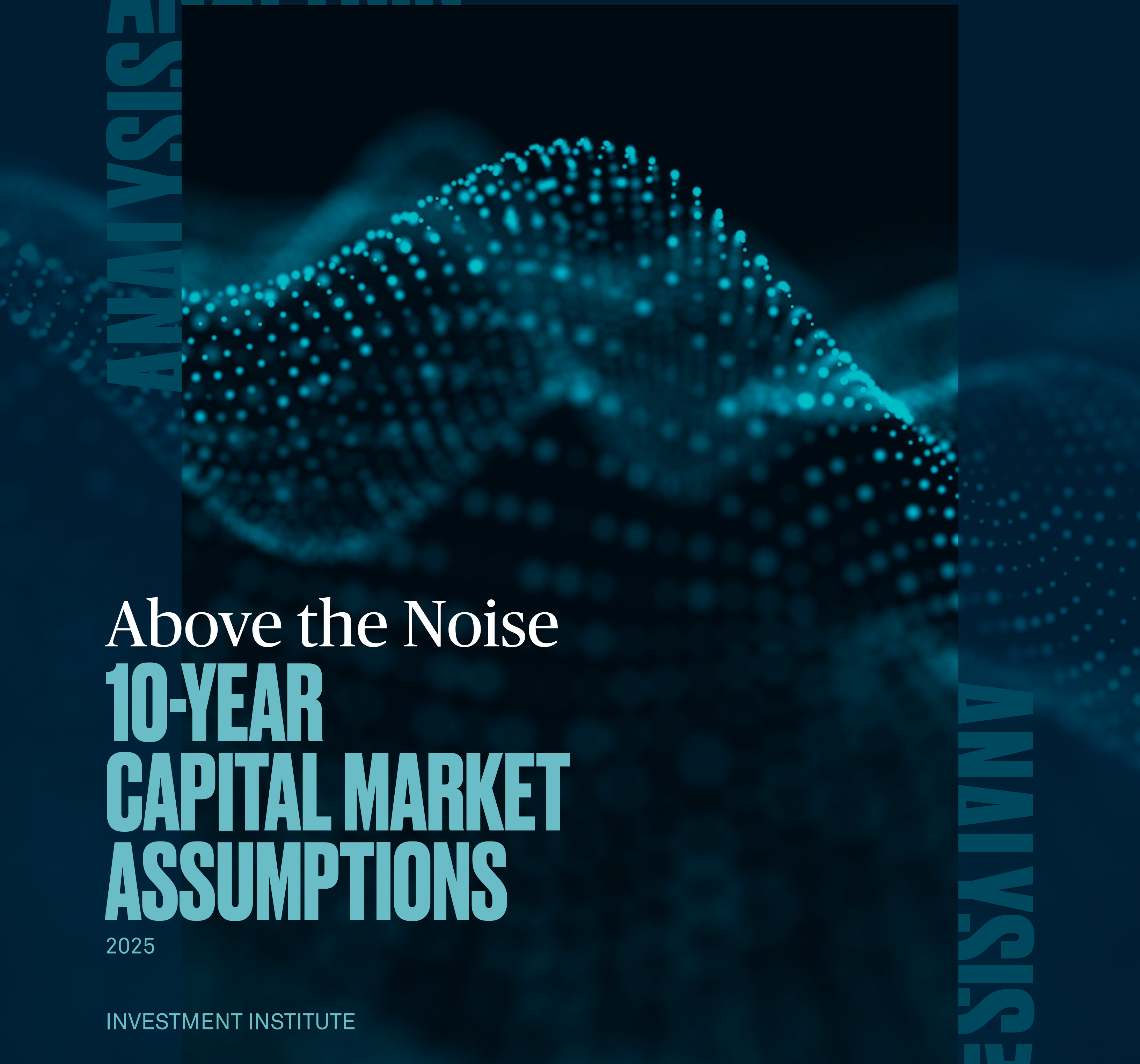


# Above the Noise

# 10-YEAR CAPITAL MARKET ASSUMPTIONS

2025

INVESTMENT INSTITUTE

# CONTENTS

Annually, the BNY Investment Institute develops capital market assumptions for approximately 50 asset classes spanning global markets. The assumptions are based on a 10-year investment horizon and are available in terms of the US dollar, British pound, Japanese yen, and euro. Our assumptions are meant to guide investors in developing long-term strategic asset allocations.

# OVERVIEW

So far in 2024, we have enjoyed healthy equity performance as markets successfully navigated a directional shift in monetary policy. The battle between central banks and inflation has reached its inflection point; inflation is now seemingly on the retreat at the expense of cooling the global economy. As we look ahead to 2025, the stage is set for a series of additional rate cuts, looser financial conditions, and the launch of a new phase of growth.

We anticipate continued macroeconomic uncertainty in 2025. The key question is whether markets will perceive future rate cuts as stabilizing actions or emergency measures. If the US Federal Reserve (Fed) delays action, the lagged effects of tighter conditions and political instability could pressure the US economy into a shallow recession. Nonetheless, our base case is that the US economy will slow to below-trend growth while avoiding outright recession as inflation declines to target levels. We may also see labor productivity accelerate from hastening the adoption of artificial intelligence (AI), propping up revenues and keeping corporate margins healthy. Taking everything into account, 2025 is expected to be a transitional year for the economy with potential opportunities for investors.

# KEY TAKEAWAYS

- Businesses that integrate AI early are more likely to increase their profitability through higher worker productivity. Our assumptions reflect **higher earnings growth in US equity markets** as the US is likely to be the most rapid adopter of innovative AI technology.
- As the easing cycle progresses, the opportunity to **lengthen duration** is fading. We forecast US Treasury bills to earn a 1.1% real return over the next decade, while US Treasury markets are projected to achieve 2.2%.
- For US investors, we anticipate the highest fixed income returns will come from domestic bond allocations. We expect international allocations to earn higher returns when their currency exposure is hedged. We think investors should consider **hedging international bond allocations** this year to help maximize risk-adjusted returns.
- The latest market fluctuations underscore the importance of diversified portfolios in withstanding market volatility. We believe **alternatives may offer more diversification** if the correlation between stocks and bonds remains elevated.

## EXHIBIT 01

2025 vs. 2024
Capital Market Return Assumptions

| | | Expected Return 2025 | Expected Return 2024 | Standard Deviation 2025 | |
|---|---|---|---|---|---|
| EQUITY | We anticipate a modest improvement in equity earnings growth as the adoption of AI enhances worker productivity and improves corporate profitability. | 7.5% | 7.4% | 16.2% | US Equity |
| | | 6.7% | 6.3% | 16.3% | Non-US Developed |
| | | 7.7% | 7.3% | 18.7% | Emerging Markets |
| FIXED INCOME | The current level of yields, combined with the global trajectory of monetary policy, enhances the attractiveness of fixed income markets at this entry point. | 4.8% | 4.8% | 5.1% | US Aggregate |
| | | 6.0% | 5.8% | 8.4% | US High Yield |
| | | 3.2% | 2.5% | 8.3% | Global Agg. Ex-US |
| | | 4.0% | 2.9% | 9.0% | EM Local Currency |
| ALTERNATIVES | Alternative asset class expected returns are in line with publicly traded markets on a risk-adjusted basis with additional return opportunities for alpha and compensation for illiquidity. | 4.5% | 5.0% | 4.6% | Absolute Return |
| | | 5.3% | 5.5% | 6.3% | Hedge Funds |
| | | 9.7% | 8.8% | 20.1% | US Private Equity |

Source: BNY Mellon Advisors, Inc. (BNY Advisors) as of November 2024.

# 01

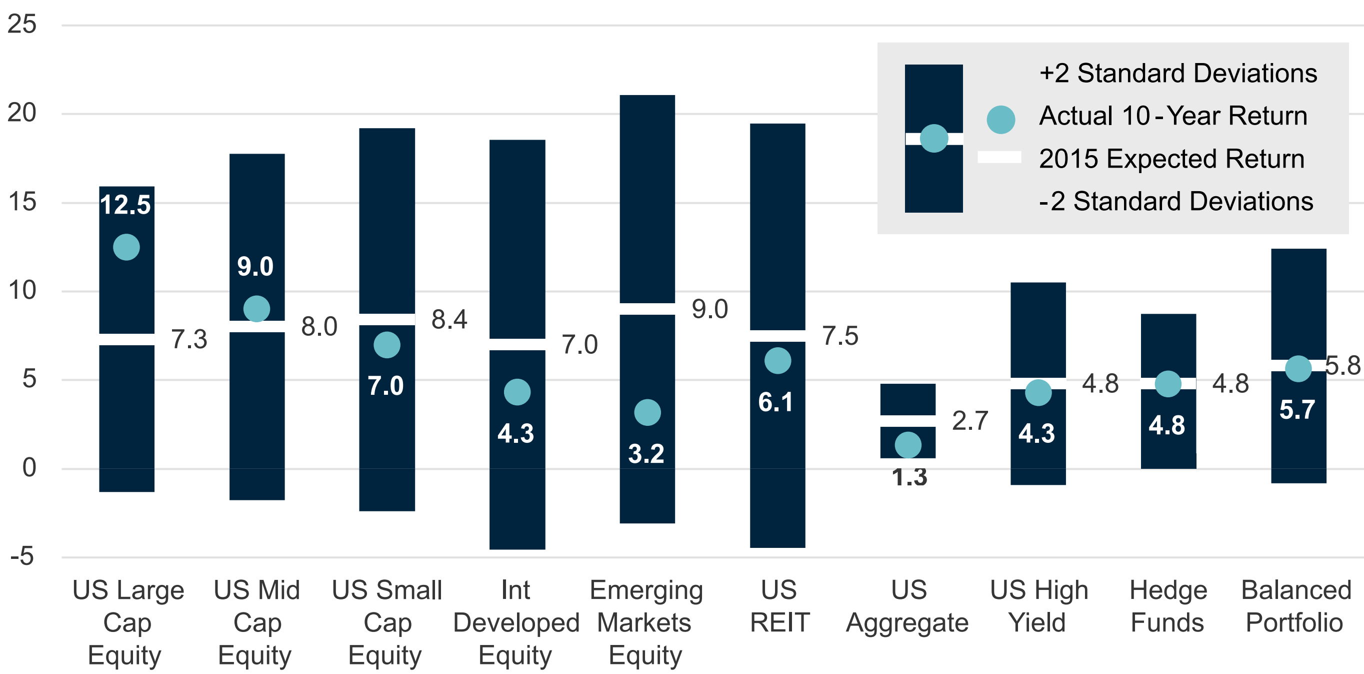
# A TIME-TESTED APPROACH THAT APPROXIMATES REAL WORLD RESULTS

For years, BNY has developed capital market assumptions to assist our clients in designing their long-term asset allocations. We believe it is essential to compare forward-looking return expectations against actual market returns. We consistently review and assess the accuracy of our assumptions to refine and enhance our methodology. Evaluating our 10-year assumptions from 2015 reveals that our expectations for US large-cap equities were too low, while mid- and small-cap equities were approximately in line. Projections for international and emerging market equities were overly optimistic, and fixed income expectations were slightly too high.

While we explore the root causes of these deviations, we should highlight the accuracy of the projection for a hypothetical strategic asset allocation (SAA), shown at the far right of the Exhibit. The accuracy of the SAA's assumption was only surpassed by one asset class and demonstrates the value of a balanced asset allocation. Accurately forecasting a 10-year return for any market is beyond challenging, but the return of a well-diversified portfolio has proven to be more predictable over the long term. We believe this result highlights the importance of our assumptions in their application to portfolio construction.

## EXHIBIT TTA1

### 2015 Capital Market Assumptions vs. Actual 10-Year Returns



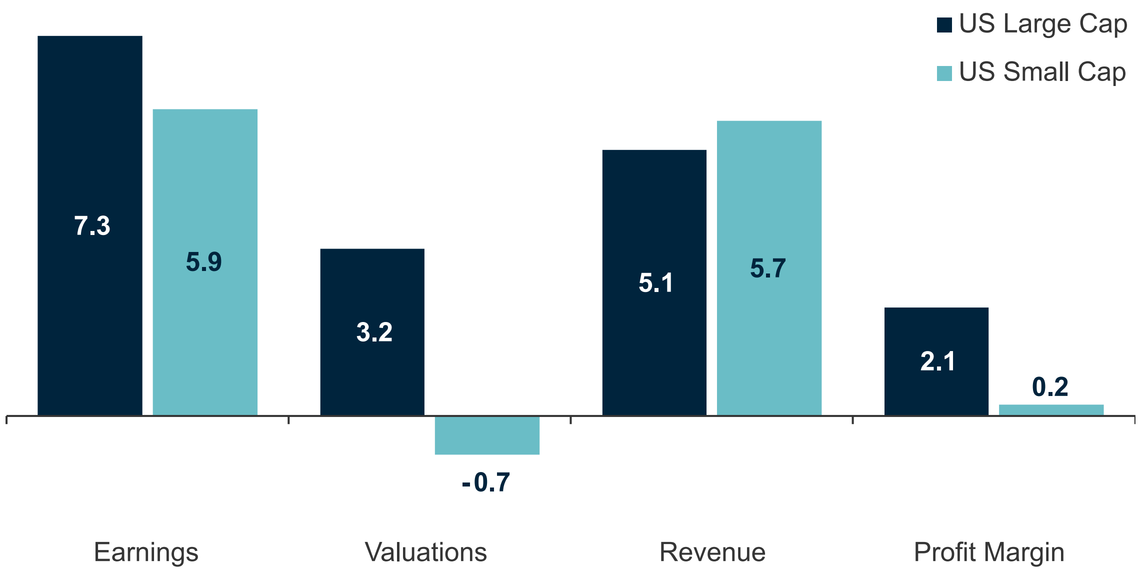

Sources: BNY Advisors, Bloomberg. Data as of June 30, 2024.

Note: Strategic Asset Allocation represents a hypothetical portfolio with weights of 20% US Large Cap Equity, 7% US Mid Cap Equity, 3% US Small Cap Equity, 16% International Developed Equity, 7% Emerging Markets Equity, 2% US REIT, 25% US Aggregate Fixed Income, 5% US High Yield, and 15% Hedge Funds.

In our analysis of where our forecasts deviated materially, we explored why large-cap companies have outperformed small-cap companies. We attribute their divergent performance to valuations and profitability. These factors lifted the annualized returns of large cap to over 12% but had otherwise flat impacts on small-cap equities. The strongest evidence supporting a small-cap premium is that smaller firms achieved higher revenue growth than larger ones. We see little evidence supporting the persistence of any previously mentioned trends and believe some have potential to reverse. For this year, we estimate a small-cap premium of 0.5%, which is about half the premium projected in 2015.

## EXHIBIT TTA2

### Annualized Percentage Change in US Equity Fundamentals
*2014-2024*




Sources: BNY Advisors, Bloomberg. Data as of June 30, 2024.

While international and emerging market equities underperformed expectations, realized returns fell within one standard deviation of our assumptions. Reflecting on our 2015 building block framework, our projections of inflation, dividends, and buyback yields proved the most accurate, whereas our expectations of real earnings growth did not materialize. Lower-than-expected valuations further compounded underperformance in emerging markets.

In fixed income markets, the returns of US Aggregate bonds fell short of expectations despite our accurate forecast of the US 10-year Treasury yield. The ending yield was 4.4%, just 0.1% above our projection. The primary reason for the underperformance of US Aggregate bonds is due to a much later rise in yields than anticipated. This caused bonds to be repriced later than expected and led to less income over time. US High Yield bonds fell below expectations for similar reasons, though shorter duration helped mitigate repricing losses.

# 02 THEMES TO WATCH FOR THE NEXT DECADE

We acknowledge that a multitude of short- and long-term themes and trends will shape capital markets in the coming decade. The extent to which these themes affect our investments is inherently uncertain and underscores the importance of a well-designed portfolio strategy. Here, we highlight the key themes we believe will have a significant influence on markets over the next 10 years.

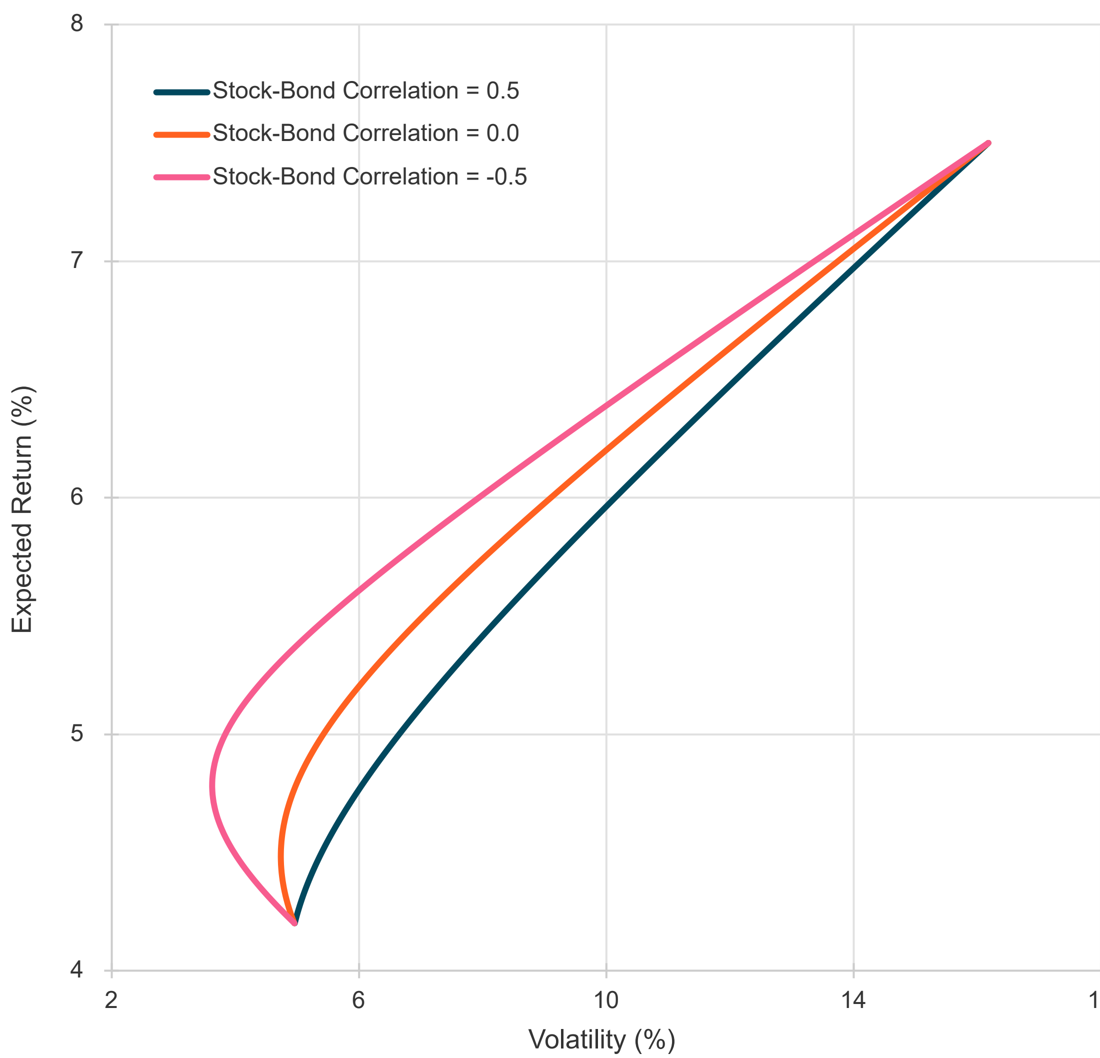
# THEMES

# STOCK-BOND CORRELATION

Diversification is a core principle of portfolio management reflected through our correlation assumptions. Therefore, the correlation between stocks and bonds should be carefully studied when designing a strategic asset allocation. In Exhibit SBC1, we display the efficient frontier of a two-asset portfolio consisting of US equities and US Treasuries under multiple correlation assumptions. The key finding is that a positive correlation increases the volatility of all portfolios, but more worryingly, it raises the volatility of defensive portfolios more than aggressive ones. We assume a slightly positive level for the long-term stock-bond correlation and we think investors with low-to-medium risk tolerances should consider allocating a greater share of their portfolios to alternative asset classes for additional diversification.

## EXHIBIT SBC1

### Efficient Frontier Under Multiple Stock-Bond Correlation (SBC) Assumptions




Source: BNY Advisors as of November 2024.

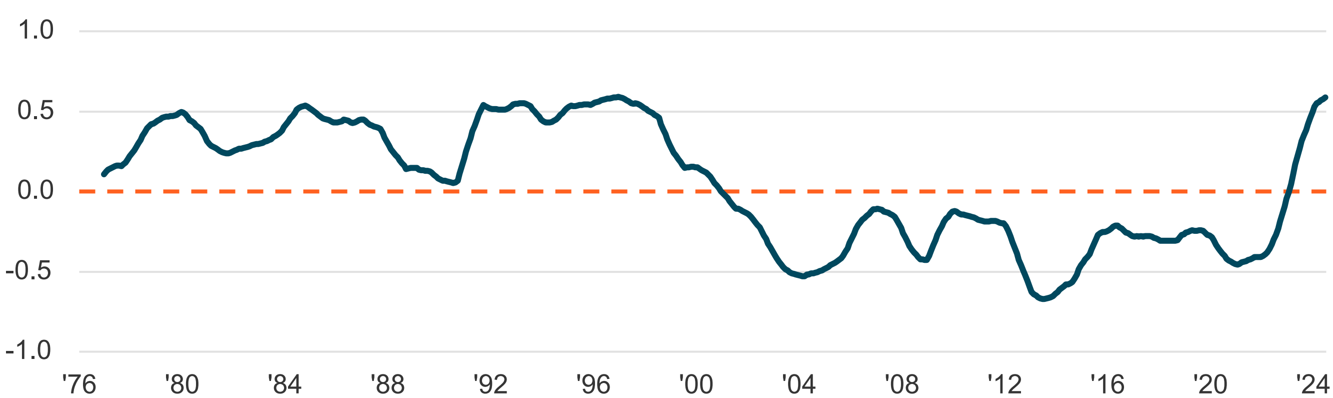
A negative stock-bond correlation has benefited traditional portfolios for over 20 years, but as shown in Exhibit SBC2, this trend has sharply reversed. The exhibit traces the correlation from the 1970s and suggests that a reasonable assumption would be approximately zero, although few periods reflect this outcome. A helpful way to understand changes in the stock-bond correlation is to examine the influence of supply and demand shocks on growth, inflation, monetary policy, and their subsequent impacts on financial markets. The following section will provide a brief outline of what economic shocks mean for markets, particularly how they shape the co-movement between stocks, bonds, and alternative asset classes. We have chosen to include growth and inflation alongside our asset class forecasts this year; Exhibit SBC3 provides a subset of their assumptions.

A demand shock refers to an unexpected change in the demand for goods and services in the economy. A positive demand shock occurs when demand increases unexpectedly (e.g., due to fiscal policy), typically resulting in greater utilization of resources and, in turn, greater price pressures. Equity markets rise in this environment as earnings expectations are revised higher, while bond prices fall, in line with expectations for more restrictive monetary policy. The opposite holds true in a negative demand shock, where demand and inflation fall together, weighing on equity markets but lifting bond prices. This dynamic, where growth and inflation move in similar directions, is a fundamental trait of demand shocks and leads to negatively correlated equity and bond markets. As demand shocks were the prevalent driver of the global economy from 2000 through 2022, the stock-bond correlation was consistently negative over the period.

A supply shock refers to an unexpected change in the supply of goods and services in the economy and is associated with growth and inflation moving in opposite directions. A negative supply shock occurs when there is a decrease in the availability of goods or services in the economy, the decline in output then shocks inflation sharply higher. Growth is further stifled if tighter monetary policy is required to reduce inflation. Both equity and bond markets sell off in this environment, as they did in 2022, causing a nasty correlation on the way down. 2022 was the year when the stock-bond correlation began a rapid ascension upward, driven by significant supply chain challenges related to semiconductor shortages, China's zero-Covid policy, and the Russia-Ukraine conflict's impact on energy and agricultural markets. Inflation rose to levels not seen since the 1980s and leading economic indicators fell sharply over the year.

## EXHIBIT SBC2

### Rolling 3-Year S&P 500®/US Treasury Correlation




Sources: BNY Advisors, Bloomberg. Data as of June 30, 2024.

Note: 12-month moving average of a rolling 3-year correlation (S&P 500® Index vs. Bloomberg US Treasury Index).

When economies experience supply shocks, alternative markets have historically served as a ballast to portfolios. Assets that hedge against supply shocks are those with a positive correlation to inflation, offering diversification and inflation mitigation at just the moment when the stock-bond correlation rises. During 2022, commodities and natural resources were among the few asset classes to achieve positive returns, while infrastructure allocations remained flat. In contrast, both equity and bond markets declined by over 10%. We expect these alternative asset classes to play larger roles in diversified asset allocations over the next decade due to their defensive inflation sensitivity.

We expect the stock-bond correlation to average slightly above zero over the next ten years, contrasting the two decades before Covid. In our view, as the world undergoes several structural transitions — ranging from the AI-related technological disruption and its effect on productivity, decarbonization and its impact on energy markets, geopolitics and the reconfiguration of supply chains, to demographics and a decline in the global labor force — the supply side of the global economy will become more volatile, with supply shocks becoming more frequent.

## EXHIBIT SBC3

### Asset Class Correlations to Growth and Inflation

| | US Growth | US Inflation |
|---|---|---|
| US Equity | ↑ 0.19 | ↓ -0.01 |
| US Treasury | ↓ -0.11 | ↓ -0.32 |
| Commodities | ↑ 0.29 | ↑ 0.27 |
| Global Natural Resources Equity | ↑ 0.15 | ↑ 0.11 |
| Global Listed Infrastructure | ↑ 0.23 | ↑ 0.04 |
| Absolute Return | ↑ 0.33 | ↑ 0.09 |
| Hedge Funds | ↑ 0.32 | ↑ 0.06 |

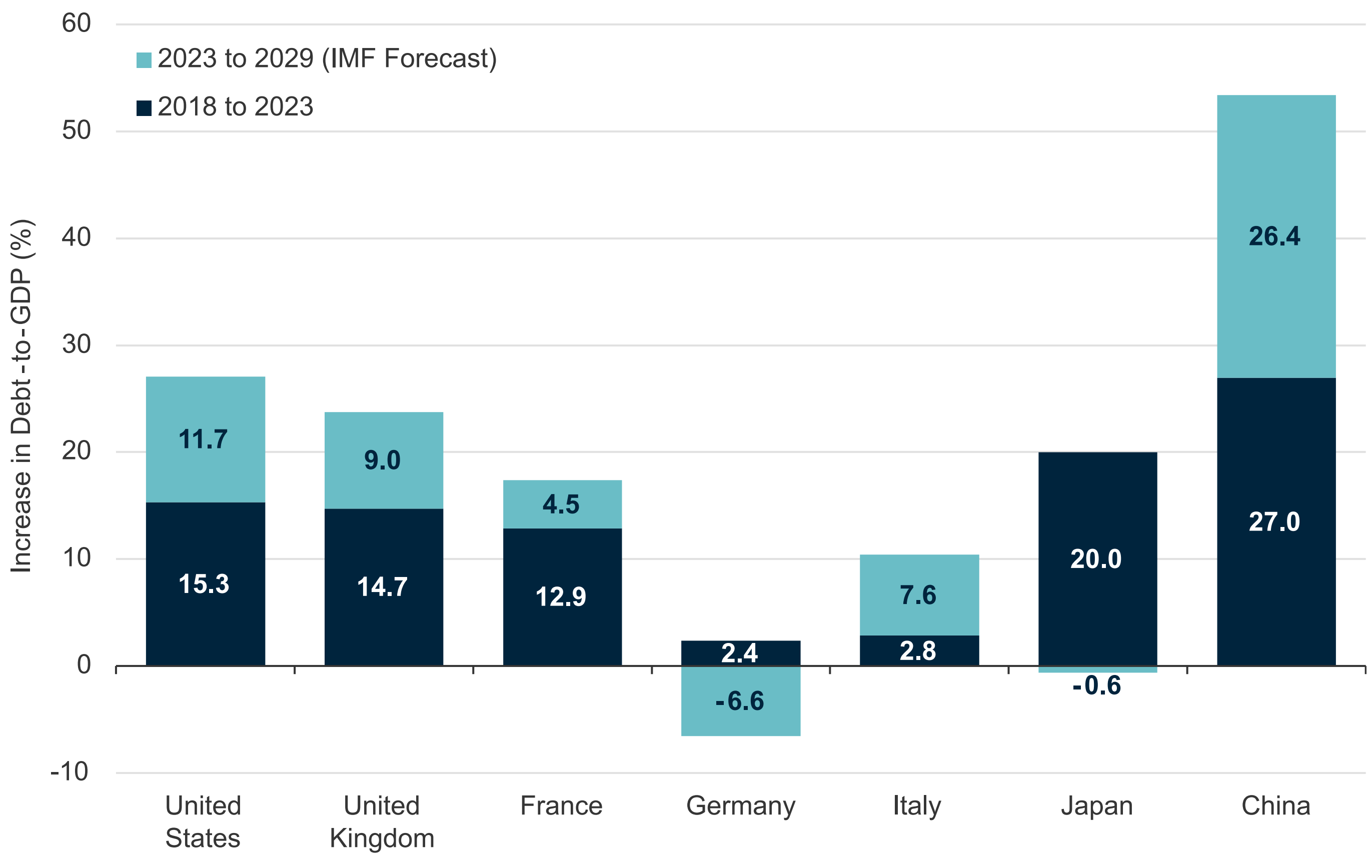
Sources: BNY Advisors, US Conference Board, US Bureau of Labor Statistics, Bloomberg. Data as of June 30, 2024.

