45	0.23	0.08	-0.09	0.31	0.33	0.21	0.18	0.44	0.29	0.32	0.33	0.33	0.32	0.42	1.00

Shaded cells indicate negative correlation

BNY Mellon Investor Solutions. Data as of September 30, 2023.

[1] Consistent with the Representative Index, returns are net of management fees.

[2] The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly.

Only a subset of the asset classes is shown in the matrix above. A full correlation matrix is available upon request.

For illustrative purposes only. There can be no assurance that the expected returns listed above will be achieved.

Contributors

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