In addition, we see the potential for an increase in the credit risk of fixed income assets, which would also push up on the correlation with equity markets. Global debt-to-gross domestic product (GDP) ratios have been deteriorating in most economies, as shown in Exhibit SBC4, and the International Monetary Fund (IMF) projects a continued worsening of debt sustainability. In the absence of large fiscal adjustments, we may see greater bond market activism steepening yield curves globally, pushing both the volatility of sovereign bond markets and their correlation to equity markets higher.

The debt burden of the United States was brought somewhat into question late in 2023 as Fitch Ratings issued the second downgrade of United States debt, pushing Treasury yields to decade highs. The rating cited concerns over the deteriorating fiscal outlook and a governance structure that prevents the country from addressing medium-term issues such as Social Security and rising health care costs. Further bond market activism was seen in France, as spreads of French OATs[1] to German Bunds widened in June 2024 following the country's snap elections. Fear that the second largest economy in Europe would be unable to adhere to the fiscal rules of the European Union have now become top of mind for investors.

## EXHIBIT SBC4

### Debt Burdens Are Growing Globally




Sources: BNY Advisors, IMF Global Debt Database, Bloomberg. Data as of November 30, 2024.

# THE SECOND WAVE OF ARTIFICIAL INTELLIGENCE

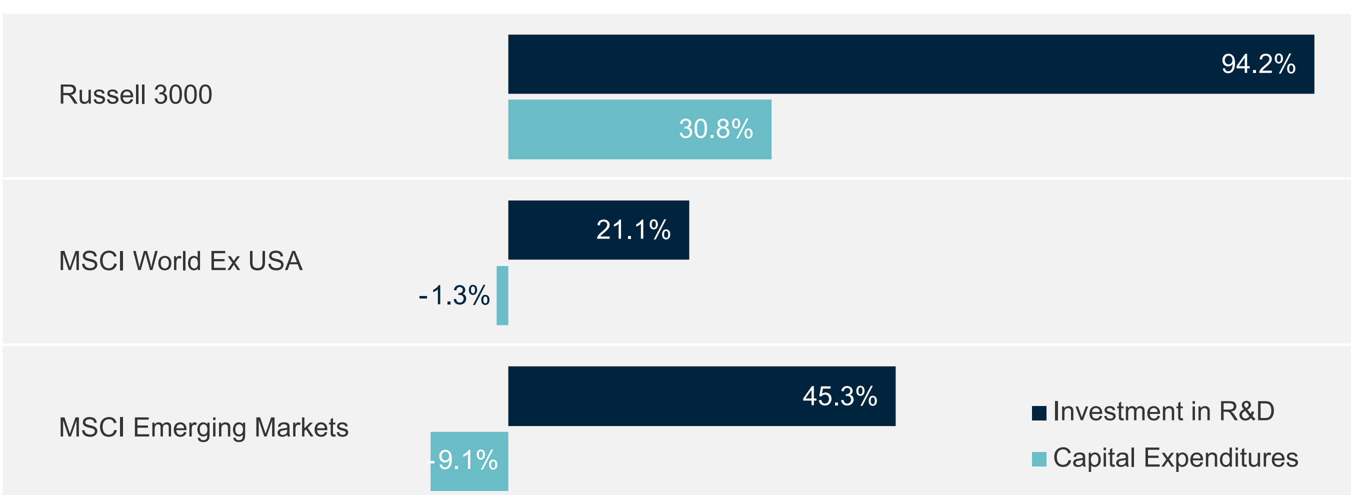
AI and Generative AI in particular, could represent an important technological innovation for the global economy.

Generative AI can be used in several use cases across almost every industry as it can create new, original outputs (e.g., content) based on patterns it learned during its training. It's a General-Purpose Technology (GPT). Like steam internal combustion engines, electrification and computers, it could fundamentally reshape industrial organization and the world of work; and stimulates the development of complementary technologies. It is extremely hard to predict exactly how AI will develop, but we think it will have a large, direct impact on a range of industries and job functions. AI is both labor saving (e.g., autonomous vehicles), and labor augmenting (e.g., demand prediction). In extremes, it could be a viable substitute for all current human cognitive functions.

Artificial intelligence (and robotization — i.e., machines controlled by computers) are not "new" innovations, so why should they start lifting productivity growth soon? Innovations can be subject to a J-curve before they boost productivity, where its impact is absent or low for some time but eventually accelerates exponentially. At the macro level, the J-curve framework is consistent with the marked slowdown in productivity growth over the previous decade but now points toward a surge in productivity over the near horizon. Further, the adoption of artificial intelligence must be accompanied by data centers and semiconductor plants to support its global use. Exhibit AI1 shows the percentage change in investments for research and development (R&D) and capital expenditures (capex), highlighting US leadership and facilitating earlier AI adoption compared to other countries.

## EXHIBIT AI1

Percent Change in Capex & R&D from 2018 to 2023




Sources: BNY Advisors, Bloomberg. Data as of November 30, 2024.

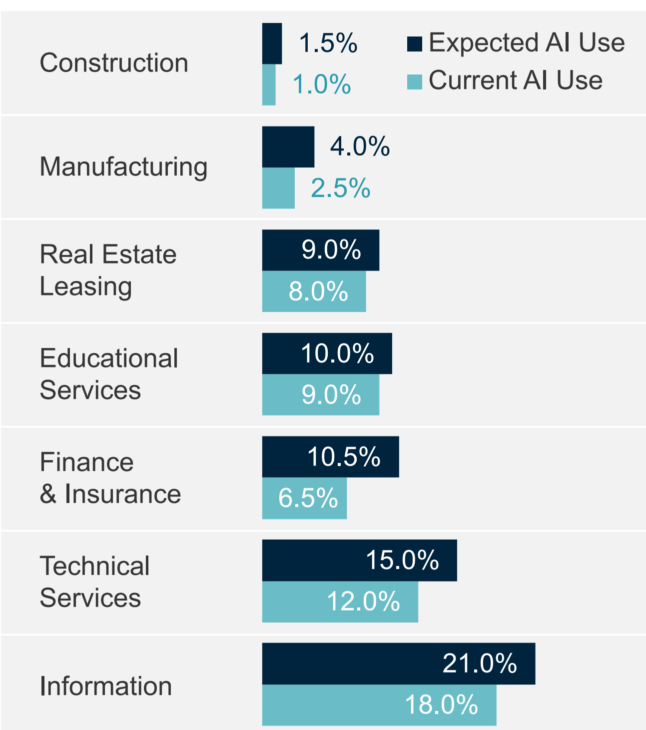
History has demonstrated that technological revolutions come in two broad phases. During the first phase, technology is developed and rolled out to the rest of the economy, with benefits mostly accruing to firms that are directly involved in related activities. The next phase is adoption, where the technology then spreads into the economy and drives productivity growth, benefiting firms not directly involved with the technology's development.

Artificial intelligence has been around for some time and is now transitioning toward the second phase. We present Exhibits AI2 and AI3 to highlight recent adoption trends within US business. It is unsurprising to find technology firms adopting AI so quickly, but we note the broader theme — AI adoption and use cases heavily favor cognitive labor compared to physical labor. AI technology is now assisting marketing specialists with content generation and virtual chat agents are helping developers accelerate software development cycles.

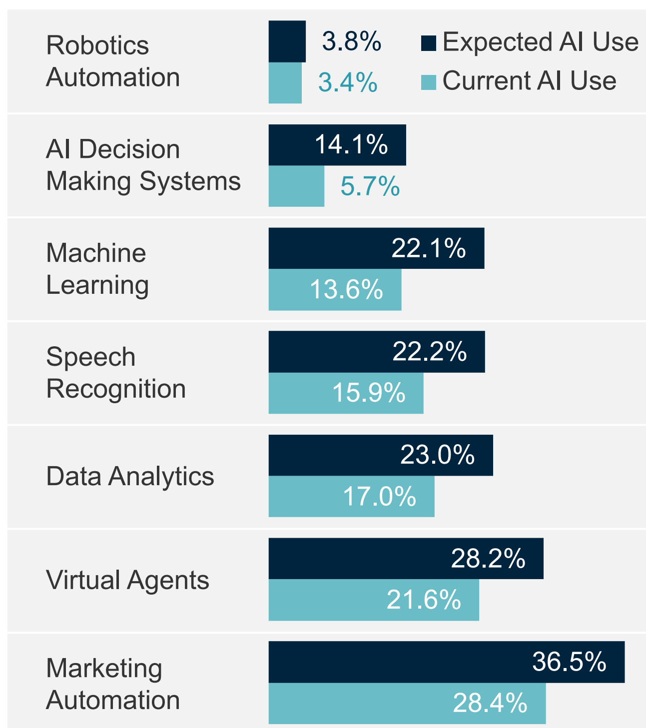
Further analysis reveals that smaller firms are adopting artificial intelligence faster than larger ones. Additionally, smaller firms who adopt AI appear to be associated with higher levels of revenue growth. Adoption rates are still low in the construction and manufacturing sectors. We think this is because implementing robotics automation demands significant capital investment, with potential for consumers to benefit from the related cost savings rather than firms. We anticipate AI's manifestation within the economy over the next decade but, considering recent adoption rates, not for at least another two to three years.

## EXHIBIT AI2 & AI3

### Reported Use Case of AI Within Business




### Reported AI Use Cases




Sources: BNY Advisors as of November 2024. US Census Bureau. Business Trends Outlook Survey, Artificial Intelligence Supplement.

## Whether AI will be beneficial or disruptive for any industry, will depend on (1) the degree to which AI is productivity-enhancing and (2) the new competitive dynamics created by the spread of AI.

Industries where the impact of AI will be significant and competitive dynamics high are most prone to disruption. Prices and profit margins are likely to decline and added value will be progressively captured by the consumer. In contrast, industries where the impact of AI on productivity will be high and competitive dynamics low are expected to benefit the most, as additional value created is retained by the firm. We illustrate these dynamics within Exhibit AI4. It is important to note that a fall in prices could lead to a rise in demand, lifting revenues. Thus, even if profit margins decline, corporate earnings may still benefit from disruptive technology.[2]

As noted, we have adjusted our assumptions of equity earnings growth according to this thematic report. Our adjustments considered which regional markets have the largest potential for value creation, according to exhibit AI4, and how quickly AI is likely to be adopted within these regions. In aggregate, these adjustments provide a boost to corporate earnings through improved profit margins.

We anticipate developed markets will have more opportunities for value creation due to higher exposure to software and pharmaceuticals industries. Further, innovative technology is likely to be more accessible within developed markets given higher investments in R&D and infrastructure investment. Dynamic economies, such as the United States, are particularly likely to benefit from AI due to higher adoption rates within innovation hubs. Data privacy and content regulations in Europe may hinder AI adoption. We do not expect emerging markets to benefit as greatly over the next 10 years given the lower readiness to adopt and diffuse AI in the economy, and the higher share of GDP that is driven by sectors where manual tasks are prevalent.

### EXHIBIT AI4
AI Dynamics

| PRODUCTIVITY IMPACT | INDUSTRY COMPETITION: HIGH | INDUSTRY COMPETITION: LOW |
|---|---|---|
| HIGH | Prone to Disruption (Consumer Captured) | Poised to Benefit (Firm Capture) |
| LOW | Low Value Creation (Consumer Captured) | Minimal Impact |

Source: BNY Advisors as of November 2024.

# DEGLOBALIZING EMERGING MARKETS

Investors have long assumed that emerging market equities offer a premium over developed markets, predicated on higher expectations of real earnings growth. However, over the past decade, this realized premium has been on a steady decline. In 2015, our assumption for emerging market real earnings growth was 4.2%. In the year at hand, the same assumption has dwindled to 3.6%. Nevertheless, investable emerging market economies have managed to avoid any significant banking or currency crisis despite trade conflicts, pandemics and supply chain blockages. Their resilience speaks to the improving flexibility of emerging market economies, and as such, investors should continue to look to emerging markets for their diversified growth opportunities.

China's economic landscape is one of the main reasons for declining growth expectations within emerging markets. In the last five years, China's influence on global debt growth has been substantial, leading to a balance sheet slowdown, which has dragged on its corporations and households. The International Monetary Fund (IMF) forecasts the country's debt will increase to 110% of GDP by 2029, and we doubt China can resolve this issue on its current growth trajectory. Policymakers must closely monitor debt risk while incentivizing consumption. We anticipate China will continue to invest in advanced manufacturing and shift more basic industrial production to peripheral emerging market economies to ascend the value chain, although this strategy involves significant short-term costs worsening debt sustainability. Furthermore, increasing protectionism, showcased by the US CHIPS and Science Act of 2022 and the European Chips Act, complicate China's position in the global semiconductor market.

In contrast to China's challenges, India is a bright spot in the emerging market landscape.

In contrast to China's challenges, India is a bright spot in the emerging market landscape. Prime Minister Narendra Modi has secured a third term, and we anticipate his continued reinforcement of the core drivers behind his economic strategy. His administration is expected to maintain a strong focus on sound macroeconomic management, boosting investment and infrastructure. Modi's government has consistently prioritized infrastructure and manufacturing development, which are likely to remain central themes. We expect US-India relationships to remain strong, with both countries focusing on strategic cooperation and economic growth.

# EXHIBIT DG1

## Local Equity Market 5-Year Correlation Matrix and Changes

| | 5-Year Change | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **5-Year Correlation** | United States | United Kingdom | Eurozone | Japan | China | India | Taiwan | South Korea | Brazil | Chile | Mexico |
| United States | | ↓ -0.07 | → 0.01 | → 0.01 | ↓ -0.18 | ↑ 0.19 | → 0.00 | ↑ 0.11 | ↑ 0.20 | ↑ 0.06 | → -0.01 |
| United Kingdom | 0.64 | | ↑ 0.09 | ↑ 0.08 | ↓ -0.23 | ↑ 0.07 | ↓ -0.08 | ↑ 0.08 | ↑ 0.20 | ↓ -0.07 | → 0.00 |
| Eurozone | 0.72 | 0.87 | | → -0.02 | ↓ -0.16 | ↑ 0.10 | → -0.02 | ↑ 0.09 | ↑ 0.17 | → -0.01 | → 0.02 |
| Japan | 0.60 | 0.64 | 0.67 | | ↓ -0.23 | ↑ 0.05 | → -0.01 | → 0.04 | ↑ 0.20 | → 0.00 | → -0.02 |
| China | 0.41 | 0.35 | 0.40 | 0.33 | | ↓ -0.18 | ↓ -0.23 | ↓ -0.24 | ↓ -0.08 | ↓ -0.17 | ↓ -0.18 |
| India | 0.60 | 0.55 | 0.60 | 0.51 | 0.36 | | ↑ 0.06 | ↑ 0.09 | ↑ 0.25 | ↑ 0.06 | ↑ 0.09 |
| Taiwan | 0.57 | 0.45 | 0.52 | 0.52 | 0.47 | 0.55 | | → 0.03 | → 0.01 | ↓ -0.07 | ↓ -0.11 |
| South Korea | 0.68 | 0.64 | 0.67 | 0.64 | 0.44 | 0.58 | 0.73 | | ↑ 0.20 | ↑ 0.10 | ↑ 0.07 |
| Brazil | 0.62 | 0.62 | 0.57 | 0.49 | 0.34 | 0.59 | 0.41 | 0.57 | | → 0.01 | ↑ 0.08 |
| Chile | 0.49 | 0.44 | 0.46 | 0.32 | 0.29 | 0.40 | 0.39 | 0.50 | 0.51 | | → -0.03 |
| Mexico | 0.56 | 0.59 | 0.60 | 0.37 | 0.31 | 0.49 | 0.42 | 0.59 | 0.59 | 0.52 | |

Sources: BNY Advisors, Bloomberg. Data as of June 30, 2024.

Allocators can examine shifting correlations to find signs of global reshoring initiatives. Exhibit DG1 demonstrates the shifts in correlations of several local equity markets when excluding the effects of currency. The lower left triangle reflects the most recent observations while the upper right triangle reflects five-year changes. The most notable change is the universal decline of Chinese equities relative to both developed and emerging markets, indicating its declining sensitivity to global economic events (i.e., decoupling). Conversely, countries which are becoming more integrated with global supply chains, such as India, South Korea, and Brazil, show increased correlations. Investors may wish to consider how these trends impact their allocations of developed and emerging market equities within portfolios.

# SHIFTING GEARS IN PRIVATE CREDIT

Private investment markets have been effectively allocating startup capital and optimizing the capital structures of young firms for decades. We expect this industry to continue pushing disruptive technology to the forefront of our economy and provide fuel for productivity growth.

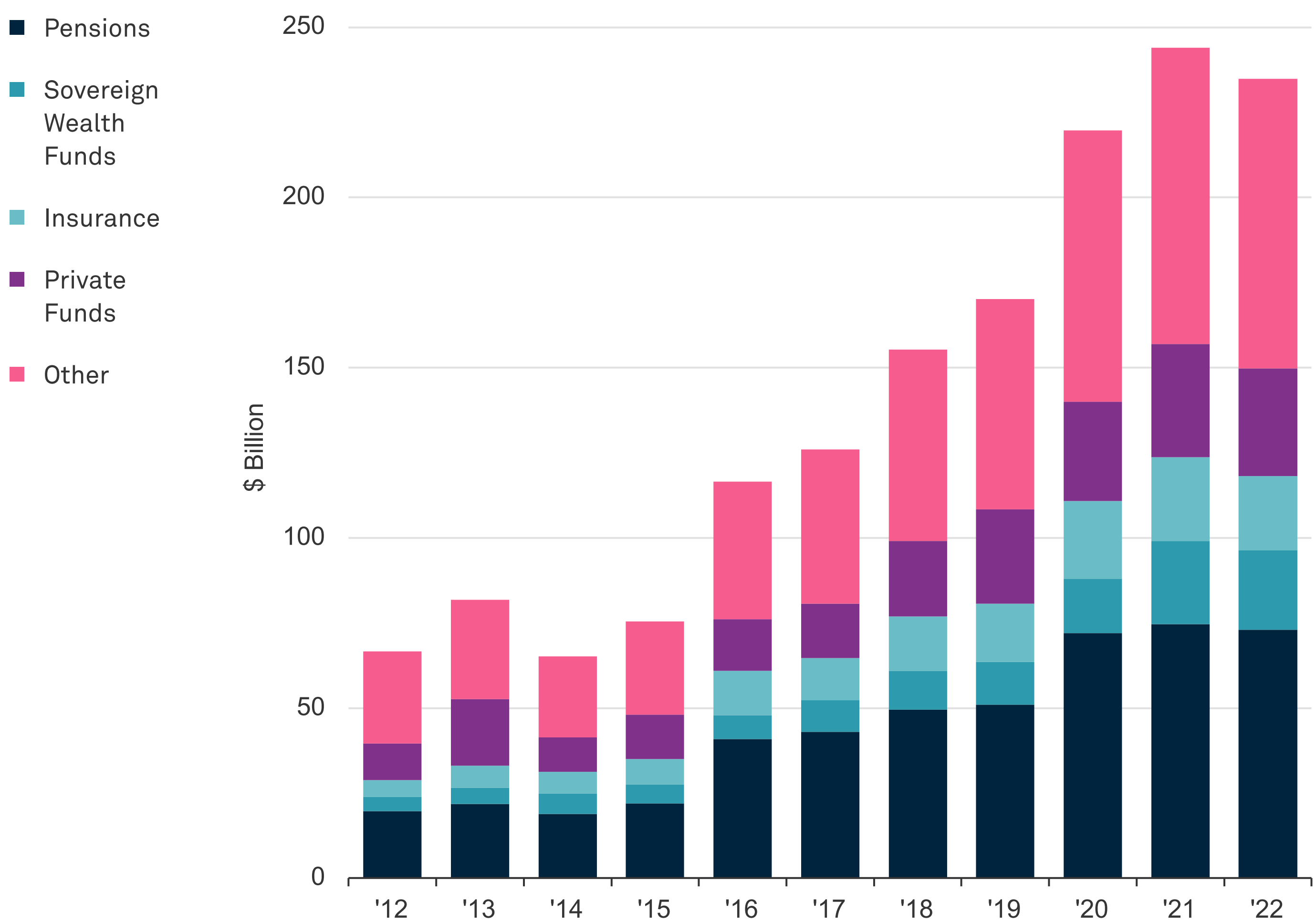
Looking ahead, we expect sustained expansion in private markets, with a notable emphasis on the private debt sector. Private debt markets, which include direct lending and syndicated loans, have experienced several consecutive years of phenomenally successful fundraising and are transforming a market traditionally dominated by bank lenders. We expect this shift to continue, but cyclical headwinds from a buildup of dry powder and falling interest rates may push private credit yields lower.

The main structural force pushing traditional bank lenders out of the industry and toward private lenders is the inherent mismatch between a bank's sudden liquidity needs and illiquid investments. Private credit funds maintain longer time horizons with minimal cash needs by placing lock-up periods on investor capital; this allows managers to offer more customized loans, which can assist borrowers in preventing default. These features are useful during periods of prolonged economic distress and allow businesses to quickly issue new debt by deferring near-term interest payments. Additionally, private credit has seen growth in its collateralized loan obligations (CLO) markets, whose complex structure of debt tranches offer a variety of risk and return profiles that investors may not otherwise find in public markets. Recently formed CLO exchange-traded funds (ETFs) have been attracting attention as they make historically inaccessible private opportunities available to the wider investing public. We anticipate the long-term back drop of private credit to remain in place and its continued growth as investors seek opportunities for higher yields and diversification.

We acknowledge the long-term momentum of the industry but anticipate two cyclical forces contributing to near term headwinds: (1) the global easing cycle and (2) growing amounts of dry powder. Easing cycles tilt investor allocations toward longer-duration bonds and suppress private credit fundraising as the underlying loans are issued as floating rate debt. This feature was a strong tailwind for fundraising in 2021 and 2022 due to floating rate debt's resilience to rising rates, but the trajectory of interest rates for 2025 leads us to expect lower yields, and thus lower performance, from private credit investments. According to Exhibit PC1, the Federal Reserve estimates dry powder levels of private credit have risen to $250 billion. The increase in dry powder indicates a growing supply of credit relative to demand, so we expect spreads between public and private market yields to decline as credit managers compete for opportunities to deploy capital. Further, this competition during a period of weaker economic growth and low demand for credit could pressure private credit funds to lower their credit standards to achieve internal rate of return targets, increasing default rates above historical norms.

## EXHIBIT PC1

### Estimated Growth of Dry Powder by Investor Type




Sources: Degerli, Ahmet, and Phillip Monin (2024). "Private Credit Growth and Monetary Policy Transmission," Fed's Notes. BNY Advisors. Data as of December 31, 2022.

Note: Other includes individuals, endowments, funds-of-funds, the manager's stake, and other types of investors.

# CLIMATE RISK & RESILIENCE

"It is imperative that we embrace innovative solutions and collaborative efforts to ensure a resilient and sustainable world for generations to come."

With 2024 on track to be the hottest year ever recorded, the urgency of addressing climate change-related risks is becoming increasingly important. Climate change presents two main types of risks: physical and transition. Physical risks, resulting from extreme weather and natural disasters such as thunderstorms, flooding, wildfires, and hurricanes, are contributing to economic losses that are growing faster than our global economy. Transition risks involve challenges associated with the global shift to a low-carbon economy, such as policy and legal risks, market risks, technology, or reputational risks. Global policymakers have made noteworthy progress, but accelerated efforts are essential to achieving the goals set out by the Paris Agreement. Scientists and academics have stated that the decade will be pivotal for our planet, as the actions we take now will determine the sustainability of our future. Organizations can seize this moment by embracing innovative solutions and collaborative efforts that embed climate-risk and resilience considerations into material decision making.

Flooding and wildfires are significantly impacting the affordability of home insurance in certain regions, which could have ripple effects on home prices and real estate markets. Some insurers are even withdrawing from high-risk areas altogether. This trend may drive climate migration from high-risk to low-risk zones. The resulting labor shortages could force companies to relocate, potentially devastating local businesses. Cities unprepared for a population exodus may struggle to invest in sustainable climate infrastructure due to reduced tax revenues. Conversely, areas receiving a population influx will need to invest in new infrastructure to support larger communities, potentially exacerbating global climate challenges.

## PROGRESS REPORT SUMMER 2024

Bipartisan Infrastructure Law & Inflation Reduction Act Funding

| | |
|---|---|
| $82.5B+ | funding opportunities announced for clean energy |
| $48.7B+ | for 1,000+ selected projects and 4,000+ formula funding awardees |
| $60B+ | of private capital in matched federal dollars for selected projects |
| $24.3B+ | in closed or conditionally committed loans |

Source: US Department of Energy.

Global policymaking will be a key driver of progress. Policymakers continue to design and implement effective climate policies, from decarbonizing transportation and improving the energy efficiency of buildings, to reducing energy emissions through carbon taxation and formalizing carbon markets.[3] Domestically, the Inflation Reduction Act of 2022 has made significant headway with more than $100 billion committed as of July 2024 toward grants, awards and other spending aimed at climate adaptation and mitigation efforts across the US.[4] This legislative effort has so far provided stability and support for renewable energy initiatives and new energy technologies, bolstering climate resilience and energy independence nationwide.

For corporations, regulatory direction and competitive drivers are compelling many to consider decarbonization pathways as a means of managing climate-related physical and transition risks. Decarbonization initiatives are enabling corporations to increase revenues and lower operating costs while reducing their climate footprint.

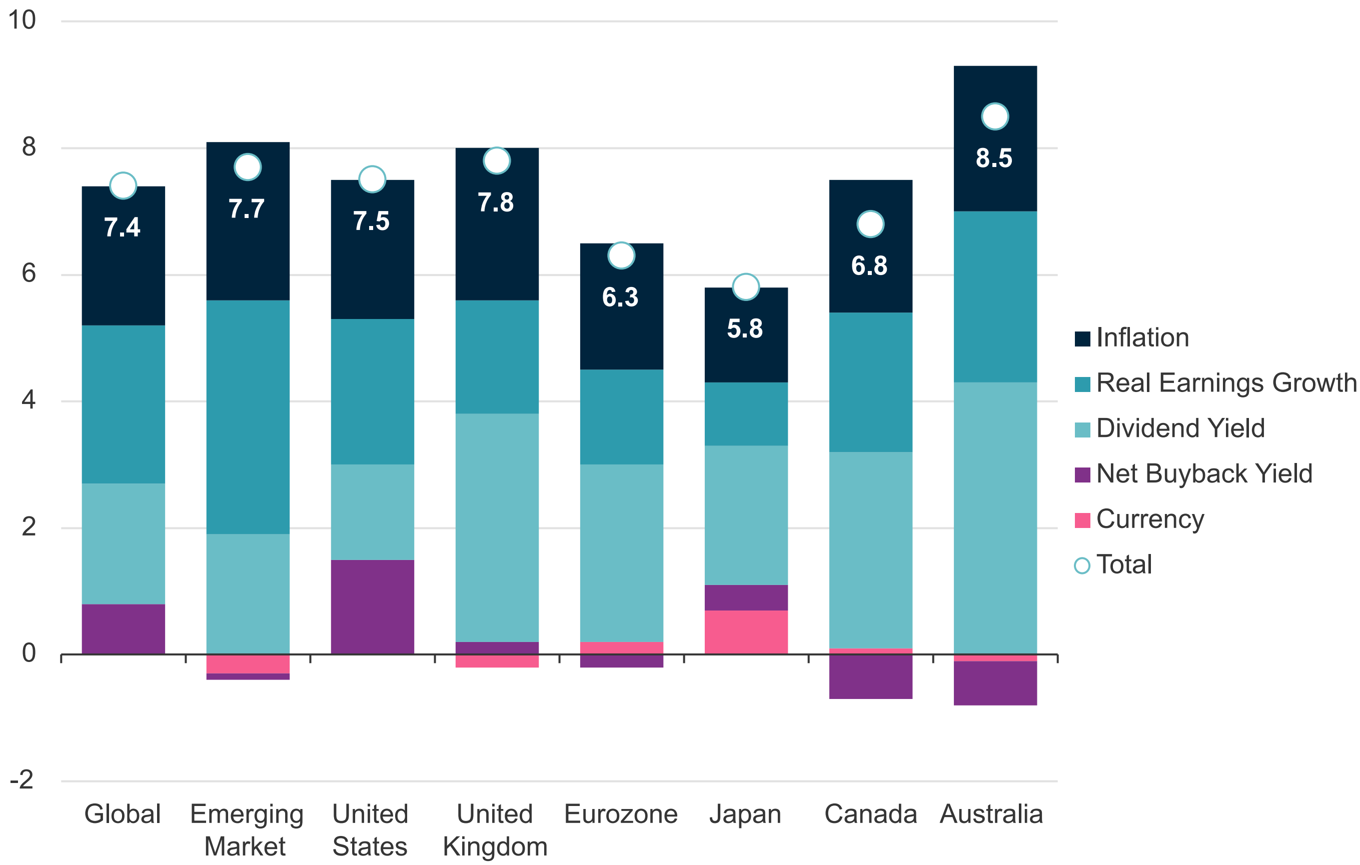
Climate change is a systemic risk and requires a systemic solution. Addressing this challenge necessitates collaboration across both the public and private sectors, placing a greater responsibility on individuals, businesses, and communities to implement climate adaptation and mitigation strategies to enhance resilience.

# 03
# EQUITY

Our equity return assumptions are developed through forecasts of earnings growth and income accumulation. Earnings growth assumptions start with 10-year projections of inflation and GDP, followed by an evaluation of relative earnings growth and valuations. Our income assumptions are set according to historical levels and consider both dividend and net buyback yields.

# EXHIBIT E1

## 10-Year Equity Market Expected Returns (Unhedged US dollar, %)




Source: BNY Advisors as of November 2024.

Exhibit E1 summarizes our current assumptions for several regional equity markets.

There are various tactics for estimating equity returns: our methodology is rooted in economic fundamentals using the formula below. The formula aligns our equity expectations with broader economic growth and evaluates whether our long-term compounded return assumptions are reasonable projections. Moreover, the building block framework can be broken down into intuitive parts, enhancing the clarity of our forward-looking views.

| Market Capitalization | = | Nominal GDP | × | Corporate Earnings Share | × | Valuations |
|---|---|---|---|---|---|---|
| | | | | ↓ | | ↓ |
| | | | | $\frac{\text{Equity Earnings}}{\text{Nominal GDP}}$ | | $\frac{\text{Market Capitalization}}{\text{Equity Earnings}}$ |

The three factors from left to right represent nominal GDP, the corporate earnings share[5] of GDP, and valuations. We combine these forecasts together to forecast a 10-year compounded return assumption. It is important to note this equation does not include returns attributable to income or net share changes, which must be included separately.

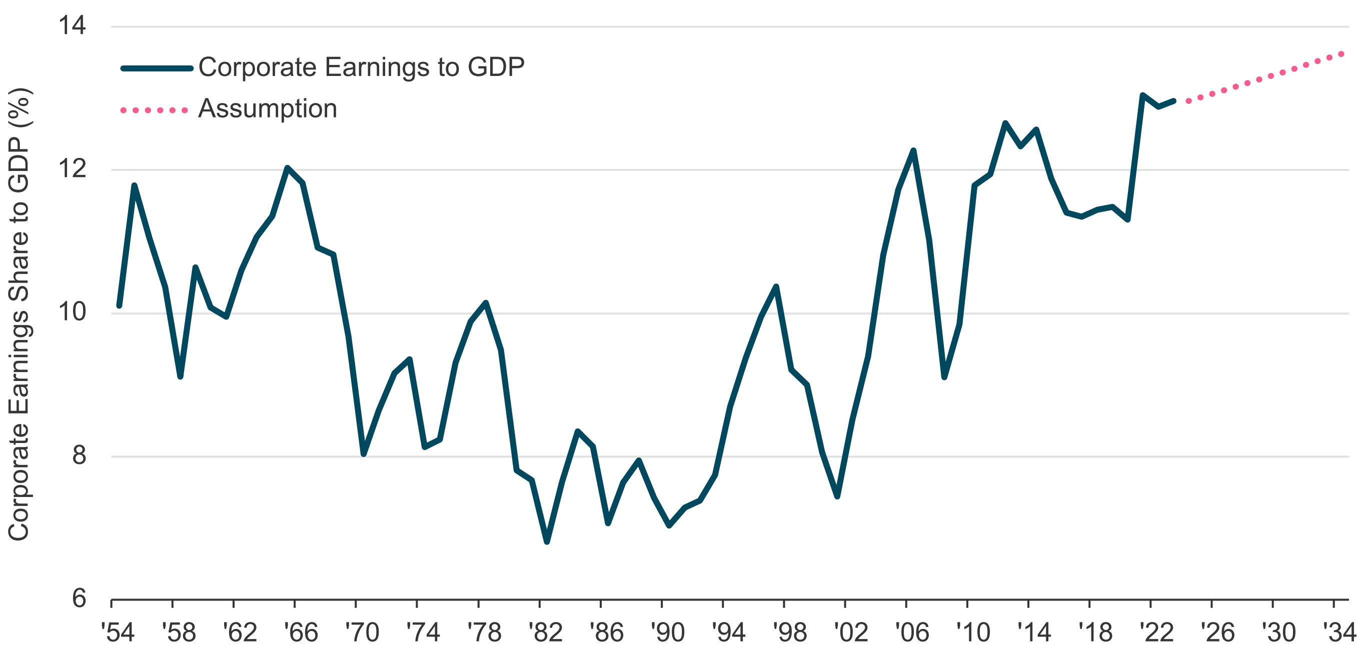
# GDP GROWTH & EARNINGS SHARE

The first component in the equation is nominal GDP growth. For the first two years of the forecast, 2025 and 2026, we base our assumptions on our latest Vantage Point report. For periods beyond 2026, our macroeconomic projections represent the mean survey from economic forecasters. We then combine our assumption of nominal growth with the second component of the equation, the corporate earnings share, to develop assumptions of equity earnings growth.

It is logical, and consistent with classical economic theory, to assume that corporate earnings relative to nominal GDP will be stable over time, as corporations are unlikely to perpetually grow or shrink relative to their domestic economy. We demonstrate this in Exhibit E2, charting the US corporate earnings share since the 1950s. The evidence suggests that the earnings share tends to fluctuate around some long-term mean; however, it may still contribute or detract meaningfully to equity growth over extended periods of time. For instance, its expansion between 2000 and 2023 contributed approximately 1.7% to annualized equity growth. For the next decade we anticipate US equity market earnings will outpace nominal GDP by 0.5% per year, raising the earnings share from 13.0% to approximately 13.6%.

## EXHIBIT E2

United States Earnings Share - Corporate Earnings to GDP

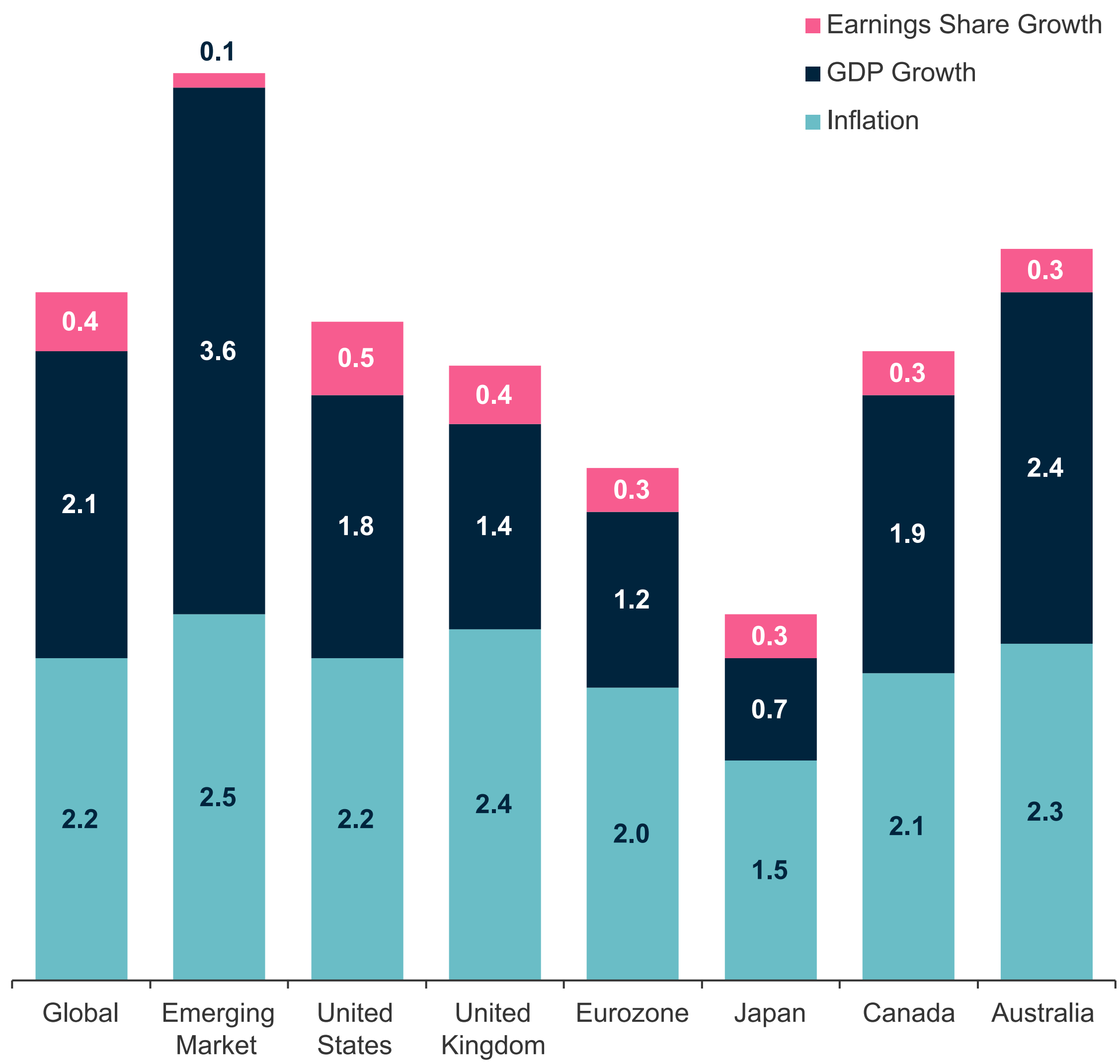



Sources: BNY Advisors, US Bureau of Economic Analysis, Bloomberg. Data as of June 30, 2024.

In Exhibit E3, we provide a detailed breakdown of our earnings growth projections. As highlighted in the AI theme section, we expect AI to boost equity earnings globally. We anticipate the United States to be best positioned for AI-driven growth due to its investment in AI infrastructure, large share of cognitive labor, favorable regulations, and concentration of firms with dominant positions in the AI ecosystem. We also expect developed markets outside the US to experience enhanced revenue growth, albeit to a lesser extent, as lower infrastructure investment and regulatory hurdles may impede adoption. Conversely, we see slower AI adoption in emerging markets as its higher proportion of the world's physical labor limits potential productivity growth.

## EXHIBIT E3

### Annualized 10-Year Equity Market Earnings Growth Assumptions



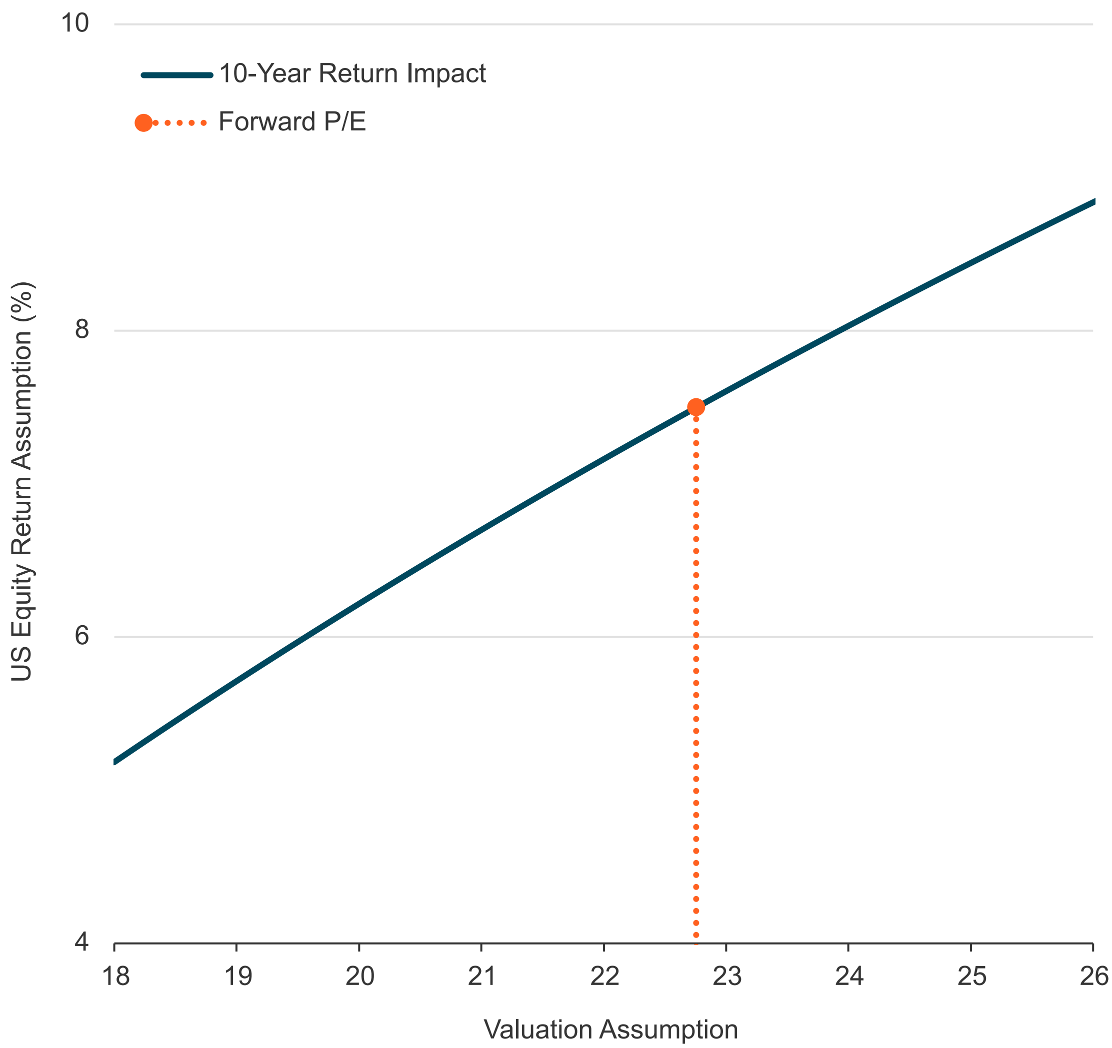

Source: BNY Advisors as of November 2024.

# VALUATION

The third element in our formula is the price-to-earnings ratio. It is important to note that short-term valuation fluctuations only cause temporary changes to asset returns, making long-term valuation forecasts the only relevant factor for our 10-year assumptions. Since forecasts for long-term equity market valuations are the primary source of forecast error, we decided not to make any valuation adjustments this year. Instead, we present Exhibit E4, which details the impact of valuation assumptions on our 10-year US equity return assumption. Our current valuation assumption is that future price to earnings (P/E) ratios will reflect the same values observed on June 30, 2024, depicted by the orange line. If an investor were to apply a long-term valuation multiple of 20 to our forecast, the valuation-adjusted US equity assumption would be 6.2%.

## EXHIBIT E4

### Impact of Valuation Assumptions on 2025 US Equity Return Assumption



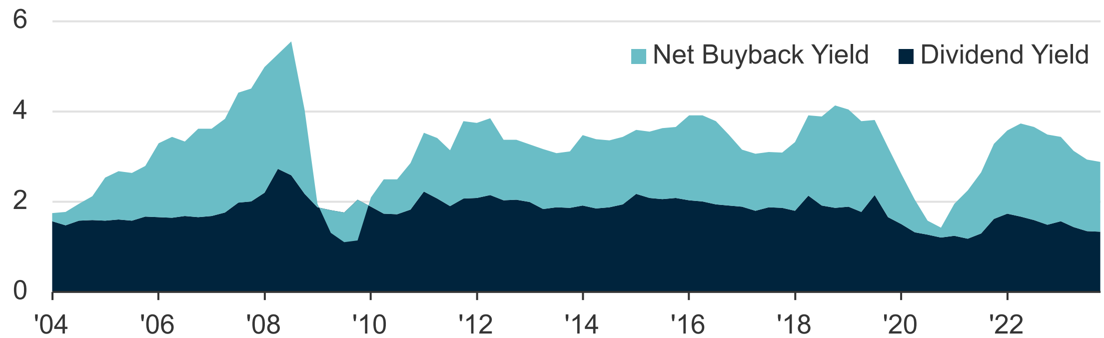

Sources: BNY Advisors, Bloomberg. Data as of June 30, 2024. Chart is for illustrative purposes only.

# INCOME

Income returns are a particularly important, yet often neglected, source of equity returns. The two primary methods of distributing earnings to shareholders are dividends and buybacks (share repurchases). Exhibit E5 shows that these factors have been a meaningful contributor to equity returns in the United States for several decades. Historically, the US has had higher buyback rates compared to the rest of the world mainly because capital gains are taxed at a lower rate than income.

## EXHIBIT E5

### US Equity Income Returns Disaggregated into Dividend Yield and Share Repurchase (%)

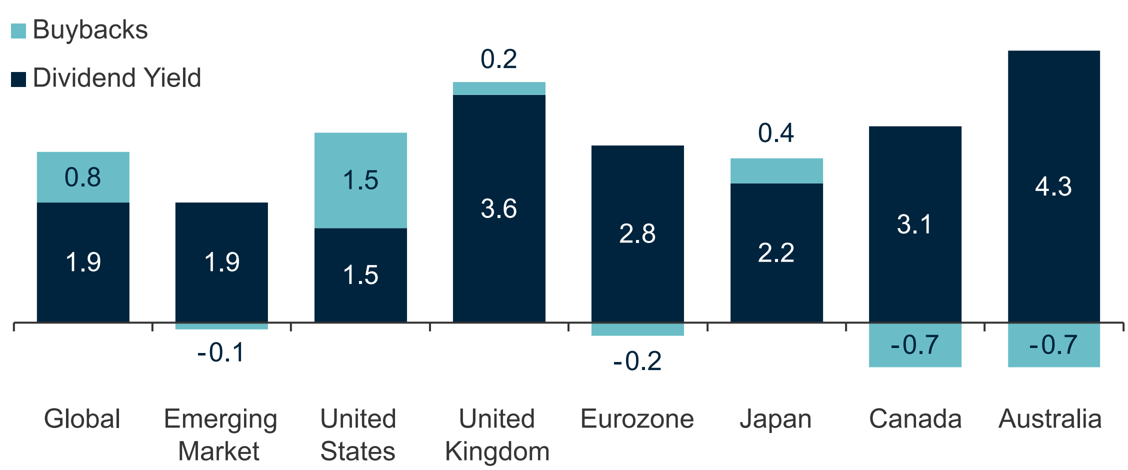



Sources: BNY Advisors, FactSet. Data as of June 30, 2024.

We anticipate dividend and buyback yields will align with historical averages across all regions. Additionally, we expect developed markets to provide investors with higher income returns compared to emerging markets. We believe this characteristic is particularly valuable for risk-averse investors due to the stability of returns generated through income.

## EXHIBIT E6

### Annualized 10-Year Equity Market Income Assumptions



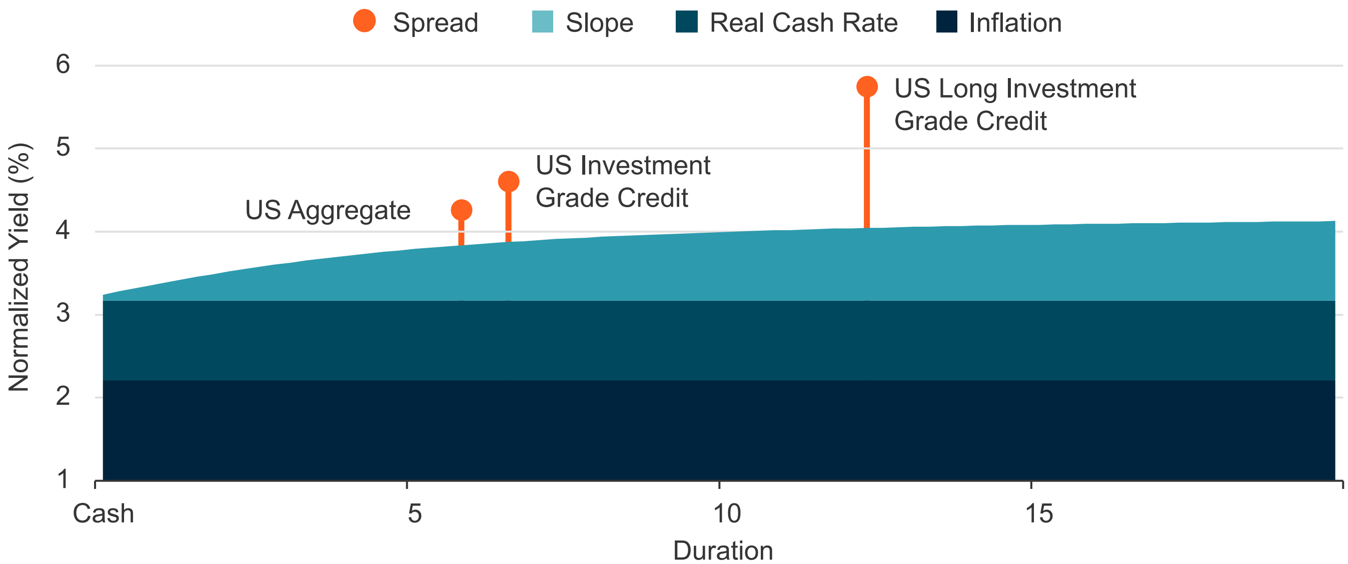

Source: BNY Advisors as of November 2024.

# 04 FIXED INCOME

Our fixed income assumptions rely on a building block approach to project yields over the next 10 years. This approach begins with economic assumptions of inflation and real interest rates, which together form the level of short-rate expectations. We then incorporate expectations of slope to develop sovereign yield curves, creating the foundation of our fixed income assumptions. Next, we forecast credit spreads and default rates for non-Treasury fixed income asset classes. Finally, we conduct a horizon analysis, transitioning yields from their current levels to long-term projections.

## EXHIBIT F1

### United States Long Term Yield Projections



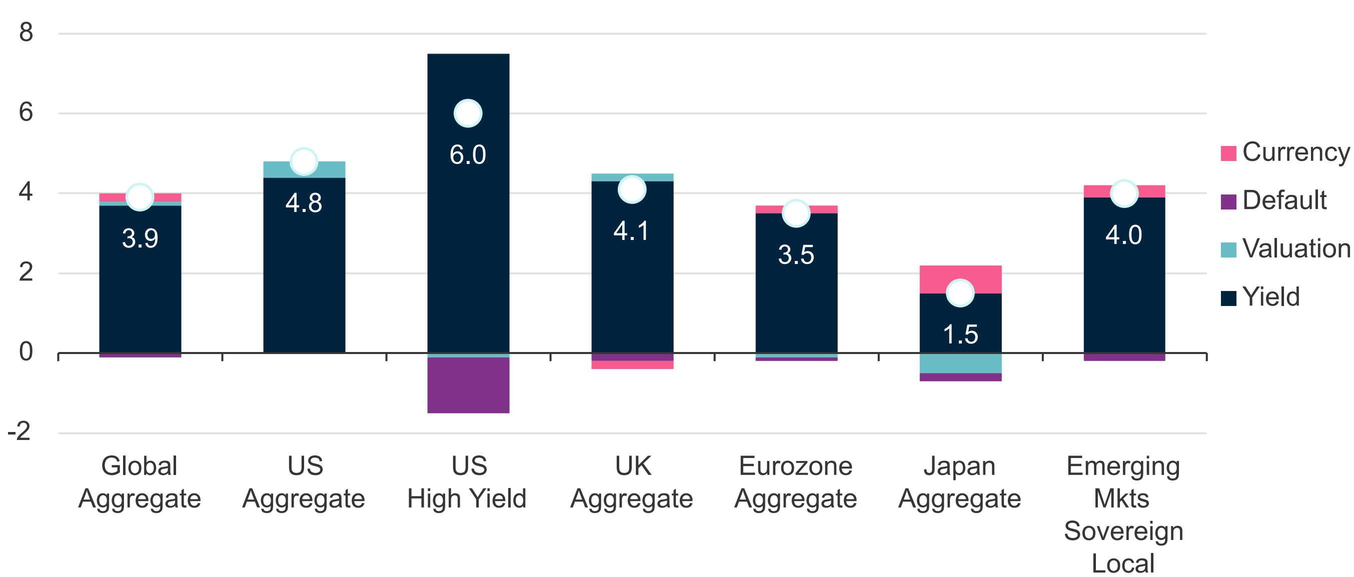

Source: BNY Advisors as of November 2024. Chart is for illustrative purposes only.

Exhibit F1 details our normalized projections for the US Treasury curve and several asset classes.

We summarize our fixed income expectations within the following sections. Globally, fixed income returns remain high supported by current yields. Within the United States our projection of an easing cycle benefits long-duration Treasuries, although this is modestly offset by a steepening yield curve. Credit sectors benefit less from a steepening yield curve due to shorter duration and projections for widening credit spreads. Outside of the United States, we expect lower returns driven by lower yields and mixed valuation impacts, which for instance benefit UK gilts and weigh on Japanese government bonds.

## EXHIBIT F2

### 10-Year Fixed Income Market Expected Returns (Unhedged USD)




Source: BNY Advisors as of November 2024.

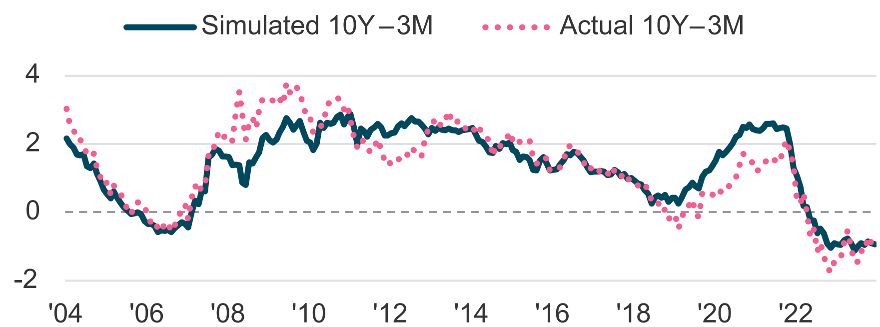
# SOVEREIGN YIELD CURVES

Expectations for inflation and short-term interest rates determine the level of our long-term projected sovereign yield curves. Next, we formulate an expectation for the slope of these curves. To do this, we focus our attention on the excess yield of a 10-year Treasury bond over a 3-month Treasury bill (10Y-3M). For other maturities, such as 5Y-3M and 30Y-3M, our long-term projections assume a relationship to the 10Y-3M, best visualized by Exhibit F1.

We first perform a regression analysis, which indicates that inflation expectations and short-term real interest rates have significant relationships with the slope of the yield curve. The result of our analysis is shown in Exhibit F3, which compares the simulated results to market observations of the US Treasury curve slope. If we relied purely on this model, our projection of the US Treasury curve's slope would be approximately 40 basis points (bps). This projection is flat but aligns with historical trends when considering our expectation for a long-term 1.0% real interest rate.

## EXHIBIT F3

### United States Treasury Curve Slope (%)




Sources: BNY Advisors, Bloomberg. Data as of June 30, 2024.

To refine our projections, we examine historical data and economic forecasts for 10-year and 3-month yields. Our review indicates steeper curves than we estimated, though still flatter than historical levels. A frequent factor pushing up the slope of the yield curve cited by forecasters is the growing level of government debt burdens. This is not captured within our model. Considering all metrics, we anticipate the US Treasury curve's slope to normalize at 70 basis points. As the economic dislocations brought on by the past several years of global inflation unwind, we expect sovereign bond yields to normalize to long-term levels over the course of five years, more detailed projections are summarized in Exhibit F4.

## EXHIBIT F4

### Normalized Sovereign Yield Curve Projections (%)

| Maturity | US | U.K. | Eurozone | Japan |
|---|---|---|---|---|
| 3 Month | 3.2 | 3.2 | 2.4 | 1.0 |
| 5 Year | 3.7 | 3.6 | 2.8 | 1.3 |
| 10 Year | 3.9 | 3.8 | 3.0 | 1.4 |
| 30 Year | 4.1 | 3.9 | 3.1 | 1.5 |

Source: BNY Advisors as of November 2024.

Note: The Eurozone reflects weighted projections of France, Italy and Germany.

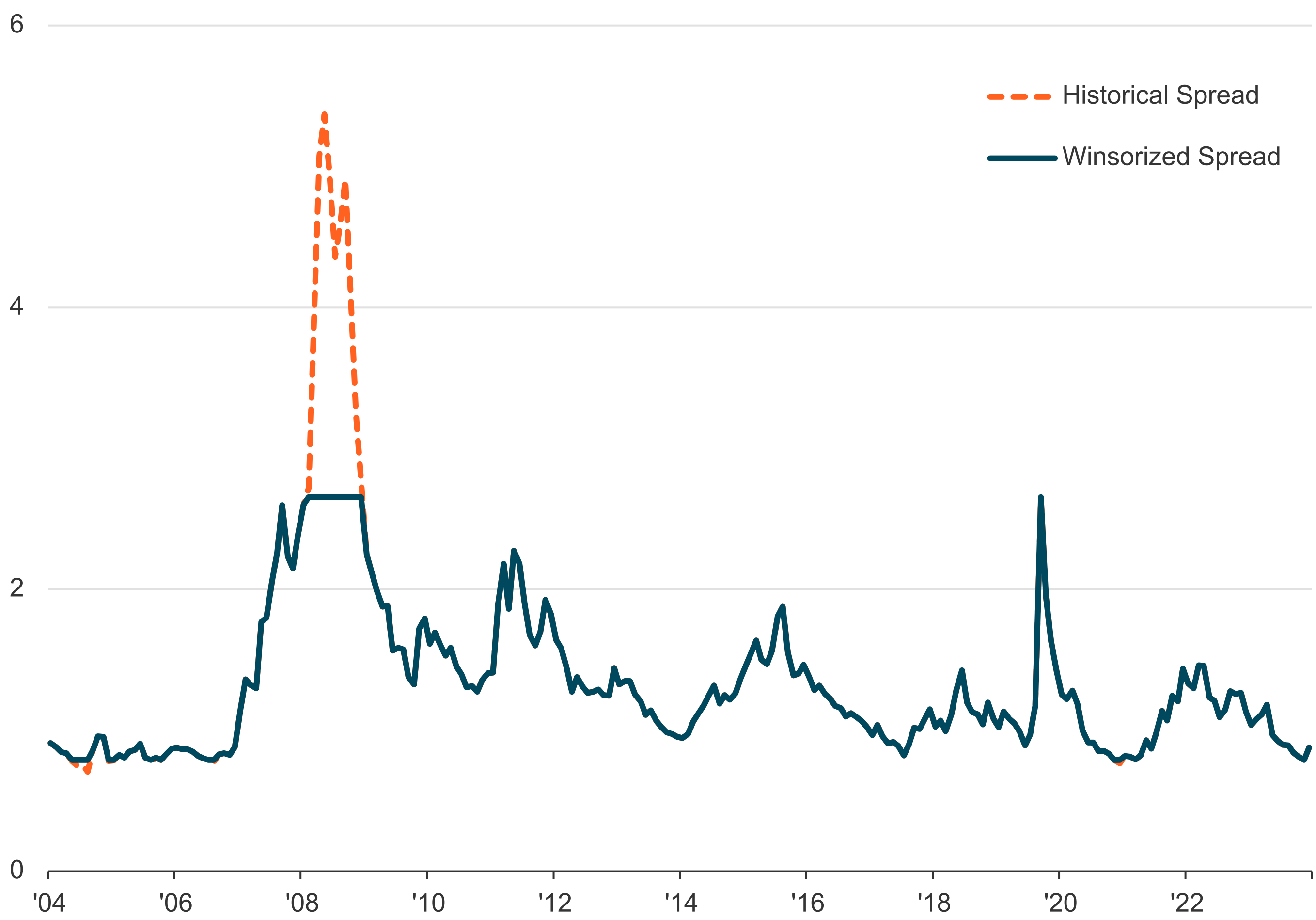
# CREDIT SPREADS

We expect US investment grade credit spreads to widen from 70 bps to 110 bps and US high yield spreads to widen from 310 bps to 470 bps. To develop these assumptions, as well as spread expectations for other asset classes, we assume credit spreads trend toward long-term historical averages. To determine the historical average, we winsorize[6] the data to eliminate the impact of extreme events such as the Global Financial Crisis (GFC). This approach can be visualized in Exhibit F5.

We anticipate default and recovery rates to be in line with historical averages, according to current quality ratings. For emerging market local and hard currency debt, we apply default and recovery assumptions according to regional market capitalization to capture the elevated credit risk of sovereign borrowers, such as Egypt and Argentina.

## EXHIBIT F5

US Investment Grade Credit Spread to Treasuries (%)



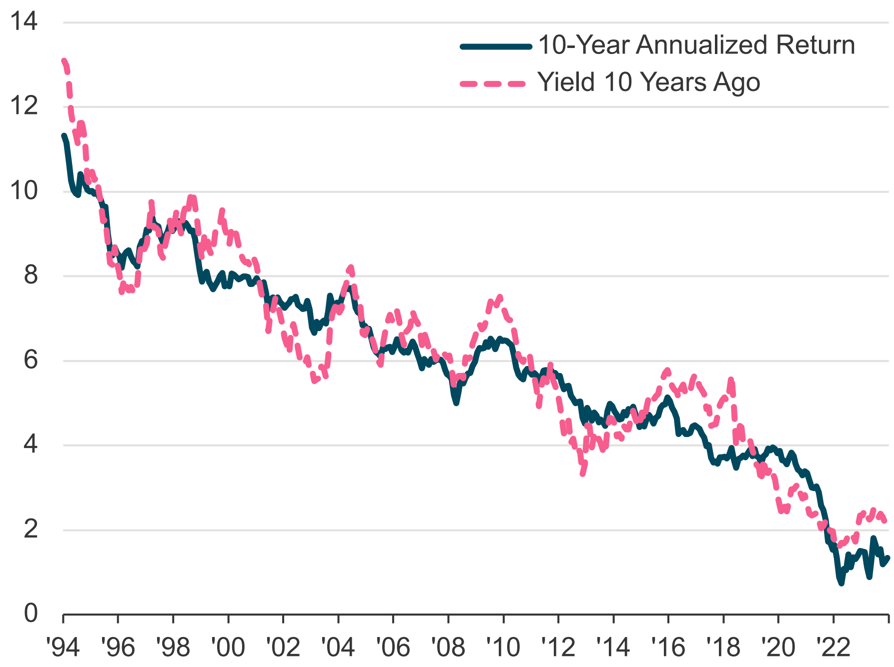

Sources: BNY Advisors, Bloomberg. Data as of June 30, 2024.

# COMPARING EXPECTATIONS TO CURRENT YIELDS

Investors can mitigate reinvestment risk by extending the duration of their portfolios. Consequently, current fixed income yields have provided a reliable foundation for estimating future performance. We anticipate fixed income returns to be favorable over the next decade, largely because of today's elevated entry point. To validate our approach, we examine rolling 10-year returns of Bloomberg US Aggregate Index in relation to its starting yield, as shown in Exhibit F6. Applying a regression analysis reveals a coefficient of determination (R-Squared) of 0.91.

## EXHIBIT F6

Bloomberg US Aggregate Index Returns vs. Starting Yields (%)




Sources: BNY Advisors, Bloomberg. Data as of June 30, 2024.

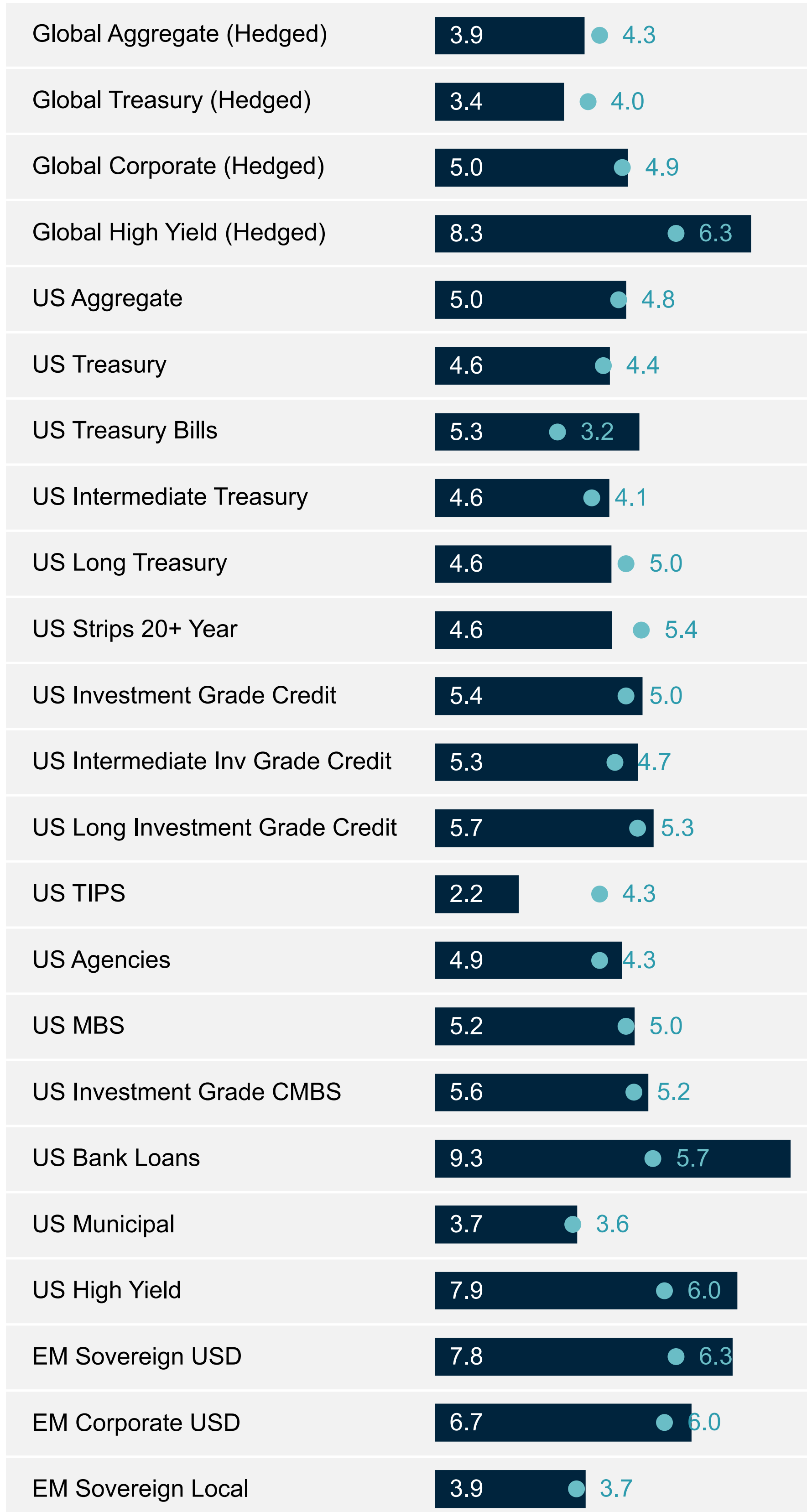
In exhibit F7, we compare the prevailing yields of various fixed income asset classes with our forward-looking return projections. For asset classes that involve minimal reinvestment, credit or currency risk, our expectations align well with market yields as of June 30th, 2024. A notable exception is inflation-protected securities, where the yield reflects market expectations for real yields and future inflation adjustments. Moreover, the anticipated returns for global aggregate and Treasury bonds slightly exceed current yields when hedged. This reflects our higher expectations of nominal cash rates in the US compared to international economies.

# EXHIBIT F7

## Current Fixed Income Yields vs. Expected Return Assumptions (%)

■ Current Yield

● Expected Return




Sources: BNY Advisors, Bloomberg. Data as of June 30, 2024.

# 05
# ALTERNATIVES

Investing in real assets, hedge funds, or private investments provides diversification and alternative risk exposures beyond traditional portfolios. Real assets, such as commodities and natural resources, offer valuable protection from left-tail supply shocks. Infrastructure offers additional equity exposure and income through its essential business model. Hedge fund strategies are not precisely distinct asset classes but have demonstrated an ability to generate diversified returns through specialized investment approaches unavailable to most investors. Private markets offer opportunities for higher growth prospects if investors can tolerate extended lock-up periods.

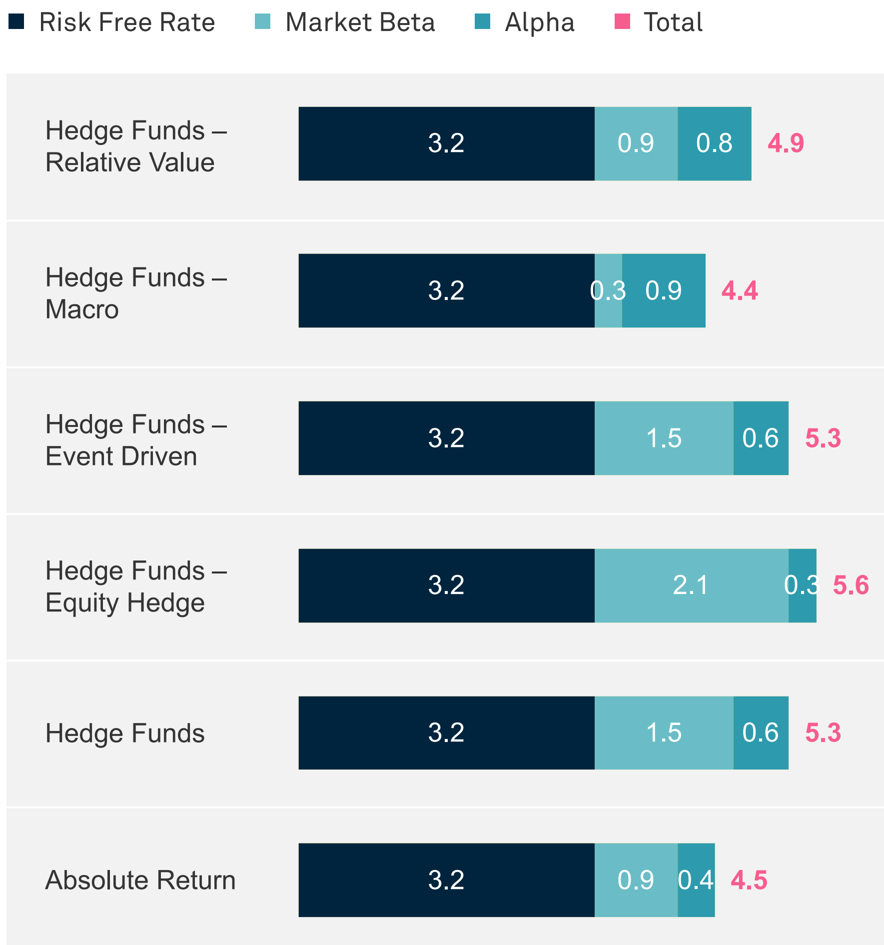
For investment in alternative asset classes, we anticipate risk-adjusted returns will align with broader equity and fixed income markets. To formulate risk-adjusted return assumptions for these investments, we start by calculating their beta relative to their closest traditional market peer. The alternative's return assumption is then the sum of the beta multiplied against their peer's expected return premium and our risk-free rate projection. We ensure cross-sectional consistency by estimating beta exposure through our volatility and correlation assumptions.

# HEDGE FUNDS

Our projections for hedge fund strategies are based on the same framework previously described with additional premiums for exposure to idiosyncratic risk. We have enhanced our approach this year by studying realized hedge fund returns and have set our expectations of manager alpha according to historical performance. Exhibit A1 summarizes the building blocks of our hedge fund return assumptions.

## EXHIBIT A1

### 10-Year Hedge Fund Expected Returns (US dollar)




Source: BNY Advisors. Data as of June 30, 2024.

We expect absolute return strategies will provide lower returns for investors relative to the broader hedge fund asset class, yet they generally offer reduced volatility and more consistent outcomes. Within hedge fund strategies, equity hedge funds have historically offered the most return although this is due to high equity exposure. Macro hedge funds have managed to earn the largest amount of alpha historically, although they typically come with low amounts of market exposure.

We should highlight how our assumptions represent projections of broad hedge fund indices, which are not directly investable. We concede that the unique investment strategy of any single manager will contribute to risk concentrations and is not accounted for within our expectations. A hedge fund portfolio with exposure to a diversified set of managers and strategies would be the closest form of implementation reflecting our assumptions.

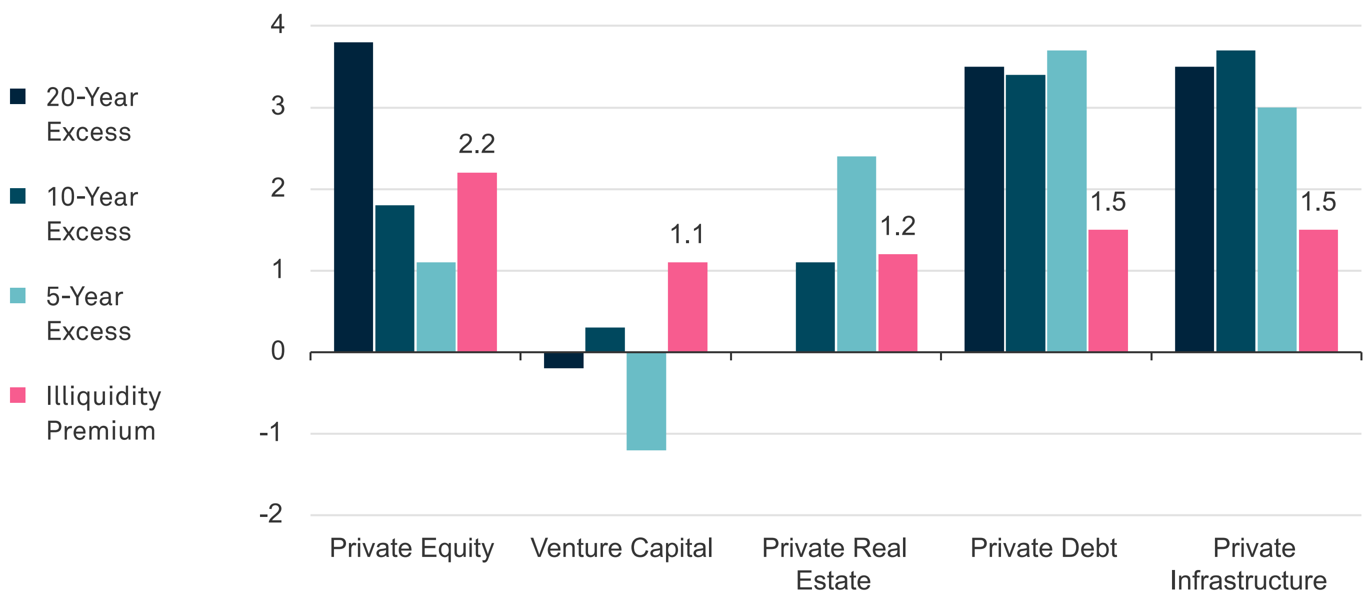
# PRIVATE INVESTMENTS

In private markets, we integrate assumptions about illiquidity, which align with historical excess returns relative to public market equivalents (PMEs). To derive initial estimates of the illiquidity premium, we average historical excess returns relative to PMEs over 5-, 10-, and 20-year periods. For equivalents, we equate private equity and venture capital with US equity and private credit with US high yield, private real estate with US REITs, and private infrastructure with global listed infrastructure. Historical average excess returns and our illiquidity premium assumptions are detailed in Exhibit A2.

The private equity premium has waned in the past decade, but overall performance still rightfully earns a reputation for delivering strong relative returns. Venture capital has only managed to keep pace with public markets, but venture capital within the United States is well positioned to benefit from disruptive technology associated with AI. Due to this factor, we have chosen to increase its illiquidity premium. We have made no changes to the above-described initial estimates for private equity and real estate.

## EXHIBIT A2

### Private Market Illiquidity Assumption vs. Historical Average Annual Excess




Sources: BNY Advisors, Pitchbook. Data as of March 31, 2024.

As previously mentioned in the private credit theme of this report, we anticipate private debt to face structural headwinds, which may undo its recent outperformance. This theme has led us to reduce our liquidity assumption below the historical norm. Concerning private infrastructure, we believe that private market outperformance is the result of deteriorating valuations within publicly listed infrastructure. This has prompted us to revise our initial estimates downward. This revision was made after considering the discounted valuations of public listed infrastructure to public equity, which we do not believe is reflected in the valuations of less frequently traded private markets.

# 06 CURRENCY

Until now, this report has not addressed the impact of currency. This section aims to outline our methodology for developing our currency assumptions, which have been applied to foreign investments throughout this analysis. The outlook of a foreign investment should always consider how international currencies behave relative to an investor's domestic currency. Therefore, our paper presents expected returns, volatilities, and correlations for the US dollar, British pound, Japanese yen and euro. In addition, we have chosen a more logical segmentation of global investment markets by currency within their respective risk and return tables.

In our view, currency exposures are critical to consider, as the volatility associated with exchange rates can add considerable amounts of risk, often with little to no long-term benefit. For this reason, investors frequently hedge their exposure to currency risk, and this hedge frequently is included as a part of the strategic asset allocation. When generating our hedged asset class assumptions, we assume a completely hedged investment, leaving only the exposure to the foreign asset and the cost to implement the currency hedge (cost of carry).

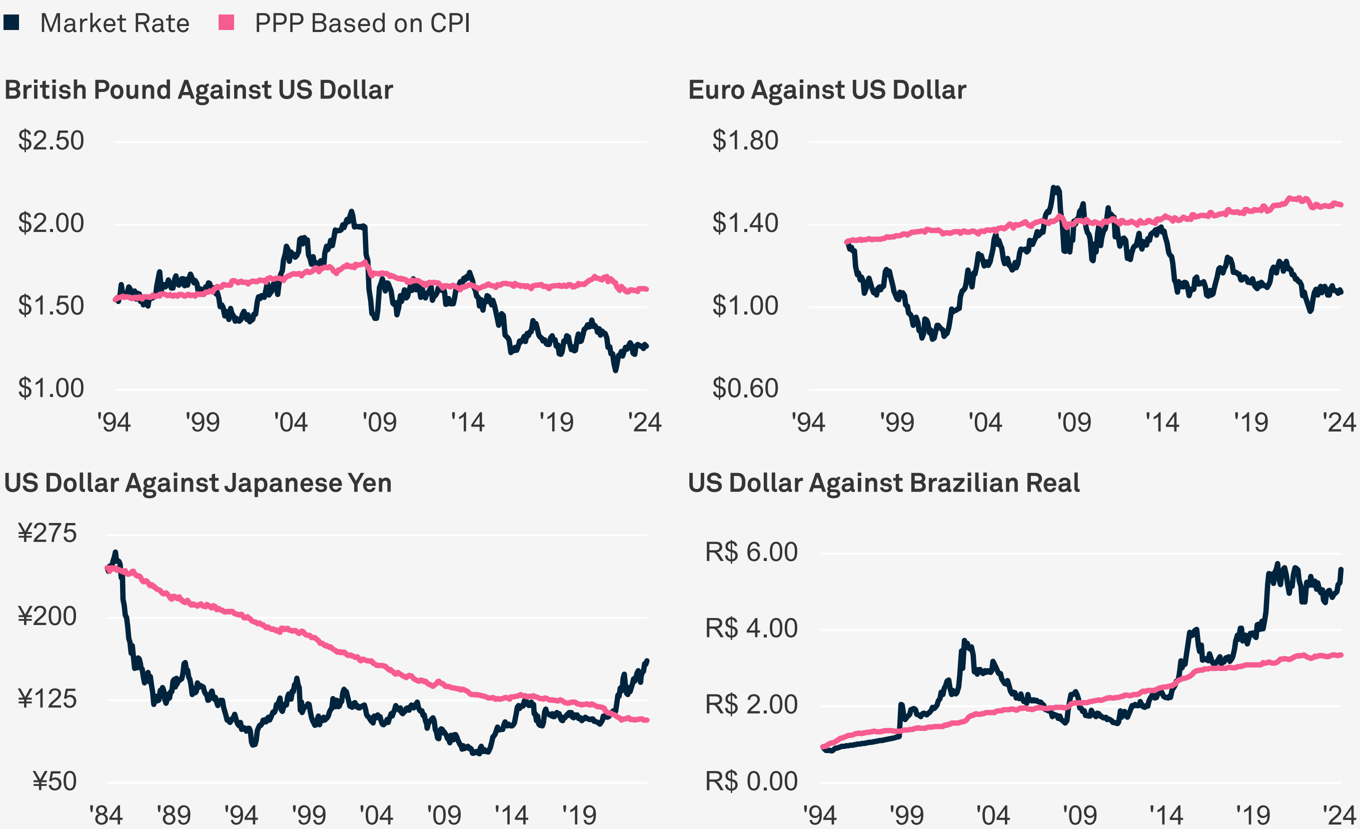
# LAW OF ONE PRICE

In the short term, exchange rates will react to changes in fiscal policy, monetary policy and international trade. However, these fluctuations are expected to have only transitory effects over the 10-year horizon. Our projections focus on the enduring economic trend of relative purchasing power parity (RPPP), a theory that suggests exchange rates will adjust over time to reflect relative national price levels. The effectiveness of this theory is illustrated in Exhibit C1 and is the only factor we consider when developing our assumptions for unhedged investments with exchange rate risk.

Analyzing the exhibit below, we see enough evidence to support RPPP over the long term. The theory supports the long-term downward trend of emerging market currencies and, over an extended time horizon, supports yen strength against the dollar. However, the theory fails to explain variations within developed markets with similar inflation rates, both the pound and euro in our example. Additionally, market exchange rates frequently stray from RPPP for prolonged periods. Instances when RPPP fair values are priced according to market exchange rates are rare, and such dislocations have lasted for decades. Consequently, our forecasts do not reflect market exchange rates returning to their depicted fair values; our unhedged currency assumptions only reflect the differentials between regional inflation projections.

## EXHIBIT C1

### Historical Exchange Rates vs. Relative PPP



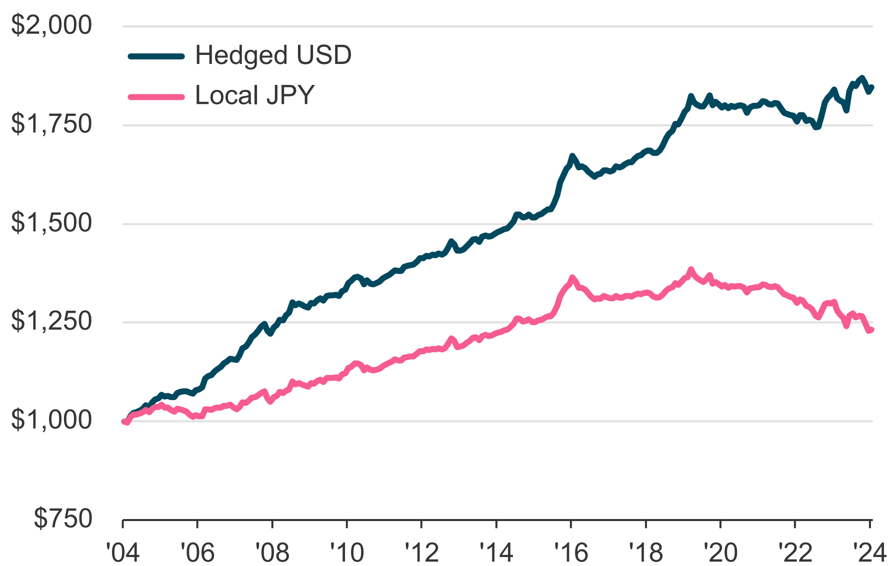

Sources: BNY Advisors, Bloomberg Data as of June 30, 2024. Other sources include: US Bureau of Labor Statistics, Eurostat, UK Office for National Statistics, JP Ministry of Internal Affairs and Communications, Brazilian Institute of Geography and Statistics.

# COST OF CARRY

Exchange rate exposure can increase the volatility of an investment and is often not worth the potential for additional compensation. Investors frequently hedge this risk out of their portfolio, which yields a steadier carry return for investors with higher domestic interest rates. The carry return is the difference between short-term interest rates of two countries, reflecting the cost to hedge currency exposure. To provide an example, it has made sound financial sense for US investors to hedge currency risk when investing in Japanese government bonds, due to Japan's consistently low interest rates relative to the US Exhibit C2 demonstrates the potential benefits of a currency hedge, by comparing a US dollar hedged investment in Japanese government bonds with the returns that would accrue to Japanese yen-based investor.

## EXHIBIT C2

Hedged US Dollar vs. Local Market Performance




Sources: BNY Advisors, Bloomberg. Data as of June 30, 2024.

The graph shows how hedging currency positions effectively removes exchange-rate volatility, leaving only the return of low-risk Japanese government bonds and the incremental carry return accumulating slowly over time. Naturally, when investors hedge against currencies with higher interest rates, the positive carry becomes an expense, which is common for most investors in developed economies. Hence, to choose the most effective strategy for foreign investment, investors need to rigorously evaluate their investments with and without currency hedges.

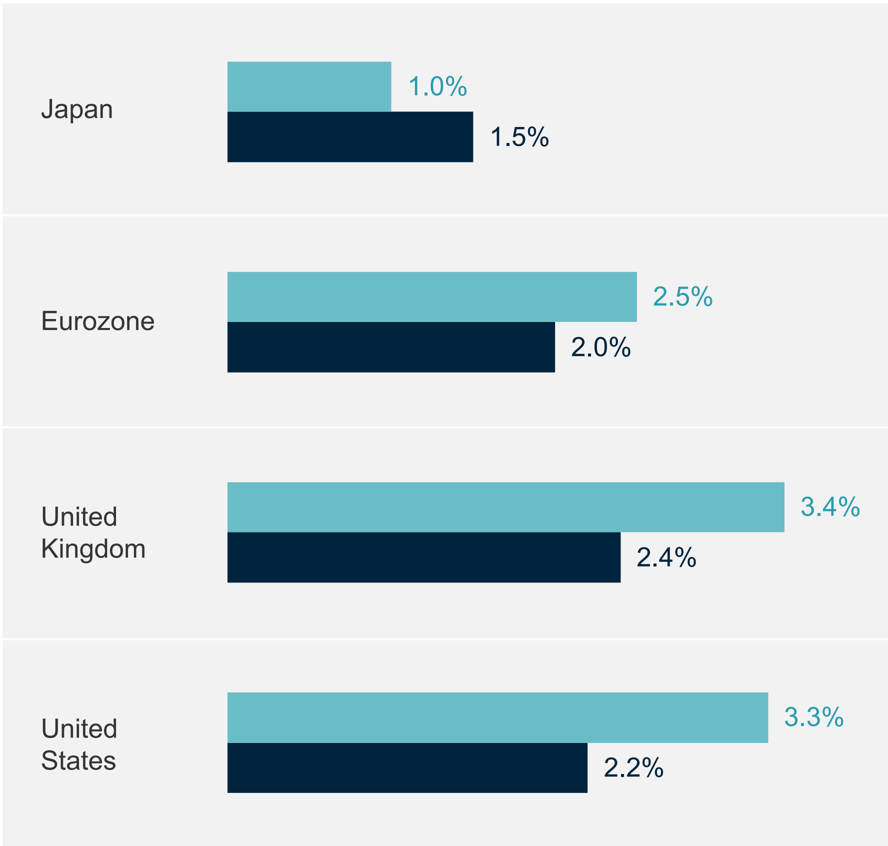
# CURRENCY ASSUMPTIONS

Exhibit C3 provides both the inflation and interest rates used to develop our assumptions for currency impacts. Simply netting the domestic rate against the foreign rate sets our assumptions. To illustrate this point, we project an annualized 1.0% interest rate for Japan and 3.3% for the United States, this results in an additional 2.3% return assumption for the US investor due to the beneficial cost of carry. A European investor would only receive 1.5% of additional return due to the lower interest rate projection of 2.5%.

## EXHIBIT C3

Annualized Inflation & Interest Rate Projections

- Interest Rates
- Inflation




Source: BNY Advisors. Data as of June 30, 2024.

Our method of calculating volatility and correlations draws from historical data, as elaborated in the respective sections on volatility and correlation in this paper. We apply a consistent approach across all currencies, considering historical prices in relation to the relevant currency.

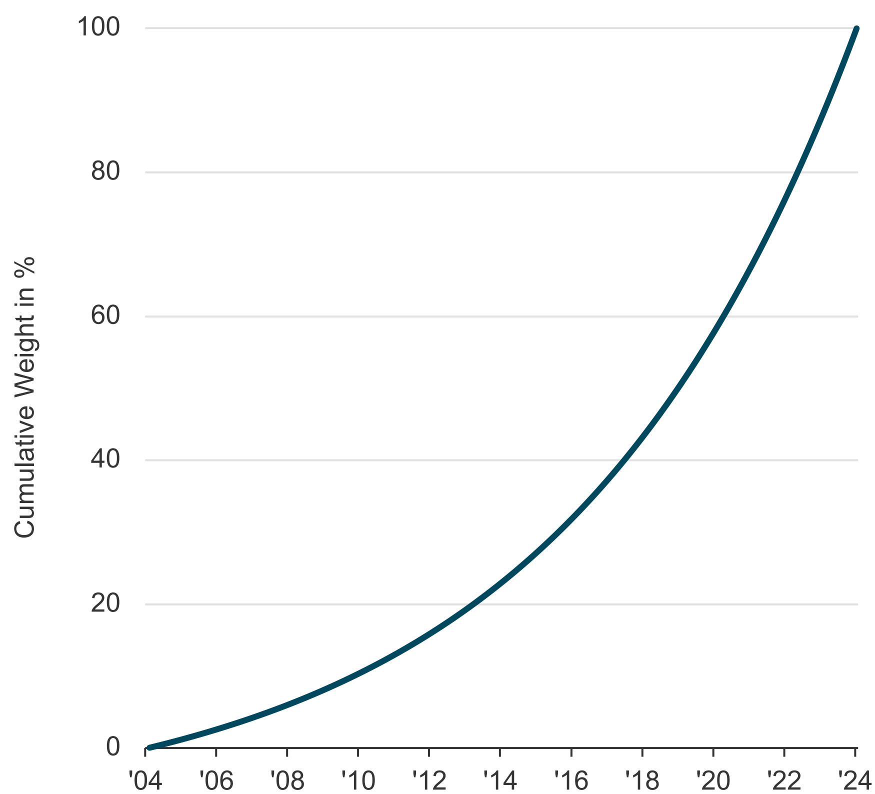
# 07 VOLATILITY & CORRELATION

Our standard deviation and correlation assumptions are developed through samples of realized monthly returns over the past 20 years weighted according to a 5-year half-life. Our weighted approach aims to achieve a balance between mitigating the impact of regimes, business cycles or economic shocks, which can skew sample results, while also reflecting most recent market conditions. Exhibit VC1 depicts the cumulative historical weights of our sample.

The available realized returns of private market indices reflect smoothed versions of historical performance. As such, we consider the true underlying returns of private markets to be unobservable. This smoothing dampens the volatility and distorts the correlation between public and private asset classes. Together these issues lead to understated estimates of portfolio volatility and overstated diversification benefits when allocating to private investments. To account for this, our forecast of private market volatility and correlations reflect public market equivalents to improve the cross-sectional consistency of our assumptions.

## EXHIBIT VC1

### Historical Weightings for Standard Deviations and Correlations




Source: BNY Advisors as of November 2024.

# 08 THE IMPORTANCE OF CAPITAL MARKET ASSUMPTIONS

Capital market assumptions are the initial building block for the development of an investor's strategic asset allocation (SAA). The SAA plays a critical role in multi-asset investing, transforming forward-looking market forecasts into enduring portfolio allocations.

# CONTRIBUTORS

We extend our gratitude to the 10-Year BNY Capital Market Assumptions Team, comprised of macroeconomic strategists, portfolio managers, quantitative and fundamental researchers, marketing experts, and client-facing investment professionals for their contributions to this report.

**AMBER DELEO, CFA**
Associate Client Portfolio Manager
*BNY Advisors*

**ANDREW WOZNIAK, CFA, ASA**
Head of Institutional Services
*BNY Advisors*

**ANINDA MITRA**
Head of Asia Macro & Investment Strategy
*BNY Advisors*

**BRET VALERIO, CFA, FRM, CAIA**
Client Portfolio Manager
*BNY Advisors*

**CHRIS VELLA, CFA**
Chief Investment Officer
*BNY Advisors*

**ELENA GONCHAROVA, CFA**
Head of Intermediary Solutions
*BNY Advisors*

**ERIC HUNDAHL, CFA**
Head of BNY Investment Institute
*BNY Advisors*

**HENRY WRIGHT, CFA**
Investment Strategist
*BNY Advisors*

**IVO BATISTA, CFA, FRM, CQF**
Head of Portfolio Management
*BNY Advisors*

**JAKE JOLLY, CFA**
Head of Investment Analysis
*BNY Advisors*

**JAMIE TYSON, CFA**
Client Portfolio Manager
*BNY Advisors*

**JOSH ARMSTRONG-LEVENTHAL, CFA CAIA**
Head of Hedge Funds & Liquid Alternatives
*BNY Advisors*

**MANISHA ALI**
Head of Responsible Investing
*BNY Advisors*

**MARISSA MURRAY**
Chief Marketing Officer
*BNY Advisors*

**MEGAN CHAMBERLIN**
Brand Activation & Marketing Strategy
*BNY Advisors*

**RYAN MILGRIM, CFA**
Senior Research Analyst
*BNY Advisors*

**SEBASTIAN VISMARA**
Senior Financial Economist
*BNY Advisors*

**TONY DESTRO, CFA, CAIA**
Senior Client Portfolio Manager
*BNY Advisors*

**ALICIA LEVINE, PHD**
Head of Investment Strategy & Equities
*BNY Wealth*

**ANDREW CLARK, CFA**
National Portfolio Management
*BNY Wealth*

**JOHN FLAHIVE, CFA**
Head of Fixed Income
*BNY Wealth*

**KEVIN SHEA, CFA**
Technology Investment Analyst
*BNY Wealth*

**PETER LUPPINO, CFA**
Sr. Investment Research Analyst
*BNY Wealth*

**SINEAD COLTON GRANT**
Chief Investment Officer
*BNY Wealth*

**TERRY SYLVESTER CHARRON**
Head of Investment Advisory
*BNY Wealth*

**BRIAN BLONGASTAINER, CFA, CMT**
Global Investment Strategist
*Newton*

**ELLA HOXHA, CFA**
Head of Fixed Income
*Newton*

**JOHN PORTER**
Chief Investment Officer
*Newton*

**NICO ASPINALL**
Head of Product Advocacy
*Newton*

# EXPECTED 10-YEAR RETURNS & STANDARD DEVIATIONS – USD

| | Asset Class | Representative Index | Returns | Volatility |
|---|---|---|---|---|
| EQUITY | Global Equity | MSCI ACWI IMI Index | 7.4% | 15.9% |
| | Global REITs | FTSE EPRA Nareit Global Real Estate Index | 7.3% | 18.5% |
| | US Equity | Russell 3000 Index | 7.5% | 16.2% |
| | US Large Cap | Russell 1000 Index | 7.5% | 16.0% |
| | US Mid Cap | Russell Midcap Index | 7.7% | 18.1% |
| | US Small Cap | Russell 2000 Index | 8.0% | 20.8% |
| | US REITs | FTSE Nareit All Equity REITs Index | 7.4% | 19.9% |
| | Developed Non US Equity | MSCI World ex USA Index | 6.7% | 16.3% |
| | Developed Non US Small Cap | MSCI World ex USA Small Cap Index | 6.8% | 18.0% |
| | Emerging Markets Equity | MSCI Emerging Markets IMI Index | 7.7% | 18.7% |
| FIXED INCOME | Global Aggregate (Hedged) | Bloomberg Global Aggregate Index Hedged USD | 4.3% | 4.0% |
| | Global Treasury (Hedged) | Bloomberg Global Treasury Index Hedged USD | 4.0% | 3.8% |
| | Global Corporate (Hedged) | Bloomberg Global Corporates Index Hedged USD | 4.9% | 6.0% |
| | Global High Yield (Hedged) | Bloomberg Global High Yield Index Value Hedged USD | 6.3% | 8.7% |
| | US Aggregate | Bloomberg US Aggregate Index | 4.8% | 5.1% |
| | US Treasury | Bloomberg US Treasury Index | 4.4% | 5.0% |
| | US Treasury Bills | Bloomberg US Treasury Bills 3-6 Months Index | 3.3% | 0.6% |
| | US Intermediate Treasury | Bloomberg US Intermediate Treasury Index | 4.1% | 3.3% |
| | US Long Treasury | Bloomberg US Long Treasury Index | 5.0% | 13.2% |
| | US Strips 20+ Year | Bloomberg US Strips 20+ Year Index | 5.4% | 20.9% |
| | US Investment Grade Credit | Bloomberg US Credit Index | 5.0% | 6.8% |
| | US Intermediate Inv Grade Credit | Bloomberg US Intermediate Credit Index | 4.7% | 4.5% |
| | US Long Investment Grade Credit | Bloomberg US Long Credit Index | 5.3% | 12.1% |
| | US TIPS | Bloomberg US Govt Inflation-Linked Index | 4.3% | 5.9% |
| | US Agencies | Bloomberg US Agencies Index | 4.3% | 3.1% |
| | US MBS | Bloomberg US MBS Index | 5.0% | 5.1% |
| | US Investment Grade CMBS | Bloomberg CMBS Investment Grade Index | 5.2% | 6.2% |
| | US Municipal | Bloomberg US Municipal Bond Index | 3.6% | 5.4% |
| | US High Yield | Bloomberg US Corporate High Yield Index | 6.0% | 8.4% |
| | US Bank Loans | Morningstar LSTA US Leveraged Loan Index | 5.7% | 6.1% |
| | Global Aggregate Ex US | Bloomberg Global Aggregate ex-USD | 3.2% | 8.3% |
| | Global Treasury Ex US | Bloomberg Global Treasury ex-US | 2.9% | 8.4% |
| | Global Corporate Ex US | Bloomberg Global Agg ex USD: Corporate | 4.0% | 9.8% |
| | Emerging Mkts Sovereign USD | Bloomberg EM USD Aggregate: Sovereign | 6.3% | 9.5% |
| | Emerging Mkts Corporate USD | Bloomberg EM USD Aggregate: Corporate | 6.0% | 8.6% |
| | Emerging Mkts Sovereign Local | Bloomberg EM Local Currency Government | 4.0% | 9.0% |

As of November 30, 2024. Index performance assumes the reinvestment of all distributions but does not assume any transaction costs, taxes, management fees or other expenses, unless indicated otherwise. Indices are unmanaged and investors cannot invest directly into any index. The 10-Year Capital Market Assumptions are available in Excel format upon request.

# EXPECTED 10-YEAR RETURNS & STANDARD DEVIATIONS – USD
*Continued*

| | Asset Class | Representative Index | Returns | Volatility |
|---|---|---|---|---|
| ALTERNATIVES | Commodities | Bloomberg Commodity Index | 2.2% | 15.0% |
| | Global Natural Resources Equity | S&P Global Natural Resources Index | 6.9% | 20.8% |
| | Global Listed Infrastructure | S&P Global Infrastructure Index | 6.6% | 16.1% |
| | Absolute Return* | HFRX Global Hedge Fund Index | 4.5% | 4.6% |
| | Hedge Funds* | HFRI Fund Weighted Composite Index | 5.3% | 6.3% |
| | Hedge Funds – Equity Hedge* | HFRI Equity Hedge Index | 5.6% | 8.9% |
| | Hedge Funds – Event Driven* | HFRI Event-Driven Index | 5.3% | 7.1% |
| | Hedge Funds – Macro* | HFRI Macro Total Index | 4.4% | 4.8% |
| | Hedge Funds – Relative Value* | HFRI Relative Value Index | 4.9% | 4.5% |
| | Private Equity* | PitchBook Global Private Equity | 9.7% | 20.1% |
| | Venture Capital* | PitchBook North American Venture Capital | 8.6% | 20.8% |
| | Private Real Estate* | PitchBook North American Real Estate | 8.6% | 16.4% |
| | Private Debt* | PitchBook North American Private Debt | 7.5% | 12.4% |
| | Private Infrastructure* | PitchBook Infrastructure | 8.4% | 18.0% |
| | United States Growth | Conference Board US Leading Index | 1.8% | 3.1% |
| | United States Inflation | US CPI Urban Consumers | 2.2% | 1.1% |

As of November 30, 2024. Index performance assumes the reinvestment of all distributions but does not assume any transaction costs, taxes, management fees or other expenses, unless indicated otherwise. Indices are unmanaged and investors cannot invest directly into any index. The 10-Year Capital Market Assumptions are available in Excel format upon request. * Consistent with the Representative Index, returns are net of management fees. The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly.

# EXPECTED CORRELATIONS USD

*Page 1 of 8*

| | | EQUITY | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Global Equity | Global REITs | US Equity | US Large Cap | US Mid Cap | US Small Cap | US REITs | Developed Non US Equity | Developed Non US Small Cap | Emerging Markets Equity |
| EQUITY | Global Equity | 1.00 | 0.87 | 0.97 | 0.97 | 0.96 | 0.89 | 0.78 | 0.96 | 0.95 | 0.84 |
| | Global REITs | 0.87 | 1.00 | 0.83 | 0.83 | 0.86 | 0.79 | 0.95 | 0.85 | 0.86 | 0.73 |
| | US Equity | 0.97 | 0.83 | 1.00 | 1.00 | 0.97 | 0.91 | 0.79 | 0.89 | 0.87 | 0.73 |
| | US Large Cap | 0.97 | 0.83 | 1.00 | 1.00 | 0.96 | 0.90 | 0.79 | 0.89 | 0.87 | 0.73 |
| | US Mid Cap | 0.96 | 0.86 | 0.97 | 0.96 | 1.00 | 0.95 | 0.81 | 0.89 | 0.90 | 0.75 |
| | US Small Cap | 0.89 | 0.79 | 0.91 | 0.90 | 0.95 | 1.00 | 0.75 | 0.81 | 0.84 | 0.69 |
| | US REITs | 0.78 | 0.95 | 0.79 | 0.79 | 0.81 | 0.75 | 1.00 | 0.73 | 0.73 | 0.62 |
| | Developed Non US Equity | 0.96 | 0.85 | 0.89 | 0.89 | 0.89 | 0.81 | 0.73 | 1.00 | 0.97 | 0.84 |
| | Developed Non US Small Cap | 0.95 | 0.86 | 0.87 | 0.87 | 0.90 | 0.84 | 0.73 | 0.97 | 1.00 | 0.83 |
| | Emerging Markets Equity | 0.84 | 0.73 | 0.73 | 0.73 | 0.75 | 0.69 | 0.62 | 0.84 | 0.83 | 1.00 |
| FIXED INCOME | Global Aggregate (Hedged) | 0.40 | 0.52 | 0.40 | 0.40 | 0.38 | 0.30 | 0.51 | 0.38 | 0.39 | 0.34 |
| | Global Treasury (Hedged) | 0.23 | 0.37 | 0.24 | 0.25 | 0.22 | 0.15 | 0.40 | 0.21 | 0.21 | 0.17 |
| | Global Corporate (Hedged) | 0.64 | 0.71 | 0.60 | 0.61 | 0.61 | 0.52 | 0.65 | 0.62 | 0.65 | 0.58 |
| | Global High Yield (Hedged) | 0.84 | 0.81 | 0.78 | 0.78 | 0.82 | 0.74 | 0.73 | 0.83 | 0.85 | 0.78 |
| | US Aggregate | 0.41 | 0.52 | 0.38 | 0.39 | 0.37 | 0.30 | 0.50 | 0.41 | 0.42 | 0.37 |
| | US Treasury | 0.13 | 0.26 | 0.12 | 0.13 | 0.09 | 0.03 | 0.29 | 0.13 | 0.13 | 0.11 |
| | US Treasury Bills | -0.01 | -0.07 | -0.03 | -0.02 | -0.08 | -0.09 | -0.07 | 0.01 | -0.06 | 0.01 |
| | US Intermediate Treasury | 0.11 | 0.22 | 0.10 | 0.11 | 0.06 | 0.01 | 0.23 | 0.13 | 0.12 | 0.10 |
| | US Long Treasury | 0.11 | 0.28 | 0.11 | 0.12 | 0.10 | 0.03 | 0.32 | 0.11 | 0.11 | 0.10 |
| | US Strips 20+ Year | 0.07 | 0.24 | 0.07 | 0.08 | 0.07 | 0.01 | 0.29 | 0.06 | 0.06 | 0.06 |
| | US Investment Grade Credit | 0.60 | 0.68 | 0.56 | 0.57 | 0.57 | 0.48 | 0.63 | 0.59 | 0.61 | 0.56 |
| | US Intermediate Inv Grade Credit | 0.59 | 0.66 | 0.54 | 0.55 | 0.55 | 0.46 | 0.59 | 0.59 | 0.62 | 0.57 |
| | US Long Investment Grade Credit | 0.58 | 0.67 | 0.55 | 0.55 | 0.56 | 0.46 | 0.63 | 0.57 | 0.58 | 0.54 |
| | US TIPS | 0.48 | 0.57 | 0.46 | 0.47 | 0.44 | 0.35 | 0.54 | 0.46 | 0.49 | 0.41 |
| | US Agencies | 0.34 | 0.45 | 0.31 | 0.31 | 0.29 | 0.22 | 0.43 | 0.34 | 0.35 | 0.33 |
| | US MBS | 0.39 | 0.46 | 0.37 | 0.37 | 0.35 | 0.30 | 0.45 | 0.39 | 0.40 | 0.33 |
| | US Investment Grade CMBS | 0.46 | 0.60 | 0.42 | 0.42 | 0.44 | 0.38 | 0.61 | 0.46 | 0.47 | 0.47 |
| | US Municipal | 0.43 | 0.51 | 0.40 | 0.40 | 0.41 | 0.32 | 0.50 | 0.44 | 0.44 | 0.42 |
| | US High Yield | 0.83 | 0.81 | 0.80 | 0.79 | 0.83 | 0.76 | 0.74 | 0.80 | 0.83 | 0.73 |
| | US Bank Loans | 0.64 | 0.62 | 0.60 | 0.60 | 0.66 | 0.61 | 0.55 | 0.61 | 0.66 | 0.59 |
| | Global Aggregate Ex US | 0.58 | 0.61 | 0.50 | 0.50 | 0.49 | 0.41 | 0.53 | 0.62 | 0.63 | 0.61 |
| | Global Treasury Ex US | 0.51 | 0.56 | 0.43 | 0.44 | 0.43 | 0.35 | 0.49 | 0.54 | 0.55 | 0.54 |
| | Global Corporate Ex US | 0.76 | 0.73 | 0.67 | 0.68 | 0.67 | 0.58 | 0.61 | 0.80 | 0.80 | 0.74 |
| | Emerging Mkts Sovereign USD | 0.74 | 0.76 | 0.67 | 0.68 | 0.69 | 0.60 | 0.68 | 0.75 | 0.75 | 0.74 |
| | Emerging Mkts Corporate USD | 0.68 | 0.68 | 0.59 | 0.59 | 0.62 | 0.53 | 0.59 | 0.70 | 0.72 | 0.75 |
| | Emerging Mkts Sovereign Local | 0.69 | 0.70 | 0.57 | 0.58 | 0.59 | 0.51 | 0.60 | 0.73 | 0.71 | 0.83 |

As of November 30, 2024. Index performance assumes the reinvestment of all distributions but does not assume any transaction costs, taxes, management fees or other expenses, unless indicated otherwise. Indices are unmanaged and investors cannot invest directly into any index.

# EXPECTED CORRELATIONS USD

*Page 2 of 8*

| | | EQUITY | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Global Equity | Global REITs | US Equity | US Large Cap | US Mid Cap | US Small Cap | US REITs | Developed Non US Equity | Developed Non US Small Cap | Emerging Markets Equity |
| ALTERNATIVES | Commodities | 0.50 | 0.44 | 0.43 | 0.43 | 0.46 | 0.41 | 0.33 | 0.52 | 0.53 | 0.53 |
| | Global Natural Resources Equity | 0.82 | 0.69 | 0.74 | 0.74 | 0.78 | 0.72 | 0.55 | 0.85 | 0.83 | 0.77 |
| | Global Listed Infrastructure | 0.87 | 0.86 | 0.80 | 0.80 | 0.83 | 0.74 | 0.77 | 0.89 | 0.88 | 0.76 |
| | Absolute Return* | 0.80 | 0.69 | 0.76 | 0.76 | 0.79 | 0.75 | 0.59 | 0.78 | 0.81 | 0.74 |
| | Hedge Funds* | 0.89 | 0.79 | 0.85 | 0.84 | 0.89 | 0.87 | 0.67 | 0.86 | 0.89 | 0.81 |
| | Hedge Funds – Equity Hedge* | 0.94 | 0.80 | 0.90 | 0.89 | 0.93 | 0.90 | 0.69 | 0.90 | 0.92 | 0.84 |
| | Hedge Funds – Event Driven* | 0.84 | 0.77 | 0.80 | 0.79 | 0.86 | 0.86 | 0.66 | 0.82 | 0.86 | 0.73 |
| | Hedge Funds – Macro* | 0.21 | 0.20 | 0.18 | 0.18 | 0.23 | 0.19 | 0.15 | 0.22 | 0.22 | 0.21 |
| | Hedge Funds – Relative Value* | 0.74 | 0.70 | 0.69 | 0.68 | 0.74 | 0.70 | 0.58 | 0.73 | 0.77 | 0.72 |
| | Private Equity* | 0.90 | 0.78 | 0.87 | 0.86 | 0.86 | 0.81 | 0.70 | 0.86 | 0.87 | 0.77 |
| | Venture Capital* | 0.81 | 0.66 | 0.83 | 0.83 | 0.81 | 0.79 | 0.62 | 0.71 | 0.73 | 0.62 |
| | Private Real Estate* | 0.36 | 0.39 | 0.36 | 0.36 | 0.36 | 0.31 | 0.39 | 0.33 | 0.34 | 0.29 |
| | Private Debt* | 0.75 | 0.71 | 0.71 | 0.70 | 0.75 | 0.68 | 0.63 | 0.73 | 0.77 | 0.69 |
| | Private Infrastructure* | 0.60 | 0.59 | 0.56 | 0.56 | 0.58 | 0.52 | 0.52 | 0.61 | 0.58 | 0.54 |
| | United States Growth | 0.21 | 0.30 | 0.19 | 0.18 | 0.23 | 0.23 | 0.26 | 0.21 | 0.23 | 0.21 |
| | United States Inflation | 0.00 | 0.01 | -0.01 | -0.01 | -0.01 | -0.01 | 0.00 | 0.02 | -0.02 | -0.03 |

As of November 30, 2024. Index performance assumes the reinvestment of all distributions but does not assume any transaction costs, taxes, management fees or other expenses, unless indicated otherwise. Indices are unmanaged and investors cannot invest directly into any index. * Consistent with the Representative Index, returns are net of management fees. The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly.

# EXPECTED CORRELATIONS USD

*Page 3 of 8*

| | | FIXED INCOME | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Global Aggregate (Hedged) | Global Treasury (Hedged) | Global Corporate (Hedged) | Global High Yield (Hedged) | US Aggregate | US Treasury | US Treasury Bills | US Intermediate Treasury | US Long Treasury | US Strips 20+ Year | US Investment Grade Credit | US Intermediate Inv Grade Credit | US Long Investment Grade Credit |
| EQUITY | Global Equity | 0.40 | 0.23 | 0.64 | 0.84 | 0.41 | 0.13 | -0.01 | 0.11 | 0.11 | 0.07 | 0.60 | 0.59 | 0.58 |
| | Global REITs | 0.52 | 0.37 | 0.71 | 0.81 | 0.52 | 0.26 | -0.07 | 0.22 | 0.28 | 0.24 | 0.68 | 0.66 | 0.67 |
| | US Equity | 0.40 | 0.24 | 0.60 | 0.78 | 0.38 | 0.12 | -0.03 | 0.10 | 0.11 | 0.07 | 0.56 | 0.54 | 0.55 |
| | US Large Cap | 0.40 | 0.25 | 0.61 | 0.78 | 0.39 | 0.13 | -0.02 | 0.11 | 0.12 | 0.08 | 0.57 | 0.55 | 0.55 |
| | US Mid Cap | 0.38 | 0.22 | 0.61 | 0.82 | 0.37 | 0.09 | -0.08 | 0.06 | 0.10 | 0.07 | 0.57 | 0.55 | 0.56 |
| | US Small Cap | 0.30 | 0.15 | 0.52 | 0.74 | 0.30 | 0.03 | -0.09 | 0.01 | 0.03 | 0.01 | 0.48 | 0.46 | 0.46 |
| | US REITs | 0.51 | 0.40 | 0.65 | 0.73 | 0.50 | 0.29 | -0.07 | 0.23 | 0.32 | 0.29 | 0.63 | 0.59 | 0.63 |
| | Developed Non US Equity | 0.38 | 0.21 | 0.62 | 0.83 | 0.41 | 0.13 | 0.01 | 0.13 | 0.11 | 0.06 | 0.59 | 0.59 | 0.57 |
| | Developed Non US Small Cap | 0.39 | 0.21 | 0.65 | 0.85 | 0.42 | 0.13 | -0.06 | 0.12 | 0.11 | 0.06 | 0.61 | 0.62 | 0.58 |
| | Emerging Markets Equity | 0.34 | 0.17 | 0.58 | 0.78 | 0.37 | 0.11 | 0.01 | 0.10 | 0.10 | 0.06 | 0.56 | 0.57 | 0.54 |
| FIXED INCOME | Global Aggregate (Hedged) | 1.00 | 0.97 | 0.90 | 0.49 | 0.96 | 0.89 | 0.15 | 0.86 | 0.85 | 0.80 | 0.91 | 0.88 | 0.90 |
| | Global Treasury (Hedged) | 0.97 | 1.00 | 0.77 | 0.30 | 0.91 | 0.92 | 0.17 | 0.88 | 0.89 | 0.84 | 0.79 | 0.75 | 0.79 |
| | Global Corporate (Hedged) | 0.90 | 0.77 | 1.00 | 0.76 | 0.88 | 0.68 | 0.06 | 0.65 | 0.66 | 0.60 | 0.99 | 0.97 | 0.96 |
| | Global High Yield (Hedged) | 0.49 | 0.30 | 0.76 | 1.00 | 0.48 | 0.16 | -0.02 | 0.15 | 0.14 | 0.09 | 0.72 | 0.74 | 0.67 |
| | US Aggregate | 0.96 | 0.91 | 0.88 | 0.48 | 1.00 | 0.93 | 0.15 | 0.90 | 0.89 | 0.83 | 0.92 | 0.89 | 0.92 |
| | US Treasury | 0.89 | 0.92 | 0.68 | 0.16 | 0.93 | 1.00 | 0.20 | 0.97 | 0.96 | 0.91 | 0.75 | 0.70 | 0.76 |
| | US Treasury Bills | 0.15 | 0.17 | 0.06 | -0.02 | 0.15 | 0.20 | 1.00 | 0.25 | 0.11 | 0.09 | 0.07 | 0.09 | 0.05 |
| | US Intermediate Treasury | 0.86 | 0.88 | 0.65 | 0.15 | 0.90 | 0.97 | 0.25 | 1.00 | 0.86 | 0.79 | 0.70 | 0.70 | 0.68 |
| | US Long Treasury | 0.85 | 0.89 | 0.66 | 0.14 | 0.89 | 0.96 | 0.11 | 0.86 | 1.00 | 0.98 | 0.73 | 0.64 | 0.78 |
| | US Strips 20+ Year | 0.80 | 0.84 | 0.60 | 0.09 | 0.83 | 0.91 | 0.09 | 0.79 | 0.98 | 1.00 | 0.68 | 0.57 | 0.75 |
| | US Investment Grade Credit | 0.91 | 0.79 | 0.99 | 0.72 | 0.92 | 0.75 | 0.07 | 0.70 | 0.73 | 0.68 | 1.00 | 0.98 | 0.98 |
| | US Intermediate Inv Grade Credit | 0.88 | 0.75 | 0.97 | 0.74 | 0.89 | 0.70 | 0.09 | 0.70 | 0.64 | 0.57 | 0.98 | 1.00 | 0.93 |
| | US Long Investment Grade Credit | 0.90 | 0.79 | 0.96 | 0.67 | 0.92 | 0.76 | 0.05 | 0.68 | 0.78 | 0.75 | 0.98 | 0.93 | 1.00 |
| | US TIPS | 0.81 | 0.75 | 0.78 | 0.54 | 0.82 | 0.74 | 0.04 | 0.73 | 0.70 | 0.63 | 0.80 | 0.80 | 0.78 |
| | US Agencies | 0.92 | 0.87 | 0.85 | 0.47 | 0.92 | 0.87 | 0.20 | 0.87 | 0.80 | 0.74 | 0.88 | 0.89 | 0.85 |
| | US MBS | 0.89 | 0.84 | 0.78 | 0.40 | 0.95 | 0.87 | 0.16 | 0.86 | 0.80 | 0.74 | 0.81 | 0.78 | 0.80 |
| | US Investment Grade CMBS | 0.61 | 0.52 | 0.68 | 0.62 | 0.64 | 0.49 | 0.02 | 0.47 | 0.47 | 0.43 | 0.69 | 0.70 | 0.66 |
| | US Municipal | 0.81 | 0.74 | 0.80 | 0.55 | 0.83 | 0.70 | 0.08 | 0.67 | 0.68 | 0.63 | 0.82 | 0.80 | 0.80 |
| | US High Yield | 0.49 | 0.31 | 0.74 | 0.97 | 0.48 | 0.18 | -0.04 | 0.17 | 0.15 | 0.10 | 0.70 | 0.73 | 0.66 |
| | US Bank Loans | 0.17 | 0.00 | 0.49 | 0.83 | 0.14 | -0.17 | -0.08 | -0.19 | -0.14 | -0.18 | 0.42 | 0.47 | 0.37 |
| | Global Aggregate Ex US | 0.75 | 0.66 | 0.77 | 0.59 | 0.77 | 0.65 | 0.11 | 0.65 | 0.59 | 0.53 | 0.79 | 0.77 | 0.77 |
| | Global Treasury Ex US | 0.78 | 0.71 | 0.75 | 0.53 | 0.80 | 0.71 | 0.11 | 0.70 | 0.65 | 0.59 | 0.78 | 0.76 | 0.77 |
| | Global Corporate Ex US | 0.64 | 0.49 | 0.78 | 0.76 | 0.66 | 0.45 | 0.10 | 0.46 | 0.39 | 0.33 | 0.77 | 0.78 | 0.74 |
| | Emerging Mkts Sovereign USD | 0.69 | 0.54 | 0.84 | 0.88 | 0.69 | 0.45 | 0.06 | 0.42 | 0.44 | 0.40 | 0.84 | 0.83 | 0.82 |
| | Emerging Mkts Corporate USD | 0.56 | 0.39 | 0.77 | 0.86 | 0.59 | 0.34 | 0.03 | 0.33 | 0.32 | 0.27 | 0.77 | 0.80 | 0.73 |
| | Emerging Mkts Sovereign Local | 0.48 | 0.35 | 0.62 | 0.70 | 0.51 | 0.32 | 0.04 | 0.32 | 0.28 | 0.23 | 0.63 | 0.63 | 0.61 |

As of November 30, 2024. Index performance assumes the reinvestment of all distributions but does not assume any transaction costs, taxes, management fees or other expenses, unless indicated otherwise. Indices are unmanaged and investors cannot invest directly into any index.

# EXPECTED CORRELATIONS USD

*Page 4 of 8*

| | | FIXED INCOME | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Global Aggregate (Hedged) | Global Treasury (Hedged) | Global Corporate (Hedged) | Global High Yield (Hedged) | US Aggregate | US Treasury | US Treasury Bills | US Intermediate Treasury | US Long Treasury | US Strips 20+ Year | US Investment Grade Credit | US Intermediate Inv Grade Credit | US Long Investment Grade Credit |
| ALTERNATIVES | Commodities | -0.07 | -0.20 | 0.15 | 0.48 | -0.03 | -0.21 | -0.14 | -0.17 | -0.24 | -0.27 | 0.13 | 0.17 | 0.10 |
| | Global Natural Resources Equity | 0.15 | -0.01 | 0.42 | 0.70 | 0.18 | -0.07 | -0.07 | -0.07 | -0.09 | -0.12 | 0.39 | 0.39 | 0.37 |
| | Global Listed Infrastructure | 0.42 | 0.26 | 0.64 | 0.80 | 0.43 | 0.16 | -0.06 | 0.14 | 0.16 | 0.13 | 0.62 | 0.62 | 0.61 |
| | Absolute Return* | 0.18 | 0.00 | 0.48 | 0.76 | 0.18 | -0.09 | -0.07 | -0.12 | -0.06 | -0.09 | 0.43 | 0.44 | 0.40 |
| | Hedge Funds* | 0.25 | 0.07 | 0.55 | 0.82 | 0.25 | -0.04 | -0.07 | -0.06 | -0.03 | -0.05 | 0.50 | 0.51 | 0.47 |
| | Hedge Funds – Equity Hedge* | 0.31 | 0.12 | 0.58 | 0.82 | 0.32 | 0.03 | -0.04 | 0.01 | 0.02 | -0.01 | 0.55 | 0.55 | 0.52 |
| | Hedge Funds – Event Driven* | 0.25 | 0.06 | 0.54 | 0.83 | 0.24 | -0.07 | -0.10 | -0.08 | -0.06 | -0.09 | 0.49 | 0.50 | 0.46 |
| | Hedge Funds – Macro* | -0.16 | -0.18 | -0.06 | 0.10 | -0.17 | -0.20 | -0.04 | -0.23 | -0.14 | -0.11 | -0.07 | -0.08 | -0.04 |
| | Hedge Funds – Relative Value* | 0.21 | 0.02 | 0.54 | 0.86 | 0.19 | -0.12 | -0.12 | -0.14 | -0.11 | -0.14 | 0.49 | 0.52 | 0.44 |
| | Private Equity* | 0.31 | 0.14 | 0.56 | 0.78 | 0.31 | 0.03 | -0.10 | 0.02 | 0.02 | -0.02 | 0.52 | 0.52 | 0.48 |
| | Venture Capital* | 0.28 | 0.14 | 0.47 | 0.67 | 0.25 | 0.01 | -0.08 | 0.01 | -0.01 | -0.03 | 0.42 | 0.42 | 0.39 |
| | Private Real Estate* | 0.07 | 0.01 | 0.18 | 0.27 | 0.07 | -0.03 | -0.23 | -0.07 | 0.00 | 0.00 | 0.15 | 0.14 | 0.16 |
| | Private Debt* | 0.28 | 0.10 | 0.56 | 0.85 | 0.26 | -0.04 | -0.13 | -0.04 | -0.05 | -0.10 | 0.50 | 0.54 | 0.46 |
| | Private Infrastructure* | 0.25 | 0.15 | 0.41 | 0.52 | 0.25 | 0.07 | -0.03 | 0.04 | 0.09 | 0.09 | 0.40 | 0.39 | 0.40 |
| | United States Growth | 0.02 | -0.03 | 0.13 | 0.30 | 0.00 | -0.12 | -0.42 | -0.16 | -0.06 | -0.06 | 0.11 | 0.10 | 0.11 |
| | United States Inflation | -0.30 | -0.32 | -0.22 | -0.05 | -0.28 | -0.32 | -0.11 | -0.34 | -0.27 | -0.27 | -0.22 | -0.24 | -0.19 |

As of November 30, 2024. Index performance assumes the reinvestment of all distributions but does not assume any transaction costs, taxes, management fees or other expenses, unless indicated otherwise. Indices are unmanaged and investors cannot invest directly into any index. * Consistent with the Representative Index, returns are net of management fees. The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly.

# EXPECTED CORRELATIONS USD



| | | FIXED INCOME | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | US TIPS | US Agencies | US MBS | US Investment Grade CMBS | US Municipal | US High Yield | US Bank Loans | Global Aggregate Ex US | Global Treasury Ex US | Global Corporate Ex US | Emerging Mkts Sovereign USD | Emerging Mkts Corporate USD | Emerging Mkts Sovereign Local |
| EQUITY | Global Equity | 0.48 | 0.34 | 0.39 | 0.46 | 0.43 | 0.83 | 0.64 | 0.58 | 0.51 | 0.76 | 0.74 | 0.68 | 0.69 |
| | Global REITs | 0.57 | 0.45 | 0.46 | 0.60 | 0.51 | 0.81 | 0.62 | 0.61 | 0.56 | 0.73 | 0.76 | 0.68 | 0.70 |
| | US Equity | 0.46 | 0.31 | 0.37 | 0.42 | 0.40 | 0.80 | 0.60 | 0.50 | 0.43 | 0.67 | 0.67 | 0.59 | 0.57 |
| | US Large Cap | 0.47 | 0.31 | 0.37 | 0.42 | 0.40 | 0.79 | 0.60 | 0.50 | 0.44 | 0.68 | 0.68 | 0.59 | 0.58 |
| | US Mid Cap | 0.44 | 0.29 | 0.35 | 0.44 | 0.41 | 0.83 | 0.66 | 0.49 | 0.43 | 0.67 | 0.69 | 0.62 | 0.59 |
| | US Small Cap | 0.35 | 0.22 | 0.30 | 0.38 | 0.32 | 0.76 | 0.61 | 0.41 | 0.35 | 0.58 | 0.60 | 0.53 | 0.51 |
| | US REITs | 0.54 | 0.43 | 0.45 | 0.61 | 0.50 | 0.74 | 0.55 | 0.53 | 0.49 | 0.61 | 0.68 | 0.59 | 0.60 |
| | Developed Non US Equity | 0.46 | 0.34 | 0.39 | 0.46 | 0.44 | 0.80 | 0.61 | 0.62 | 0.54 | 0.80 | 0.75 | 0.70 | 0.73 |
| | Developed Non US Small Cap | 0.49 | 0.35 | 0.40 | 0.47 | 0.44 | 0.83 | 0.66 | 0.63 | 0.55 | 0.80 | 0.75 | 0.72 | 0.71 |
| | Emerging Markets Equity | 0.41 | 0.33 | 0.33 | 0.47 | 0.42 | 0.73 | 0.59 | 0.61 | 0.54 | 0.74 | 0.74 | 0.75 | 0.83 |
| FIXED INCOME | Global Aggregate (Hedged) | 0.81 | 0.92 | 0.89 | 0.61 | 0.81 | 0.49 | 0.17 | 0.75 | 0.78 | 0.64 | 0.69 | 0.56 | 0.48 |
| | Global Treasury (Hedged) | 0.75 | 0.87 | 0.84 | 0.52 | 0.74 | 0.31 | 0.00 | 0.66 | 0.71 | 0.49 | 0.54 | 0.39 | 0.35 |
| | Global Corporate (Hedged) | 0.78 | 0.85 | 0.78 | 0.68 | 0.80 | 0.74 | 0.49 | 0.77 | 0.75 | 0.78 | 0.84 | 0.77 | 0.62 |
| | Global High Yield (Hedged) | 0.54 | 0.47 | 0.40 | 0.62 | 0.55 | 0.97 | 0.83 | 0.59 | 0.53 | 0.76 | 0.88 | 0.86 | 0.70 |
| | US Aggregate | 0.82 | 0.92 | 0.95 | 0.64 | 0.83 | 0.48 | 0.14 | 0.77 | 0.80 | 0.66 | 0.69 | 0.59 | 0.51 |
| | US Treasury | 0.74 | 0.87 | 0.87 | 0.49 | 0.70 | 0.18 | -0.17 | 0.65 | 0.71 | 0.45 | 0.45 | 0.34 | 0.32 |
| | US Treasury Bills | 0.04 | 0.20 | 0.16 | 0.02 | 0.08 | -0.04 | -0.08 | 0.11 | 0.11 | 0.10 | 0.06 | 0.03 | 0.04 |
| | US Intermediate Treasury | 0.73 | 0.87 | 0.86 | 0.47 | 0.67 | 0.17 | -0.19 | 0.65 | 0.70 | 0.46 | 0.42 | 0.33 | 0.32 |
| | US Long Treasury | 0.70 | 0.80 | 0.80 | 0.47 | 0.68 | 0.15 | -0.14 | 0.59 | 0.65 | 0.39 | 0.44 | 0.32 | 0.28 |
| | US Strips 20+ Year | 0.63 | 0.74 | 0.74 | 0.43 | 0.63 | 0.10 | -0.18 | 0.53 | 0.59 | 0.33 | 0.40 | 0.27 | 0.23 |
| | US Investment Grade Credit | 0.80 | 0.88 | 0.81 | 0.69 | 0.82 | 0.70 | 0.42 | 0.79 | 0.78 | 0.77 | 0.84 | 0.77 | 0.63 |
| | US Intermediate Inv Grade Credit | 0.80 | 0.89 | 0.78 | 0.70 | 0.80 | 0.73 | 0.47 | 0.77 | 0.76 | 0.78 | 0.83 | 0.80 | 0.63 |
| | US Long Investment Grade Credit | 0.78 | 0.85 | 0.80 | 0.66 | 0.80 | 0.66 | 0.37 | 0.77 | 0.77 | 0.74 | 0.82 | 0.73 | 0.61 |
| | US TIPS | 1.00 | 0.79 | 0.73 | 0.60 | 0.68 | 0.57 | 0.29 | 0.72 | 0.72 | 0.65 | 0.66 | 0.59 | 0.52 |
| | US Agencies | 0.79 | 1.00 | 0.82 | 0.61 | 0.77 | 0.46 | 0.17 | 0.74 | 0.76 | 0.63 | 0.67 | 0.60 | 0.50 |
| | US MBS | 0.73 | 0.82 | 1.00 | 0.53 | 0.79 | 0.41 | 0.05 | 0.71 | 0.74 | 0.60 | 0.61 | 0.50 | 0.44 |
| | US Investment Grade CMBS | 0.60 | 0.61 | 0.53 | 1.00 | 0.59 | 0.65 | 0.44 | 0.57 | 0.56 | 0.57 | 0.61 | 0.61 | 0.57 |
| | US Municipal | 0.68 | 0.77 | 0.79 | 0.59 | 1.00 | 0.54 | 0.28 | 0.67 | 0.69 | 0.60 | 0.72 | 0.58 | 0.49 |
| | US High Yield | 0.57 | 0.46 | 0.41 | 0.65 | 0.54 | 1.00 | 0.81 | 0.57 | 0.51 | 0.73 | 0.81 | 0.79 | 0.66 |
| | US Bank Loans | 0.29 | 0.17 | 0.05 | 0.44 | 0.28 | 0.81 | 1.00 | 0.24 | 0.17 | 0.45 | 0.58 | 0.66 | 0.42 |
| | Global Aggregate Ex US | 0.72 | 0.74 | 0.71 | 0.57 | 0.67 | 0.57 | 0.24 | 1.00 | 0.99 | 0.93 | 0.74 | 0.63 | 0.77 |
| | Global Treasury Ex US | 0.72 | 0.76 | 0.74 | 0.56 | 0.69 | 0.51 | 0.17 | 0.99 | 1.00 | 0.88 | 0.70 | 0.58 | 0.73 |
| | Global Corporate Ex US | 0.65 | 0.63 | 0.60 | 0.57 | 0.60 | 0.73 | 0.45 | 0.93 | 0.88 | 1.00 | 0.80 | 0.73 | 0.79 |
| | Emerging Mkts Sovereign USD | 0.66 | 0.67 | 0.61 | 0.61 | 0.72 | 0.81 | 0.58 | 0.74 | 0.70 | 0.80 | 1.00 | 0.88 | 0.75 |
| | Emerging Mkts Corporate USD | 0.59 | 0.60 | 0.50 | 0.61 | 0.58 | 0.79 | 0.66 | 0.63 | 0.58 | 0.73 | 0.88 | 1.00 | 0.71 |
| | Emerging Mkts Sovereign Local | 0.52 | 0.50 | 0.44 | 0.57 | 0.49 | 0.66 | 0.42 | 0.77 | 0.73 | 0.79 | 0.75 | 0.71 | 1.00 |

As of November 30, 2024. Index performance assumes the reinvestment of all distributions but does not assume any transaction costs, taxes, management fees or other expenses, unless indicated otherwise. Indices are unmanaged and investors cannot invest directly into any index.

# EXPECTED CORRELATIONS USD

*Page 6 of 8*

| | | FIXED INCOME | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | US TIPS | US Agencies | US MBS | US Investment Grade CMBS | US Municipal | US High Yield | US Bank Loans | Global Aggregate Ex US | Global Treasury Ex US | Global Corporate Ex US | Emerging Mkts Sovereign USD | Emerging Mkts Corporate USD | Emerging Mkts Sovereign Local |
| ALTERNATIVES | Commodities | 0.22 | -0.03 | -0.03 | 0.11 | 0.01 | 0.47 | 0.46 | 0.28 | 0.22 | 0.41 | 0.34 | 0.34 | 0.41 |
| | Global Natural Resources Equity | 0.32 | 0.14 | 0.17 | 0.22 | 0.20 | 0.68 | 0.54 | 0.47 | 0.40 | 0.64 | 0.57 | 0.53 | 0.62 |
| | Global Listed Infrastructure | 0.50 | 0.41 | 0.38 | 0.47 | 0.45 | 0.78 | 0.63 | 0.61 | 0.55 | 0.75 | 0.75 | 0.66 | 0.70 |
| | Absolute Return* | 0.30 | 0.17 | 0.11 | 0.36 | 0.23 | 0.74 | 0.74 | 0.33 | 0.26 | 0.54 | 0.58 | 0.64 | 0.52 |
| | Hedge Funds* | 0.36 | 0.23 | 0.21 | 0.37 | 0.32 | 0.79 | 0.73 | 0.44 | 0.36 | 0.64 | 0.66 | 0.65 | 0.59 |
| | Hedge Funds – Equity Hedge* | 0.39 | 0.27 | 0.29 | 0.40 | 0.37 | 0.81 | 0.70 | 0.50 | 0.42 | 0.69 | 0.69 | 0.67 | 0.63 |
| | Hedge Funds – Event Driven* | 0.34 | 0.23 | 0.21 | 0.37 | 0.33 | 0.81 | 0.79 | 0.40 | 0.33 | 0.61 | 0.65 | 0.64 | 0.53 |
| | Hedge Funds – Macro* | -0.02 | -0.16 | -0.23 | -0.07 | -0.18 | 0.08 | 0.11 | 0.00 | -0.03 | 0.07 | 0.03 | 0.00 | 0.08 |
| | Hedge Funds – Relative Value* | 0.33 | 0.24 | 0.12 | 0.42 | 0.33 | 0.82 | 0.90 | 0.33 | 0.26 | 0.55 | 0.67 | 0.72 | 0.54 |
| | Private Equity* | 0.40 | 0.27 | 0.28 | 0.40 | 0.37 | 0.77 | 0.66 | 0.49 | 0.42 | 0.67 | 0.65 | 0.62 | 0.59 |
| | Venture Capital* | 0.33 | 0.21 | 0.25 | 0.31 | 0.31 | 0.68 | 0.57 | 0.35 | 0.29 | 0.52 | 0.53 | 0.50 | 0.42 |
| | Private Real Estate* | 0.15 | 0.03 | 0.06 | 0.19 | 0.09 | 0.29 | 0.27 | 0.14 | 0.12 | 0.21 | 0.20 | 0.19 | 0.22 |
| | Private Debt* | 0.38 | 0.24 | 0.20 | 0.50 | 0.35 | 0.85 | 0.81 | 0.43 | 0.36 | 0.60 | 0.64 | 0.66 | 0.56 |
| | Private Infrastructure* | 0.33 | 0.25 | 0.21 | 0.27 | 0.29 | 0.52 | 0.43 | 0.36 | 0.32 | 0.45 | 0.48 | 0.41 | 0.47 |
| | United States Growth | 0.08 | 0.02 | -0.05 | 0.19 | 0.20 | 0.28 | 0.33 | 0.07 | 0.05 | 0.13 | 0.26 | 0.22 | 0.14 |
| | United States Inflation | -0.15 | -0.28 | -0.26 | -0.07 | -0.16 | -0.04 | 0.11 | -0.16 | -0.18 | -0.09 | -0.13 | -0.14 | -0.06 |

As of November 30, 2024. Index performance assumes the reinvestment of all distributions but does not assume any transaction costs, taxes, management fees or other expenses, unless indicated otherwise. Indices are unmanaged and investors cannot invest directly into any index. * Consistent with the Representative Index, returns are net of management fees. The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly.

# EXPECTED CORRELATIONS USD

*Page 7 of 8*

| | | ALTERNATIVES | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Commodities | Global Natural Resources Equity | Global Listed Infrastructure | Absolute Return* | Hedge Funds* | Hedge Funds – Equity Hedge* | Hedge Funds – Event Driven* | Hedge Funds – Macro* | Hedge Funds – Relative Value* | Private Equity* | Venture Capital* | Private Real Estate* | Private Debt* | Private Infrastructure* | United States Growth | United States Inflation |
| EQUITY | Global Equity | 0.50 | 0.82 | 0.87 | 0.80 | 0.89 | 0.94 | 0.84 | 0.21 | 0.74 | 0.90 | 0.81 | 0.36 | 0.75 | 0.60 | 0.21 | 0.00 |
| | Global REITs | 0.44 | 0.69 | 0.86 | 0.69 | 0.79 | 0.80 | 0.77 | 0.20 | 0.70 | 0.78 | 0.66 | 0.39 | 0.71 | 0.59 | 0.30 | 0.01 |
| | US Equity | 0.43 | 0.74 | 0.80 | 0.76 | 0.85 | 0.90 | 0.80 | 0.18 | 0.69 | 0.87 | 0.83 | 0.36 | 0.71 | 0.56 | 0.19 | -0.01 |
| | US Large Cap | 0.43 | 0.74 | 0.80 | 0.76 | 0.84 | 0.89 | 0.79 | 0.18 | 0.68 | 0.86 | 0.83 | 0.36 | 0.70 | 0.56 | 0.18 | -0.01 |
| | US Mid Cap | 0.46 | 0.78 | 0.83 | 0.79 | 0.89 | 0.93 | 0.86 | 0.23 | 0.74 | 0.86 | 0.81 | 0.36 | 0.75 | 0.58 | 0.23 | -0.01 |
| | US Small Cap | 0.41 | 0.72 | 0.74 | 0.75 | 0.87 | 0.90 | 0.86 | 0.19 | 0.70 | 0.81 | 0.79 | 0.31 | 0.68 | 0.52 | 0.23 | -0.01 |
| | US REITs | 0.33 | 0.55 | 0.77 | 0.59 | 0.67 | 0.69 | 0.66 | 0.15 | 0.58 | 0.70 | 0.62 | 0.39 | 0.63 | 0.52 | 0.26 | 0.00 |
| | Developed Non US Equity | 0.52 | 0.85 | 0.89 | 0.78 | 0.86 | 0.90 | 0.82 | 0.22 | 0.73 | 0.86 | 0.71 | 0.33 | 0.73 | 0.61 | 0.21 | 0.02 |
| | Developed Non US Small Cap | 0.53 | 0.83 | 0.88 | 0.81 | 0.89 | 0.92 | 0.86 | 0.22 | 0.77 | 0.87 | 0.73 | 0.34 | 0.77 | 0.58 | 0.23 | -0.02 |
| | Emerging Markets Equity | 0.53 | 0.77 | 0.76 | 0.74 | 0.81 | 0.84 | 0.73 | 0.21 | 0.72 | 0.77 | 0.62 | 0.29 | 0.69 | 0.54 | 0.21 | -0.03 |
| FIXED INCOME | Global Aggregate (Hedged) | -0.07 | 0.15 | 0.42 | 0.18 | 0.25 | 0.31 | 0.25 | -0.16 | 0.21 | 0.31 | 0.28 | 0.07 | 0.28 | 0.25 | 0.02 | -0.30 |
| | Global Treasury (Hedged) | -0.20 | -0.01 | 0.26 | 0.00 | 0.07 | 0.12 | 0.06 | -0.18 | 0.02 | 0.14 | 0.14 | 0.01 | 0.10 | 0.15 | -0.03 | -0.32 |
| | Global Corporate (Hedged) | 0.15 | 0.42 | 0.64 | 0.48 | 0.55 | 0.58 | 0.54 | -0.06 | 0.54 | 0.56 | 0.47 | 0.18 | 0.56 | 0.41 | 0.13 | -0.22 |
| | Global High Yield (Hedged) | 0.48 | 0.70 | 0.80 | 0.76 | 0.82 | 0.82 | 0.83 | 0.10 | 0.86 | 0.78 | 0.67 | 0.27 | 0.85 | 0.52 | 0.30 | -0.05 |
| | US Aggregate | -0.03 | 0.18 | 0.43 | 0.18 | 0.25 | 0.32 | 0.24 | -0.17 | 0.19 | 0.31 | 0.25 | 0.07 | 0.26 | 0.25 | 0.00 | -0.28 |
| | US Treasury | -0.21 | -0.07 | 0.16 | -0.09 | -0.04 | 0.03 | -0.07 | -0.20 | -0.12 | 0.03 | 0.01 | -0.03 | -0.04 | 0.07 | -0.12 | -0.32 |
| | US Treasury Bills | -0.14 | -0.07 | -0.06 | -0.07 | -0.07 | -0.04 | -0.10 | -0.04 | -0.12 | -0.10 | -0.08 | -0.23 | -0.13 | -0.03 | -0.42 | -0.11 |
| | US Intermediate Treasury | -0.17 | -0.07 | 0.14 | -0.12 | -0.06 | 0.01 | -0.08 | -0.23 | -0.14 | 0.02 | 0.01 | -0.07 | -0.04 | 0.04 | -0.16 | -0.34 |
| | US Long Treasury | -0.24 | -0.09 | 0.16 | -0.06 | -0.03 | 0.02 | -0.06 | -0.14 | -0.11 | 0.02 | -0.01 | 0.00 | -0.05 | 0.09 | -0.06 | -0.27 |
| | US Strips 20+ Year | -0.27 | -0.12 | 0.13 | -0.09 | -0.05 | -0.01 | -0.09 | -0.11 | -0.14 | -0.02 | -0.03 | 0.00 | -0.10 | 0.09 | -0.06 | -0.27 |
| | US Investment Grade Credit | 0.13 | 0.39 | 0.62 | 0.43 | 0.50 | 0.55 | 0.49 | -0.07 | 0.49 | 0.52 | 0.42 | 0.15 | 0.50 | 0.40 | 0.11 | -0.22 |
| | US Intermediate Inv Grade Credit | 0.17 | 0.39 | 0.62 | 0.44 | 0.51 | 0.55 | 0.50 | -0.08 | 0.52 | 0.52 | 0.42 | 0.14 | 0.54 | 0.39 | 0.10 | -0.24 |
| | US Long Investment Grade Credit | 0.10 | 0.37 | 0.61 | 0.40 | 0.47 | 0.52 | 0.46 | -0.04 | 0.44 | 0.48 | 0.39 | 0.16 | 0.46 | 0.40 | 0.11 | -0.19 |
| | US TIPS | 0.22 | 0.32 | 0.50 | 0.30 | 0.36 | 0.39 | 0.34 | -0.02 | 0.33 | 0.40 | 0.33 | 0.15 | 0.38 | 0.33 | 0.08 | -0.15 |
| | US Agencies | -0.03 | 0.14 | 0.41 | 0.17 | 0.23 | 0.27 | 0.23 | -0.16 | 0.24 | 0.27 | 0.21 | 0.03 | 0.24 | 0.25 | 0.02 | -0.28 |
| | US MBS | -0.03 | 0.17 | 0.38 | 0.11 | 0.21 | 0.29 | 0.21 | -0.23 | 0.12 | 0.28 | 0.25 | 0.06 | 0.20 | 0.21 | -0.05 | -0.26 |
| | US Investment Grade CMBS | 0.11 | 0.22 | 0.47 | 0.36 | 0.37 | 0.40 | 0.37 | -0.07 | 0.42 | 0.40 | 0.31 | 0.19 | 0.50 | 0.27 | 0.19 | -0.07 |
| | US Municipal | 0.01 | 0.20 | 0.45 | 0.23 | 0.32 | 0.37 | 0.33 | -0.18 | 0.33 | 0.37 | 0.31 | 0.09 | 0.35 | 0.29 | 0.20 | -0.16 |
| | US High Yield | 0.47 | 0.68 | 0.78 | 0.74 | 0.79 | 0.81 | 0.81 | 0.08 | 0.82 | 0.77 | 0.68 | 0.29 | 0.85 | 0.52 | 0.28 | -0.04 |
| | US Bank Loans | 0.46 | 0.54 | 0.63 | 0.74 | 0.73 | 0.70 | 0.79 | 0.11 | 0.90 | 0.66 | 0.57 | 0.27 | 0.81 | 0.43 | 0.33 | 0.11 |
| | Global Aggregate Ex US | 0.28 | 0.47 | 0.61 | 0.33 | 0.44 | 0.50 | 0.40 | 0.00 | 0.33 | 0.49 | 0.35 | 0.14 | 0.43 | 0.36 | 0.07 | -0.16 |
| | Global Treasury Ex US | 0.22 | 0.40 | 0.55 | 0.26 | 0.36 | 0.42 | 0.33 | -0.03 | 0.26 | 0.42 | 0.29 | 0.12 | 0.36 | 0.32 | 0.05 | -0.18 |
| | Global Corporate Ex US | 0.41 | 0.64 | 0.75 | 0.54 | 0.64 | 0.69 | 0.61 | 0.07 | 0.55 | 0.67 | 0.52 | 0.21 | 0.60 | 0.45 | 0.13 | -0.09 |
| | Emerging Mkts Sovereign USD | 0.34 | 0.57 | 0.75 | 0.58 | 0.66 | 0.69 | 0.65 | 0.03 | 0.67 | 0.65 | 0.53 | 0.20 | 0.64 | 0.48 | 0.26 | -0.13 |
| | Emerging Mkts Corporate USD | 0.34 | 0.53 | 0.66 | 0.64 | 0.65 | 0.67 | 0.64 | 0.00 | 0.72 | 0.62 | 0.50 | 0.19 | 0.66 | 0.41 | 0.22 | -0.14 |
| | Emerging Mkts Sovereign Local | 0.41 | 0.62 | 0.70 | 0.52 | 0.59 | 0.63 | 0.53 | 0.08 | 0.54 | 0.59 | 0.42 | 0.22 | 0.56 | 0.47 | 0.14 | -0.06 |

As of November 30, 2024. Index performance assumes the reinvestment of all distributions but does not assume any transaction costs, taxes, management fees or other expenses, unless indicated otherwise. Indices are unmanaged and investors cannot invest directly into any index. * Consistent with the Representative Index, returns are net of management fees. The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly.

# EXPECTED CORRELATIONS USD



| | | ALTERNATIVES | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Commodities | Global Natural Resources Equity | Global Listed Infrastructure | Absolute Return* | Hedge Funds* | Hedge Funds – Equity Hedge* | Hedge Funds – Event Driven* | Hedge Funds – Macro* | Hedge Funds – Relative Value* | Private Equity* | Venture Capital* | Private Real Estate* | Private Debt* | Private Infrastructure* | United States Growth | United States Inflation |
| ALTERNATIVES | Commodities | 1.00 | 0.72 | 0.55 | 0.52 | 0.57 | 0.52 | 0.54 | 0.38 | 0.57 | 0.49 | 0.33 | 0.29 | 0.53 | 0.43 | 0.29 | 0.27 |
| | Global Natural Resources Equity | 0.72 | 1.00 | 0.81 | 0.72 | 0.82 | 0.81 | 0.78 | 0.38 | 0.69 | 0.74 | 0.59 | 0.28 | 0.66 | 0.60 | 0.15 | 0.11 |
| | Global Listed Infrastructure | 0.55 | 0.81 | 1.00 | 0.70 | 0.80 | 0.80 | 0.77 | 0.26 | 0.73 | 0.77 | 0.60 | 0.35 | 0.69 | 0.68 | 0.23 | 0.04 |
| | Absolute Return* | 0.52 | 0.72 | 0.70 | 1.00 | 0.92 | 0.89 | 0.88 | 0.44 | 0.87 | 0.79 | 0.70 | 0.35 | 0.75 | 0.51 | 0.33 | 0.09 |
| | Hedge Funds* | 0.57 | 0.82 | 0.80 | 0.92 | 1.00 | 0.98 | 0.95 | 0.44 | 0.88 | 0.86 | 0.78 | 0.35 | 0.78 | 0.59 | 0.32 | 0.06 |
| | Hedge Funds – Equity Hedge* | 0.52 | 0.81 | 0.80 | 0.89 | 0.98 | 1.00 | 0.93 | 0.31 | 0.84 | 0.89 | 0.82 | 0.34 | 0.77 | 0.58 | 0.27 | 0.01 |
| | Hedge Funds – Event Driven* | 0.54 | 0.78 | 0.77 | 0.88 | 0.95 | 0.93 | 1.00 | 0.28 | 0.91 | 0.84 | 0.75 | 0.33 | 0.80 | 0.55 | 0.38 | 0.09 |
| | Hedge Funds – Macro* | 0.38 | 0.38 | 0.26 | 0.44 | 0.44 | 0.31 | 0.28 | 1.00 | 0.25 | 0.19 | 0.13 | 0.17 | 0.15 | 0.21 | 0.08 | 0.14 |
| | Hedge Funds – Relative Value* | 0.57 | 0.69 | 0.73 | 0.87 | 0.88 | 0.84 | 0.91 | 0.25 | 1.00 | 0.76 | 0.65 | 0.34 | 0.83 | 0.54 | 0.44 | 0.13 |
| | Private Equity* | 0.49 | 0.74 | 0.77 | 0.79 | 0.86 | 0.89 | 0.84 | 0.19 | 0.76 | 1.00 | 0.88 | 0.54 | 0.84 | 0.63 | 0.32 | 0.03 |
| | Venture Capital* | 0.33 | 0.59 | 0.60 | 0.70 | 0.78 | 0.82 | 0.75 | 0.13 | 0.65 | 0.88 | 1.00 | 0.41 | 0.69 | 0.49 | 0.27 | -0.10 |
| | Private Real Estate* | 0.29 | 0.28 | 0.35 | 0.35 | 0.35 | 0.34 | 0.33 | 0.17 | 0.34 | 0.54 | 0.41 | 1.00 | 0.47 | 0.35 | 0.38 | 0.17 |
| | Private Debt* | 0.53 | 0.66 | 0.69 | 0.75 | 0.78 | 0.77 | 0.80 | 0.15 | 0.83 | 0.84 | 0.69 | 0.47 | 1.00 | 0.52 | 0.38 | 0.09 |
| | Private Infrastructure* | 0.43 | 0.60 | 0.68 | 0.51 | 0.59 | 0.58 | 0.55 | 0.21 | 0.54 | 0.63 | 0.49 | 0.35 | 0.52 | 1.00 | 0.25 | 0.14 |
| | United States Growth | 0.29 | 0.15 | 0.23 | 0.33 | 0.32 | 0.27 | 0.38 | 0.08 | 0.44 | 0.32 | 0.27 | 0.38 | 0.38 | 0.25 | 1.00 | 0.29 |
| | United States Inflation | 0.27 | 0.11 | 0.04 | 0.09 | 0.06 | 0.01 | 0.09 | 0.14 | 0.13 | 0.03 | -0.10 | 0.17 | 0.09 | 0.14 | 0.29 | 1.00 |

As of November 30, 2024. Index performance assumes the reinvestment of all distributions but does not assume any transaction costs, taxes, management fees or other expenses, unless indicated otherwise. Indices are unmanaged and investors cannot invest directly into any index. * Consistent with the Representative Index, returns are net of management fees. The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly.

# EXPECTED 10-YEAR RETURNS & STANDARD DEVIATIONS – EUR

| | Asset Class | Representative Index | Returns | Volatility |
|---|---|---|---|---|
| EQUITY | Global Equity | MSCI ACWI IMI Index | 7.2% | 13.6% |
| | Global REITs | FTSE EPRA Nareit Global Real Estate Index | 7.1% | 16.7% |
| | Eurozone Equity | Bloomberg Eurozone Developed Markets Index | 6.1% | 16.5% |
| | Developed Non Eurozone Equity | Bloomberg Developed Markets ex Eurozone Index | 7.2% | 13.6% |
| | Emerging Markets Equity | MSCI Emerging Markets IMI Index | 7.5% | 15.3% |
| FIXED INCOME | Global Aggregate (Hedged) | Bloomberg Global Aggregate Index Hedged USD | 3.5% | 4.1% |
| | Global Treasury (Hedged) | Bloomberg Global Treasury Index Hedged USD | 3.2% | 3.9% |
| | Global Corporate (Hedged) | Bloomberg Global Corporates Index Hedged USD | 4.1% | 6.0% |
| | Global High Yield (Hedged) | Bloomberg Global High Yield Index Value Hedged USD | 5.5% | 8.8% |
| | Eurozone Aggregate | Bloomberg Euro Aggregate Index | 3.3% | 5.0% |
| | Eurozone Treasury | Bloomberg Euro Aggregate Treasury Index | 3.1% | 5.6% |
| | Eurozone Corporates | Bloomberg Euro Aggregate Corporate Index | 3.6% | 5.0% |
| | Eurozone High Yield | Bloomberg Liquidity Screened Euro HY Index | 4.8% | 8.1% |
| | Eurozone Inflation Linked | Bloomberg Euro Govt Inflation-Linked AAA-AA All Maturities Index | 3.0% | 6.4% |
| | 3-Month Euro Bills | Bloomberg Euro Treasury Bills Index | 2.3% | 0.4% |
| | Emerging Mkts Sovereign Local | Bloomberg EM Local Currency Government | 3.8% | 6.5% |
| ALTERNATIVES | Commodities | Bloomberg Commodity Index | 2.0% | 14.0% |
| | Global Natural Resources Equity | S&P Global Natural Resources Total Return Index | 6.7% | 18.0% |
| | Global Listed Infrastructure | S&P Global Infrastructure Total Return Index | 6.4% | 13.6% |
| | Absolute Return* | HFRX Global Hedge Fund Index | 4.3% | 7.8% |
| | Hedge Funds* | HFRI Fund Weighted Composite Index | 5.1% | 7.9% |
| | Private Equity* | PitchBook Global Private Equity | 9.5% | 18.0% |
| | Venture Capital* | PitchBook North American Venture Capital | 8.4% | 20.1% |
| | Private Real Estate* | PitchBook North American Real Estate | 8.4% | 17.4% |
| | Private Debt* | PitchBook North American Private Debt | 7.3% | 12.3% |
| | Private Infrastructure* | PitchBook Infrastructure | 8.2% | 17.4% |
| | Eurozone Inflation | Euro Area MUICP All Items | 2.0% | 1.8% |

As of November 30, 2024. Index performance assumes the reinvestment of all distributions but does not assume any transaction costs, taxes, management fees or other expenses, unless indicated otherwise. Indices are unmanaged and investors cannot invest directly into any index. * Consistent with the Representative Index, returns are net of management fees. The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly.

# EXPECTED CORRELATIONS EUR

*Page 1 of 2*

| | | EQUITY | | | | | FIXED INCOME | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Global Equity | Global REITs | Eurozone Equity | Developed Non Eurozone Equity | Emerging Markets Equity | Global Aggregate (Hedged) | Global Treasury (Hedged) | Global Corporate (Hedged) | Global High Yield (Hedged) | Eurozone Aggregate | Eurozone Treasury | Eurozone Corporates | Eurozone High Yield | Eurozone Inflation Linked | 3 Month Euro Bills | Emerging Mkts Sovereign Local |
| EQUITY | Global Equity | 1.00 | 0.83 | 0.85 | 0.99 | 0.77 | 0.33 | 0.19 | 0.54 | 0.72 | 0.40 | 0.32 | 0.62 | 0.75 | 0.51 | 0.01 | 0.48 |
| | Global REITs | 0.83 | 1.00 | 0.72 | 0.82 | 0.65 | 0.47 | 0.35 | 0.62 | 0.69 | 0.49 | 0.43 | 0.65 | 0.70 | 0.61 | -0.06 | 0.56 |
| | Eurozone Equity | 0.85 | 0.72 | 1.00 | 0.80 | 0.67 | 0.31 | 0.16 | 0.55 | 0.76 | 0.35 | 0.27 | 0.58 | 0.77 | 0.44 | -0.01 | 0.30 |
| | Developed Non Eurozone Equity | 0.99 | 0.82 | 0.80 | 1.00 | 0.68 | 0.32 | 0.20 | 0.50 | 0.66 | 0.40 | 0.33 | 0.59 | 0.69 | 0.51 | 0.02 | 0.45 |
| | Emerging Markets Equity | 0.77 | 0.65 | 0.67 | 0.68 | 1.00 | 0.28 | 0.13 | 0.52 | 0.72 | 0.29 | 0.21 | 0.53 | 0.69 | 0.36 | -0.02 | 0.61 |
| FIXED INCOME | Global Aggregate (Hedged) | 0.33 | 0.47 | 0.31 | 0.32 | 0.28 | 1.00 | 0.97 | 0.90 | 0.49 | 0.91 | 0.89 | 0.79 | 0.43 | 0.69 | 0.14 | 0.36 |
| | Global Treasury (Hedged) | 0.19 | 0.35 | 0.16 | 0.20 | 0.13 | 0.97 | 1.00 | 0.78 | 0.30 | 0.90 | 0.91 | 0.67 | 0.24 | 0.66 | 0.14 | 0.31 |
| | Global Corporate (Hedged) | 0.54 | 0.62 | 0.55 | 0.50 | 0.52 | 0.90 | 0.78 | 1.00 | 0.76 | 0.82 | 0.75 | 0.90 | 0.72 | 0.67 | 0.09 | 0.41 |
| | Global High Yield (Hedged) | 0.72 | 0.69 | 0.76 | 0.66 | 0.72 | 0.49 | 0.30 | 0.76 | 1.00 | 0.48 | 0.38 | 0.75 | 0.94 | 0.53 | 0.07 | 0.40 |
| | Eurozone Aggregate | 0.40 | 0.49 | 0.35 | 0.40 | 0.29 | 0.91 | 0.90 | 0.82 | 0.48 | 1.00 | 0.99 | 0.87 | 0.47 | 0.80 | 0.13 | 0.39 |
| | Eurozone Treasury | 0.32 | 0.43 | 0.27 | 0.33 | 0.21 | 0.89 | 0.91 | 0.75 | 0.38 | 0.99 | 1.00 | 0.79 | 0.37 | 0.78 | 0.12 | 0.36 |
| | Eurozone Corporates | 0.62 | 0.65 | 0.58 | 0.59 | 0.53 | 0.79 | 0.67 | 0.90 | 0.75 | 0.87 | 0.79 | 1.00 | 0.78 | 0.77 | 0.12 | 0.46 |
| | Eurozone High Yield | 0.75 | 0.70 | 0.77 | 0.69 | 0.69 | 0.43 | 0.24 | 0.72 | 0.94 | 0.47 | 0.37 | 0.78 | 1.00 | 0.53 | 0.04 | 0.40 |
| | Eurozone Inflation Linked | 0.51 | 0.61 | 0.44 | 0.51 | 0.36 | 0.69 | 0.66 | 0.67 | 0.53 | 0.80 | 0.78 | 0.77 | 0.53 | 1.00 | 0.00 | 0.40 |
| | 3-Month Euro Bills | 0.01 | -0.06 | -0.01 | 0.02 | -0.02 | 0.14 | 0.14 | 0.09 | 0.07 | 0.13 | 0.12 | 0.12 | 0.04 | 0.00 | 1.00 | -0.01 |
| | Emerging Mkts Sovereign Local | 0.48 | 0.56 | 0.30 | 0.45 | 0.61 | 0.36 | 0.31 | 0.41 | 0.40 | 0.39 | 0.36 | 0.46 | 0.40 | 0.40 | -0.01 | 1.00 |
| ALTERNATIVES | Commodities | 0.37 | 0.32 | 0.23 | 0.36 | 0.36 | -0.21 | -0.28 | -0.03 | 0.28 | -0.11 | -0.16 | 0.09 | 0.28 | 0.22 | -0.14 | 0.23 |
| | Global Natural Resources Equity | 0.74 | 0.60 | 0.70 | 0.70 | 0.68 | 0.07 | -0.08 | 0.32 | 0.61 | 0.11 | 0.03 | 0.39 | 0.61 | 0.33 | -0.09 | 0.34 |
| | Global Listed Infrastructure | 0.81 | 0.83 | 0.76 | 0.78 | 0.65 | 0.35 | 0.22 | 0.55 | 0.68 | 0.38 | 0.31 | 0.57 | 0.69 | 0.55 | -0.06 | 0.49 |
| | Absolute Return* | 0.41 | 0.35 | 0.12 | 0.46 | 0.22 | -0.15 | -0.15 | -0.09 | -0.01 | 0.00 | -0.02 | 0.08 | 0.13 | 0.12 | -0.05 | 0.42 |
| | Hedge Funds* | 0.62 | 0.53 | 0.33 | 0.65 | 0.42 | -0.05 | -0.09 | 0.08 | 0.20 | 0.09 | 0.05 | 0.23 | 0.31 | 0.25 | -0.02 | 0.48 |
| | Private Equity* | 0.86 | 0.72 | 0.76 | 0.84 | 0.70 | 0.23 | 0.09 | 0.47 | 0.67 | 0.30 | 0.22 | 0.54 | 0.71 | 0.42 | -0.09 | 0.39 |
| | Venture Capital* | 0.80 | 0.61 | 0.61 | 0.80 | 0.55 | 0.19 | 0.09 | 0.34 | 0.52 | 0.29 | 0.22 | 0.46 | 0.56 | 0.34 | -0.04 | 0.31 |
| | Private Real Estate* | 0.32 | 0.36 | 0.17 | 0.35 | 0.19 | -0.04 | -0.05 | 0.01 | 0.06 | 0.03 | 0.02 | 0.09 | 0.14 | 0.17 | -0.27 | 0.26 |
| | Private Debt* | 0.67 | 0.63 | 0.49 | 0.66 | 0.54 | 0.12 | 0.01 | 0.33 | 0.57 | 0.24 | 0.16 | 0.48 | 0.66 | 0.38 | -0.06 | 0.52 |
| | Private Infrastructure* | 0.54 | 0.52 | 0.45 | 0.53 | 0.42 | 0.14 | 0.08 | 0.26 | 0.33 | 0.17 | 0.14 | 0.28 | 0.36 | 0.32 | -0.07 | 0.35 |
| | Eurozone Inflation | -0.07 | -0.12 | -0.08 | -0.06 | -0.12 | -0.35 | -0.32 | -0.35 | -0.20 | -0.31 | -0.30 | -0.30 | -0.17 | -0.10 | 0.00 | -0.17 |

As of November 30, 2024. Index performance assumes the reinvestment of all distributions but does not assume any transaction costs, taxes, management fees or other expenses, unless indicated otherwise. Indices are unmanaged and investors cannot invest directly into any index. * Consistent with the Representative Index, returns are net of management fees. The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly.

# EXPECTED CORRELATIONS EUR

*Page 2 of 2*

| | | ALTERNATIVES | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Commodities | Global Natural Resources Equity | Global Listed Infrastructure | Absolute Return* | Hedge Funds* | Private Equity* | Venture Capital* | Private Real Estate* | Private Debt* | Private Infrastructure* | Eurozone Inflation |
| EQUITY | Global Equity | 0.37 | 0.74 | 0.81 | 0.41 | 0.62 | 0.86 | 0.80 | 0.32 | 0.67 | 0.54 | -0.07 |
| | Global REITs | 0.32 | 0.60 | 0.83 | 0.35 | 0.53 | 0.72 | 0.61 | 0.36 | 0.63 | 0.52 | -0.12 |
| | Eurozone Equity | 0.23 | 0.70 | 0.76 | 0.12 | 0.33 | 0.76 | 0.61 | 0.17 | 0.49 | 0.45 | -0.08 |
| | Developed Non Eurozone Equity | 0.36 | 0.70 | 0.78 | 0.46 | 0.65 | 0.84 | 0.80 | 0.35 | 0.66 | 0.53 | -0.06 |
| | Emerging Markets Equity | 0.36 | 0.68 | 0.65 | 0.22 | 0.42 | 0.70 | 0.55 | 0.19 | 0.54 | 0.42 | -0.12 |
| FIXED INCOME | Global Aggregate (Hedged) | -0.21 | 0.07 | 0.35 | -0.15 | -0.05 | 0.23 | 0.19 | -0.04 | 0.12 | 0.14 | -0.35 |
| | Global Treasury (Hedged) | -0.28 | -0.08 | 0.22 | -0.15 | -0.09 | 0.09 | 0.09 | -0.05 | 0.01 | 0.08 | -0.32 |
| | Global Corporate (Hedged) | -0.03 | 0.32 | 0.55 | -0.09 | 0.08 | 0.47 | 0.34 | 0.01 | 0.33 | 0.26 | -0.35 |
| | Global High Yield (Hedged) | 0.28 | 0.61 | 0.68 | -0.01 | 0.20 | 0.67 | 0.52 | 0.06 | 0.57 | 0.33 | -0.20 |
| | Eurozone Aggregate | -0.11 | 0.11 | 0.38 | 0.00 | 0.09 | 0.30 | 0.29 | 0.03 | 0.24 | 0.17 | -0.31 |
| | Eurozone Treasury | -0.16 | 0.03 | 0.31 | -0.02 | 0.05 | 0.22 | 0.22 | 0.02 | 0.16 | 0.14 | -0.30 |
| | Eurozone Corporates | 0.09 | 0.39 | 0.57 | 0.08 | 0.23 | 0.54 | 0.46 | 0.09 | 0.48 | 0.28 | -0.30 |
| | Eurozone High Yield | 0.28 | 0.61 | 0.69 | 0.13 | 0.31 | 0.71 | 0.56 | 0.14 | 0.66 | 0.36 | -0.17 |
| | Eurozone Inflation Linked | 0.22 | 0.33 | 0.55 | 0.12 | 0.25 | 0.42 | 0.34 | 0.17 | 0.38 | 0.32 | -0.10 |
| | 3-Month Euro Bills | -0.14 | -0.09 | -0.06 | -0.05 | -0.02 | -0.09 | -0.04 | -0.27 | -0.06 | -0.07 | 0.00 |
| | Emerging Mkts Sovereign Local | 0.23 | 0.34 | 0.49 | 0.42 | 0.48 | 0.39 | 0.31 | 0.26 | 0.52 | 0.35 | -0.17 |
| ALTERNATIVES | Commodities | 1.00 | 0.63 | 0.44 | 0.36 | 0.45 | 0.37 | 0.25 | 0.30 | 0.47 | 0.37 | 0.15 |
| | Global Natural Resources Equity | 0.63 | 1.00 | 0.74 | 0.24 | 0.45 | 0.66 | 0.51 | 0.19 | 0.52 | 0.51 | 0.08 |
| | Global Listed Infrastructure | 0.44 | 0.74 | 1.00 | 0.32 | 0.52 | 0.70 | 0.55 | 0.31 | 0.60 | 0.64 | 0.00 |
| | Absolute Return* | 0.36 | 0.24 | 0.32 | 1.00 | 0.94 | 0.37 | 0.46 | 0.47 | 0.64 | 0.38 | 0.02 |
| | Hedge Funds* | 0.45 | 0.45 | 0.52 | 0.94 | 1.00 | 0.57 | 0.62 | 0.48 | 0.73 | 0.49 | 0.00 |
| | Private Equity* | 0.37 | 0.66 | 0.70 | 0.37 | 0.57 | 1.00 | 0.87 | 0.50 | 0.76 | 0.57 | -0.05 |
| | Venture Capital* | 0.25 | 0.51 | 0.55 | 0.46 | 0.62 | 0.87 | 1.00 | 0.41 | 0.65 | 0.45 | -0.10 |
| | Private Real Estate* | 0.30 | 0.19 | 0.31 | 0.47 | 0.48 | 0.50 | 0.41 | 1.00 | 0.52 | 0.37 | 0.06 |
| | Private Debt* | 0.47 | 0.52 | 0.60 | 0.64 | 0.73 | 0.76 | 0.65 | 0.52 | 1.00 | 0.49 | -0.02 |
| | Private Infrastructure* | 0.37 | 0.51 | 0.64 | 0.38 | 0.49 | 0.57 | 0.45 | 0.37 | 0.49 | 1.00 | 0.08 |
| | Eurozone Inflation | 0.15 | 0.08 | 0.00 | 0.02 | 0.00 | -0.05 | -0.10 | 0.06 | -0.02 | 0.08 | 1.00 |

As of November 30, 2024. Index performance assumes the reinvestment of all distributions but does not assume any transaction costs, taxes, management fees or other expenses, unless indicated otherwise. Indices are unmanaged and investors cannot invest directly into any index. * Consistent with the Representative Index, returns are net of management fees. The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly.

# EXPECTED 10-YEAR RETURNS & STANDARD DEVIATIONS – GBP

| | Asset Class | Representative Index | Returns | Volatility |
|---|---|---|---|---|
| EQUITY | Global Equity | MSCI ACWI IMI Index | 7.6% | 12.5% |
| | Global REITs | FTSE EPRA Nareit Global Real Estate Index | 7.5% | 16.0% |
| | UK Equity | Bloomberg United Kingdom Large, Mid & Small Cap Index | 8.0% | 12.8% |
| | UK Large Cap | MSCI United Kingdom Index | 7.9% | 12.5% |
| | UK Small Cap | MSCI United Kingdom Small Cap Index | 8.3% | 17.5% |
| | Developed Non UK Equity | Bloomberg Developed Markets ex UK Index | 7.5% | 12.6% |
| | Emerging Markets Equity | MSCI Emerging Markets IMI Index | 7.9% | 15.5% |
| FIXED INCOME | Global Aggregate (Hedged) | Bloomberg Global Aggregate Index Hedged GBP | 4.4% | 4.1% |
| | Global Treasury (Hedged) | Bloomberg Global Treasury Index Hedged GBP | 4.1% | 3.9% |
| | Global Corporate (Hedged) | Bloomberg Global Corporates Index Hedged GBP | 5.0% | 6.0% |
| | Global High Yield (Hedged) | Bloomberg Global High Yield Index Value Hedged GBP | 6.4% | 8.9% |
| | UK Aggregate | Bloomberg United Kingdom Aggregate Index | 4.3% | 7.3% |
| | UK Gilts | Bloomberg Global: United Kingdom Index | 4.4% | 8.6% |
| | UK Corporates | Bloomberg Global Aggregate Corporate: United Kingdom Index | 4.9% | 6.3% |
| | UK Inflation Linked | Bloomberg United Kingdom Inflation-Linked All Maturities Index | 3.0% | 12.1% |
| | 3-Month Gilt | Bloomberg Sterling Gilt 0-12 Month Index | 3.4% | 0.6% |
| | Emerging Mkts Sovereign Local | Bloomberg EM Local Currency Government | 4.2% | 8.5% |
| ALTERNATIVES | Commodities | Bloomberg Commodity Index | 2.4% | 14.0% |
| | Global Natural Resources Equity | S&P Global Natural Resources Total Return Index | 7.1% | 17.5% |
| | Global Listed Infrastructure | S&P Global Infrastructure Total Return Index | 6.8% | 13.4% |
| | Absolute Return* | HFRX Global Hedge Fund Index | 4.7% | 7.6% |
| | Hedge Funds* | HFRI Fund Weighted Composite Index | 5.5% | 7.4% |
| | Private Equity* | PitchBook Global Private Equity | 9.9% | 16.7% |
| | Venture Capital* | PitchBook North American Venture Capital | 8.8% | 18.5% |
| | Private Real Estate* | PitchBook North American Real Estate | 8.8% | 16.6% |
| | Private Debt* | PitchBook North American Private Debt | 7.7% | 11.2% |
| | Private Infrastructure* | PitchBook Infrastructure | 8.6% | 16.9% |
| | United Kingdom Inflation | UK CPI EU Harmonized | 2.4% | 1.6% |

As of November 30, 2024. Index performance assumes the reinvestment of all distributions but does not assume any transaction costs, taxes, management fees or other expenses, unless indicated otherwise. Indices are unmanaged and investors cannot invest directly into any index. The 10-Year Capital Market Assumptions are available in Excel format upon request. * Consistent with the Representative Index, returns are net of management fees. The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly.

# EXPECTED CORRELATIONS GBP

*Page 1 of 2*

| | | EQUITY | | | | | | | FIXED INCOME | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Global Equity | Global REITs | UK Equity | UK Large Cap | UK Small Cap | Developed Non UK Equity | Emerging Markets Equity | Global Aggregate (Hedged) | Global Treasury (Hedged) | Global Corporate (Hedged) | Global High Yield (Hedged) | UK Aggregate | UK Gilts | UK Corporates | UK Inflation Linked | 3 Month Gilt | Emerging Mkts Sovereign Local |
| EQUITY | Global Equity | 1.00 | 0.82 | 0.80 | 0.78 | 0.76 | 0.99 | 0.77 | 0.36 | 0.23 | 0.55 | 0.72 | 0.34 | 0.24 | 0.52 | 0.35 | 0.07 | 0.39 |
| | Global REITs | 0.82 | 1.00 | 0.71 | 0.69 | 0.69 | 0.80 | 0.63 | 0.49 | 0.38 | 0.62 | 0.68 | 0.50 | 0.40 | 0.63 | 0.48 | 0.01 | 0.47 |
| | UK Equity | 0.80 | 0.71 | 1.00 | 0.99 | 0.87 | 0.76 | 0.65 | 0.22 | 0.07 | 0.47 | 0.70 | 0.20 | 0.12 | 0.37 | 0.20 | 0.03 | 0.22 |
| | UK Large Cap | 0.78 | 0.69 | 0.99 | 1.00 | 0.80 | 0.74 | 0.64 | 0.18 | 0.04 | 0.42 | 0.66 | 0.18 | 0.09 | 0.35 | 0.18 | 0.02 | 0.25 |
| | UK Small Cap | 0.76 | 0.69 | 0.87 | 0.80 | 1.00 | 0.72 | 0.57 | 0.36 | 0.19 | 0.60 | 0.78 | 0.26 | 0.20 | 0.35 | 0.24 | 0.08 | 0.06 |
| | Developed Non UK Equity | 0.99 | 0.80 | 0.76 | 0.74 | 0.72 | 1.00 | 0.68 | 0.36 | 0.25 | 0.53 | 0.68 | 0.35 | 0.26 | 0.51 | 0.36 | 0.10 | 0.35 |
| | Emerging Markets Equity | 0.77 | 0.63 | 0.65 | 0.64 | 0.57 | 0.68 | 1.00 | 0.28 | 0.15 | 0.49 | 0.66 | 0.24 | 0.12 | 0.48 | 0.26 | -0.04 | 0.56 |
| FIXED INCOME | Global Aggregate (Hedged) | 0.36 | 0.49 | 0.22 | 0.18 | 0.36 | 0.36 | 0.28 | 1.00 | 0.97 | 0.90 | 0.49 | 0.84 | 0.82 | 0.71 | 0.74 | 0.25 | 0.29 |
| | Global Treasury (Hedged) | 0.23 | 0.38 | 0.07 | 0.04 | 0.19 | 0.25 | 0.15 | 0.97 | 1.00 | 0.77 | 0.30 | 0.87 | 0.86 | 0.67 | 0.75 | 0.25 | 0.29 |
| | Global Corporate (Hedged) | 0.55 | 0.62 | 0.47 | 0.42 | 0.60 | 0.53 | 0.49 | 0.90 | 0.77 | 1.00 | 0.76 | 0.71 | 0.64 | 0.72 | 0.65 | 0.20 | 0.28 |
| | Global High Yield (Hedged) | 0.72 | 0.68 | 0.70 | 0.66 | 0.78 | 0.68 | 0.66 | 0.49 | 0.30 | 0.76 | 1.00 | 0.30 | 0.22 | 0.44 | 0.36 | 0.12 | 0.21 |
| | UK Aggregate | 0.34 | 0.50 | 0.20 | 0.18 | 0.26 | 0.35 | 0.24 | 0.84 | 0.87 | 0.71 | 0.30 | 1.00 | 0.98 | 0.82 | 0.84 | 0.29 | 0.41 |
| | UK Gilts | 0.24 | 0.40 | 0.12 | 0.09 | 0.20 | 0.26 | 0.12 | 0.82 | 0.86 | 0.64 | 0.22 | 0.98 | 1.00 | 0.68 | 0.82 | 0.31 | 0.26 |
| | UK Corporates | 0.52 | 0.63 | 0.37 | 0.35 | 0.35 | 0.51 | 0.48 | 0.71 | 0.67 | 0.72 | 0.44 | 0.82 | 0.68 | 1.00 | 0.68 | 0.15 | 0.70 |
| | UK Inflation Linked | 0.35 | 0.48 | 0.20 | 0.18 | 0.24 | 0.36 | 0.26 | 0.74 | 0.75 | 0.65 | 0.36 | 0.84 | 0.82 | 0.68 | 1.00 | 0.09 | 0.38 |
| | 3-Month Gilt | 0.07 | 0.01 | 0.03 | 0.02 | 0.08 | 0.10 | -0.04 | 0.25 | 0.25 | 0.20 | 0.12 | 0.29 | 0.31 | 0.15 | 0.09 | 1.00 | -0.04 |
| | Emerging Mkts Sovereign Local | 0.39 | 0.47 | 0.22 | 0.25 | 0.06 | 0.35 | 0.56 | 0.29 | 0.29 | 0.28 | 0.21 | 0.41 | 0.26 | 0.70 | 0.38 | -0.04 | 1.00 |
| ALTERNATIVES | Commodities | 0.32 | 0.28 | 0.37 | 0.40 | 0.18 | 0.28 | 0.37 | -0.21 | -0.26 | -0.06 | 0.22 | -0.11 | -0.18 | 0.10 | -0.03 | -0.15 | 0.28 |
| | Global Natural Resources Equity | 0.73 | 0.57 | 0.79 | 0.81 | 0.62 | 0.67 | 0.67 | 0.07 | -0.06 | 0.31 | 0.58 | 0.08 | 0.01 | 0.25 | 0.13 | -0.03 | 0.28 |
| | Global Listed Infrastructure | 0.79 | 0.81 | 0.78 | 0.78 | 0.66 | 0.77 | 0.66 | 0.36 | 0.25 | 0.53 | 0.64 | 0.36 | 0.25 | 0.56 | 0.36 | -0.02 | 0.47 |
| | Absolute Return* | 0.30 | 0.26 | 0.10 | 0.13 | -0.03 | 0.30 | 0.24 | -0.15 | -0.11 | -0.15 | -0.11 | 0.09 | -0.04 | 0.40 | 0.09 | -0.16 | 0.52 |
| | Hedge Funds* | 0.52 | 0.46 | 0.32 | 0.34 | 0.20 | 0.52 | 0.43 | -0.05 | -0.06 | 0.02 | 0.11 | 0.15 | 0.02 | 0.47 | 0.16 | -0.13 | 0.55 |
| | Private Equity* | 0.84 | 0.68 | 0.70 | 0.68 | 0.70 | 0.82 | 0.67 | 0.25 | 0.11 | 0.47 | 0.67 | 0.22 | 0.13 | 0.39 | 0.28 | -0.03 | 0.25 |
| | Venture Capital* | 0.74 | 0.55 | 0.51 | 0.48 | 0.57 | 0.75 | 0.49 | 0.20 | 0.10 | 0.34 | 0.51 | 0.15 | 0.09 | 0.27 | 0.25 | -0.05 | 0.14 |
| | Private Real Estate* | 0.23 | 0.29 | 0.13 | 0.15 | 0.08 | 0.24 | 0.15 | -0.05 | -0.04 | -0.03 | 0.01 | 0.08 | 0.03 | 0.18 | 0.14 | -0.20 | 0.20 |
| | Private Debt* | 0.61 | 0.59 | 0.49 | 0.49 | 0.46 | 0.59 | 0.53 | 0.12 | 0.02 | 0.32 | 0.54 | 0.20 | 0.07 | 0.49 | 0.27 | -0.07 | 0.45 |
| | Private Infrastructure* | 0.50 | 0.49 | 0.45 | 0.47 | 0.31 | 0.49 | 0.41 | 0.15 | 0.10 | 0.24 | 0.30 | 0.19 | 0.12 | 0.33 | 0.24 | -0.10 | 0.32 |
| | United Kingdom Inflation | -0.07 | -0.07 | 0.03 | 0.05 | -0.04 | -0.06 | -0.13 | -0.27 | -0.24 | -0.28 | -0.17 | -0.13 | -0.11 | -0.15 | -0.19 | 0.07 | -0.12 |

As of November 30, 2024. Index performance assumes the reinvestment of all distributions but does not assume any transaction costs, taxes, management fees or other expenses, unless indicated otherwise. Indices are unmanaged and investors cannot invest directly into any index. * Consistent with the Representative Index, returns are net of management fees. The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly.

# EXPECTED CORRELATIONS GBP

*Page 2 of 2*

| | | ALTERNATIVES | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Commodities | Global Natural Resources Equity | Global Listed Infrastructure | Absolute Return* | Hedge Funds* | Private Equity* | Venture Capital* | Private Real Estate* | Private Debt* | Private Infrastructure* | United Kingdom Inflation |
| EQUITY | Global Equity | 0.32 | 0.73 | 0.79 | 0.30 | 0.52 | 0.84 | 0.74 | 0.23 | 0.61 | 0.50 | -0.07 |
| | Global REITs | 0.28 | 0.57 | 0.81 | 0.26 | 0.46 | 0.68 | 0.55 | 0.29 | 0.59 | 0.49 | -0.07 |
| | UK Equity | 0.37 | 0.79 | 0.78 | 0.10 | 0.32 | 0.70 | 0.51 | 0.13 | 0.49 | 0.45 | 0.03 |
| | UK Large Cap | 0.40 | 0.81 | 0.78 | 0.13 | 0.34 | 0.68 | 0.48 | 0.15 | 0.49 | 0.47 | 0.05 |
| | UK Small Cap | 0.18 | 0.62 | 0.66 | -0.03 | 0.20 | 0.70 | 0.57 | 0.08 | 0.46 | 0.31 | -0.04 |
| | Developed Non UK Equity | 0.28 | 0.67 | 0.77 | 0.30 | 0.52 | 0.82 | 0.75 | 0.24 | 0.59 | 0.49 | -0.06 |
| | Emerging Markets Equity | 0.37 | 0.67 | 0.66 | 0.24 | 0.43 | 0.67 | 0.49 | 0.15 | 0.53 | 0.41 | -0.13 |
| FIXED INCOME | Global Aggregate (Hedged) | -0.21 | 0.07 | 0.36 | -0.15 | -0.05 | 0.25 | 0.20 | -0.05 | 0.12 | 0.15 | -0.27 |
| | Global Treasury (Hedged) | -0.26 | -0.06 | 0.25 | -0.11 | -0.06 | 0.11 | 0.10 | -0.04 | 0.02 | 0.10 | -0.24 |
| | Global Corporate (Hedged) | -0.06 | 0.31 | 0.53 | -0.15 | 0.02 | 0.47 | 0.34 | -0.03 | 0.32 | 0.24 | -0.28 |
| | Global High Yield (Hedged) | 0.22 | 0.58 | 0.64 | -0.11 | 0.11 | 0.67 | 0.51 | 0.01 | 0.54 | 0.30 | -0.17 |
| | UK Aggregate | -0.11 | 0.08 | 0.36 | 0.09 | 0.15 | 0.22 | 0.15 | 0.08 | 0.20 | 0.19 | -0.13 |
| | UK Gilts | -0.18 | 0.01 | 0.25 | -0.04 | 0.02 | 0.13 | 0.09 | 0.03 | 0.07 | 0.12 | -0.11 |
| | UK Corporates | 0.10 | 0.25 | 0.56 | 0.40 | 0.47 | 0.39 | 0.27 | 0.18 | 0.49 | 0.33 | -0.15 |
| | UK Inflation Linked | -0.03 | 0.13 | 0.36 | 0.09 | 0.16 | 0.28 | 0.25 | 0.14 | 0.27 | 0.24 | -0.19 |
| | 3-Month Gilt | -0.15 | -0.03 | -0.02 | -0.16 | -0.13 | -0.03 | -0.05 | -0.20 | -0.07 | -0.10 | 0.07 |
| | Emerging Mkts Sovereign Local | 0.28 | 0.28 | 0.47 | 0.52 | 0.55 | 0.25 | 0.14 | 0.20 | 0.45 | 0.32 | -0.12 |
| ALTERNATIVES | Commodities | 1.00 | 0.61 | 0.43 | 0.35 | 0.43 | 0.30 | 0.16 | 0.25 | 0.44 | 0.35 | 0.13 |
| | Global Natural Resources Equity | 0.61 | 1.00 | 0.72 | 0.18 | 0.40 | 0.63 | 0.45 | 0.13 | 0.48 | 0.49 | 0.01 |
| | Global Listed Infrastructure | 0.43 | 0.72 | 1.00 | 0.29 | 0.49 | 0.65 | 0.47 | 0.24 | 0.56 | 0.61 | 0.03 |
| | Absolute Return* | 0.35 | 0.18 | 0.29 | 1.00 | 0.93 | 0.22 | 0.27 | 0.38 | 0.55 | 0.33 | 0.09 |
| | Hedge Funds* | 0.43 | 0.40 | 0.49 | 0.93 | 1.00 | 0.44 | 0.47 | 0.39 | 0.66 | 0.45 | 0.06 |
| | Private Equity* | 0.30 | 0.63 | 0.65 | 0.22 | 0.44 | 1.00 | 0.84 | 0.43 | 0.71 | 0.52 | -0.08 |
| | Venture Capital* | 0.16 | 0.45 | 0.47 | 0.27 | 0.47 | 0.84 | 1.00 | 0.31 | 0.56 | 0.38 | -0.19 |
| | Private Real Estate* | 0.25 | 0.13 | 0.24 | 0.38 | 0.39 | 0.43 | 0.31 | 1.00 | 0.45 | 0.32 | 0.06 |
| | Private Debt* | 0.44 | 0.48 | 0.56 | 0.55 | 0.66 | 0.71 | 0.56 | 0.45 | 1.00 | 0.44 | -0.01 |
| | Private Infrastructure* | 0.35 | 0.49 | 0.61 | 0.33 | 0.45 | 0.52 | 0.38 | 0.32 | 0.44 | 1.00 | 0.06 |
| | United Kingdom Inflation | 0.13 | 0.01 | 0.03 | 0.09 | 0.06 | -0.08 | -0.19 | 0.06 | -0.01 | 0.06 | 1.00 |

As of November 30, 2024. Index performance assumes the reinvestment of all distributions but does not assume any transaction costs, taxes, management fees or other expenses, unless indicated otherwise. Indices are unmanaged and investors cannot invest directly into any index. * Consistent with the Representative Index, returns are net of management fees. The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly.

# EXPECTED 10-YEAR RETURNS & STANDARD DEVIATIONS – JPY

| | Asset Class | Representative Index | Returns | Volatility |
|---|---|---|---|---|
| EQUITY | Global Equity | MSCI ACWI IMI Index | 6.7% | 17.3% |
| | Global REITs | FTSE EPRA Nareit Global Real Estate Index | 6.6% | 18.7% |
| | Japan Equity | Bloomberg Japan Large, Mid & Small Cap Index | 5.1% | 15.3% |
| | Developed Non Japan Equity | Bloomberg Developed Markets ex Japan Large & Mid Cap Index | 6.7% | 17.8% |
| | Emerging Markets Equity | MSCI Emerging Markets IMI Index | 7.0% | 18.8% |
| FIXED INCOME | Global Aggregate (Hedged) | Bloomberg Global Aggregate Index Hedged JPY | 2.0% | 4.0% |
| | Global Treasury (Hedged) | Bloomberg Global Treasury Index Hedged JPY | 1.7% | 3.8% |
| | Global Corporate (Hedged) | Bloomberg Global Corporates Index Hedged JPY | 2.6% | 6.0% |
| | Global High Yield (Hedged) | Bloomberg Global High Yield Index Hedged JPY | 4.0% | 8.7% |
| | Japanese Aggregate | Bloomberg Asian Pacific Japanese Index Value | 0.8% | 2.3% |
| | Japanese Government Bonds | Bloomberg Asian-Pacific Japan Treasury Index | 0.8% | 2.4% |
| | Japanese Corporates | Bloomberg Asian-Pacific Japan Corporate Index | 1.2% | 1.1% |
| | Japanese Inflation Linked | Bloomberg Japan Govt Inflation-Linked All Maturities Index | 0.9% | 2.9% |
| | Emerging Mkts Sovereign Local | Bloomberg EM Local Currency Government | 3.3% | 9.4% |
| ALTERNATIVES | Commodities | Bloomberg Commodity Index | 1.5% | 17.2% |
| | Global Natural Resources Equity | S&P Global Natural Resources Total Return Index | 6.2% | 21.6% |
| | Global Listed Infrastructure | S&P Global Infrastructure Total Return Index | 5.9% | 16.9% |
| | Absolute Return* | HFRX Global Hedge Fund Index | 3.8% | 10.4% |
| | Hedge Funds* | HFRI Fund Weighted Composite Index | 4.6% | 10.9% |
| | Private Equity* | PitchBook Global Private Equity | 9.0% | 21.2% |
| | Venture Capital* | PitchBook North American Venture Capital | 7.9% | 23.0% |
| | Private Real Estate* | PitchBook North American Real Estate | 7.9% | 18.9% |
| | Private Debt* | PitchBook North American Private Debt | 6.8% | 14.6% |
| | Private Infrastructure* | PitchBook Infrastructure | 7.7% | 19.6% |
| | Japan Inflation | Japan CPI Nationwide | 1.5% | 1.1% |

As of November 30, 2024. Index performance assumes the reinvestment of all distributions but does not assume any transaction costs, taxes, management fees or other expenses, unless indicated otherwise. Indices are unmanaged and investors cannot invest directly into any index. The 10-Year Capital Market Assumptions are available in Excel format upon request. * Consistent with the Representative Index, returns are net of management fees. The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly.

# EXPECTED CORRELATIONS JPY

*Page 1 of 2*

| | | EQUITY | | | | | FIXED INCOME | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Global Equity | Global REITs | UK Equity | Developed Non UK Equity | Emerging Markets Equity | Global Aggregate (Hedged) | Global Treasury (Hedged) | Global Corporate (Hedged) | Global High Yield (Hedged) | UK Aggregate | UK Gilts | UK Corporates | UK Inflation Linked | Emerging Mkts Sovereign Local |
| EQUITY | Global Equity | 1.00 | 0.87 | 0.84 | 1.00 | 0.85 | 0.07 | -0.07 | 0.32 | 0.65 | -0.01 | -0.02 | 0.16 | 0.33 | 0.76 |
| | Global REITs | 0.87 | 1.00 | 0.69 | 0.87 | 0.74 | 0.24 | 0.11 | 0.45 | 0.69 | 0.12 | 0.12 | 0.25 | 0.39 | 0.69 |
| | Japan Equity | 0.84 | 0.69 | 1.00 | 0.81 | 0.70 | 0.00 | -0.12 | 0.21 | 0.50 | -0.08 | -0.09 | 0.08 | 0.29 | 0.66 |
| | Developed Non Japan Equity | 1.00 | 0.87 | 0.81 | 1.00 | 0.80 | 0.07 | -0.06 | 0.30 | 0.62 | 0.00 | -0.01 | 0.16 | 0.32 | 0.74 |
| | Emerging Markets Equity | 0.85 | 0.74 | 0.70 | 0.80 | 1.00 | 0.05 | -0.10 | 0.32 | 0.66 | -0.05 | -0.05 | 0.12 | 0.32 | 0.82 |
| FIXED INCOME | Global Aggregate (Hedged) | 0.07 | 0.24 | 0.00 | 0.07 | 0.05 | 1.00 | 0.97 | 0.90 | 0.50 | 0.59 | 0.59 | 0.50 | 0.11 | -0.10 |
| | Global Treasury (Hedged) | -0.07 | 0.11 | -0.12 | -0.06 | -0.10 | 0.97 | 1.00 | 0.78 | 0.31 | 0.64 | 0.64 | 0.51 | 0.05 | -0.19 |
| | Global Corporate (Hedged) | 0.32 | 0.45 | 0.21 | 0.30 | 0.32 | 0.90 | 0.78 | 1.00 | 0.76 | 0.45 | 0.45 | 0.47 | 0.21 | 0.10 |
| | Global High Yield (Hedged) | 0.65 | 0.69 | 0.50 | 0.62 | 0.66 | 0.50 | 0.31 | 0.76 | 1.00 | 0.22 | 0.22 | 0.34 | 0.39 | 0.44 |
| | Japanese Aggregate | -0.01 | 0.12 | -0.08 | 0.00 | -0.05 | 0.59 | 0.64 | 0.45 | 0.22 | 1.00 | 1.00 | 0.75 | 0.20 | -0.10 |
| | Japanese Government Bonds | -0.02 | 0.12 | -0.09 | -0.01 | -0.05 | 0.59 | 0.64 | 0.45 | 0.22 | 1.00 | 1.00 | 0.74 | 0.20 | -0.10 |
| | Japanese Corporates | 0.16 | 0.25 | 0.08 | 0.16 | 0.12 | 0.50 | 0.51 | 0.47 | 0.34 | 0.75 | 0.74 | 1.00 | 0.25 | 0.04 |
| | Japanese Inflation Linked | 0.33 | 0.39 | 0.29 | 0.32 | 0.32 | 0.11 | 0.05 | 0.21 | 0.39 | 0.20 | 0.20 | 0.25 | 1.00 | 0.36 |
| | Emerging Mkts Sovereign Local | 0.76 | 0.69 | 0.66 | 0.74 | 0.82 | -0.10 | -0.19 | 0.10 | 0.44 | -0.10 | -0.10 | 0.04 | 0.36 | 1.00 |
| ALTERNATIVES | Commodities | 0.60 | 0.50 | 0.46 | 0.58 | 0.57 | -0.35 | -0.44 | -0.13 | 0.31 | -0.24 | -0.24 | -0.06 | 0.30 | 0.57 |
| | Global Natural Resources Equity | 0.83 | 0.71 | 0.67 | 0.81 | 0.78 | -0.09 | -0.24 | 0.19 | 0.58 | -0.12 | -0.13 | 0.02 | 0.26 | 0.66 |
| | Global Listed Infrastructure | 0.88 | 0.87 | 0.72 | 0.87 | 0.77 | 0.09 | -0.04 | 0.34 | 0.64 | 0.07 | 0.06 | 0.19 | 0.40 | 0.73 |
| | Absolute Return* | 0.70 | 0.54 | 0.62 | 0.70 | 0.56 | -0.43 | -0.48 | -0.24 | 0.13 | -0.24 | -0.24 | -0.06 | 0.22 | 0.69 |
| | Hedge Funds* | 0.81 | 0.66 | 0.70 | 0.81 | 0.68 | -0.34 | -0.42 | -0.11 | 0.28 | -0.19 | -0.19 | 0.00 | 0.24 | 0.73 |
| | Private Equity* | 0.90 | 0.79 | 0.74 | 0.89 | 0.79 | 0.05 | -0.10 | 0.31 | 0.64 | -0.01 | -0.02 | 0.14 | 0.29 | 0.66 |
| | Venture Capital* | 0.85 | 0.71 | 0.70 | 0.85 | 0.67 | 0.02 | -0.09 | 0.22 | 0.52 | 0.01 | 0.01 | 0.15 | 0.21 | 0.58 |
| | Private Real Estate* | 0.49 | 0.47 | 0.42 | 0.50 | 0.38 | -0.19 | -0.23 | -0.08 | 0.14 | -0.06 | -0.06 | 0.03 | 0.18 | 0.44 |
| | Private Debt* | 0.79 | 0.72 | 0.66 | 0.78 | 0.70 | -0.12 | -0.25 | 0.16 | 0.58 | -0.08 | -0.09 | 0.09 | 0.36 | 0.69 |
| | Private Infrastructure* | 0.66 | 0.62 | 0.53 | 0.66 | 0.58 | -0.05 | -0.13 | 0.14 | 0.37 | 0.04 | 0.04 | 0.13 | 0.30 | 0.57 |
| | Japan Inflation | 0.02 | -0.03 | 0.03 | 0.02 | -0.01 | -0.20 | -0.21 | -0.15 | -0.06 | -0.29 | -0.28 | -0.21 | 0.04 | 0.05 |

As of November 30, 2024. Index performance assumes the reinvestment of all distributions but does not assume any transaction costs, taxes, management fees or other expenses, unless indicated otherwise. Indices are unmanaged and investors cannot invest directly into any index. * Consistent with the Representative Index, returns are net of management fees. The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly.

# EXPECTED CORRELATIONS JPY

*Page 2 of 2*

| | | ALTERNATIVES | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Commodities | Global Natural Resources Equity | Global Listed Infrastructure | Absolute Return* | Hedge Funds* | Private Equity* | Venture Capital* | Private Real Estate* | Private Debt* | Private Infrastructure* | Japan Inflation |
| EQUITY | Global Equity | 0.60 | 0.83 | 0.88 | 0.70 | 0.81 | 0.90 | 0.85 | 0.49 | 0.79 | 0.66 | 0.02 |
| | Global REITs | 0.50 | 0.71 | 0.87 | 0.54 | 0.66 | 0.79 | 0.71 | 0.47 | 0.72 | 0.62 | -0.03 |
| | Japan Equity | 0.46 | 0.67 | 0.72 | 0.62 | 0.70 | 0.74 | 0.70 | 0.42 | 0.66 | 0.53 | 0.03 |
| | Developed Non Japan Equity | 0.58 | 0.81 | 0.87 | 0.70 | 0.81 | 0.89 | 0.85 | 0.50 | 0.78 | 0.66 | 0.02 |
| | Emerging Markets Equity | 0.57 | 0.78 | 0.77 | 0.56 | 0.68 | 0.79 | 0.67 | 0.38 | 0.70 | 0.58 | -0.01 |
| FIXED INCOME | Global Aggregate (Hedged) | -0.35 | -0.09 | 0.09 | -0.43 | -0.34 | 0.05 | 0.02 | -0.19 | -0.12 | -0.05 | -0.20 |
| | Global Treasury (Hedged) | -0.44 | -0.24 | -0.04 | -0.48 | -0.42 | -0.10 | -0.09 | -0.23 | -0.25 | -0.13 | -0.21 |
| | Global Corporate (Hedged) | -0.13 | 0.19 | 0.34 | -0.24 | -0.11 | 0.31 | 0.22 | -0.08 | 0.16 | 0.14 | -0.15 |
| | Global High Yield (Hedged) | 0.31 | 0.58 | 0.64 | 0.13 | 0.28 | 0.64 | 0.52 | 0.14 | 0.58 | 0.37 | -0.06 |
| | Japanese Aggregate | -0.24 | -0.12 | 0.07 | -0.24 | -0.19 | -0.01 | 0.01 | -0.06 | -0.08 | 0.04 | -0.29 |
| | Japanese Government Bonds | -0.24 | -0.13 | 0.06 | -0.24 | -0.19 | -0.02 | 0.01 | -0.06 | -0.09 | 0.04 | -0.28 |
| | Japanese Corporates | -0.06 | 0.02 | 0.19 | -0.06 | 0.00 | 0.14 | 0.15 | 0.03 | 0.09 | 0.13 | -0.21 |
| | Japanese Inflation Linked | 0.30 | 0.26 | 0.40 | 0.22 | 0.24 | 0.29 | 0.21 | 0.18 | 0.36 | 0.30 | 0.04 |
| | Emerging Mkts Sovereign Local | 0.57 | 0.66 | 0.73 | 0.69 | 0.73 | 0.66 | 0.58 | 0.44 | 0.69 | 0.57 | 0.05 |
| ALTERNATIVES | Commodities | 1.00 | 0.75 | 0.63 | 0.64 | 0.68 | 0.56 | 0.47 | 0.46 | 0.65 | 0.54 | 0.17 |
| | Global Natural Resources Equity | 0.75 | 1.00 | 0.83 | 0.57 | 0.69 | 0.76 | 0.64 | 0.38 | 0.68 | 0.64 | 0.09 |
| | Global Listed Infrastructure | 0.63 | 0.83 | 1.00 | 0.61 | 0.73 | 0.79 | 0.67 | 0.47 | 0.73 | 0.73 | 0.05 |
| | Absolute Return* | 0.64 | 0.57 | 0.61 | 1.00 | 0.97 | 0.63 | 0.65 | 0.58 | 0.76 | 0.57 | 0.06 |
| | Hedge Funds* | 0.68 | 0.69 | 0.73 | 0.97 | 1.00 | 0.74 | 0.75 | 0.58 | 0.81 | 0.64 | 0.04 |
| | Private Equity* | 0.56 | 0.76 | 0.79 | 0.63 | 0.74 | 1.00 | 0.90 | 0.62 | 0.85 | 0.68 | -0.02 |
| | Venture Capital* | 0.47 | 0.64 | 0.67 | 0.65 | 0.75 | 0.90 | 1.00 | 0.53 | 0.76 | 0.58 | -0.03 |
| | Private Real Estate* | 0.46 | 0.38 | 0.47 | 0.58 | 0.58 | 0.62 | 0.53 | 1.00 | 0.61 | 0.48 | 0.02 |
| | Private Debt* | 0.65 | 0.68 | 0.73 | 0.76 | 0.81 | 0.85 | 0.76 | 0.61 | 1.00 | 0.62 | 0.06 |
| | Private Infrastructure* | 0.54 | 0.64 | 0.73 | 0.57 | 0.64 | 0.68 | 0.58 | 0.48 | 0.62 | 1.00 | 0.02 |
| | Japan Inflation | 0.17 | 0.09 | 0.05 | 0.06 | 0.04 | -0.02 | -0.03 | 0.02 | 0.06 | 0.02 | 1.00 |

As of November 30, 2024. Index performance assumes the reinvestment of all distributions but does not assume any transaction costs, taxes, management fees or other expenses, unless indicated otherwise. Indices are unmanaged and investors cannot invest directly into any index. * Consistent with the Representative Index, returns are net of management fees. The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly.

# Glossary

**Correlation:** A statistical measure that expresses the extent to which two variables move in relation to each other.

**Credit Spread:** The difference in yield between a Treasury security and a corporate bond of the same maturity.

**Currency:** Currencies can decline in value relative to a local currency, or, in the case of hedged positions, the local currency can decline relative to the currency being hedged.

**Dividend Yield:** A financial ratio that measures the number of dividends paid in proportion to the stock price.

**Duration:** A measure of a bond's interest rate sensitivity expressed in years. The higher the number, the greater the potential for volatility as interest rates change.

**Inflation:** As measured by the Consumer Price Index (CPI), is a general increase in the prices of goods and services in an economy over a period.

**Net Buyback Yield:** A financial ratio that measures the net amount of share repurchases minus share issuances, expressed as a percentage of market capitalization.

**Normalized Yield or Spread:** The average level of a parameter which we assume will prevail after a period of normalization.

**Real Cash Rate:** The nominal interest rate adjusted for inflation.

**Real Earnings Growth:** Referring to the change, or growth of, equity market earnings net of inflation over a period.

**Slope:** Measures a yield curve's steepness and is defined as the difference between the yield of a 10-year Treasury bond and a 3-month Treasury bond.

**Spread:** The difference between the yield of a risky bond and the yield of a risk-free security with equal duration.

**Standard Deviation:** A statistical measure that expresses how dispersed data is in relation to the mean; it can also be used interchangeably with volatility.

**Yield Curve:** Yield curve shows the yield on bonds over different maturities.

# Index Descriptions

**MSCI ACWI IMI Index -** The MSCI ACWI Investable Market Index (IMI) Index captures large, mid, and small-cap representation across 23 Developed Markets and 24 Emerging Markets countries, covering approximately 99% of the global equity investment opportunity set.

**FTSE EPRA Nareit Global Real Estate Index - T**he FTSE EPRA Nareit Global Real Estate Index Series is designed to represent general trends in eligible real estate equities worldwide. Relevant activities are defined as the ownership, trading and development of income-producing real estate.

**Russell 3000 Index -** The Russell 3000® Index measures the performance of the largest 3,000 US companies.

**Russell 1000 Index -** The Russell 1000 Index measures the performance of the large-cap segment of the US equity universe. It is a subset of the Russell 3000 Index and includes approximately 1,000 of the largest securities based on a combination of their market cap and current index membership. The Russell 1000 represents approximately 90% of the US market.

**Russell Midcap Index -** Russell Midcap Index measures the performance of the 800 smallest companies in the Russell 1000 Index, which represents approximately 25% of the total market capitalization of the Russell 1000 Index.

**Russell 2000 Index -** The Russell 2000 Index measures the performance of the small-cap segment of the US equity universe. The Russell 2000 Index is a subset of the Russell 3000 Index, representing approximately 8% of the total market capitalization of that index.

**Bloomberg United Kingdom Large, Mid & Small Cap Index -** Bloomberg United Kingdom Large, Mid & Small Cap Total Return Index is a float market-cap-weighted equity benchmark that covers the top 99% of market cap of the measured market.

**MSCI United Kingdom Index -** The MSCI United Kingdom Index is designed to measure the performance of the large and mid-cap segments of the UK market. With 77 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in the UK

**MSCI United Kingdom Small Cap Index -** The MSCI UK Small Cap Index is designed to measure the performance of the small cap segment of the UK equity market. The index represents approximately 14% of the free float-adjusted market capitalization in the UK.

**Bloomberg Developed Markets ex UK Index -** Bloomberg Developed Markets ex UK Large & Mid Cap Price Return Index USD is a float market-cap-weighted equity benchmark that covers the top 85% of market cap of the measured market.

**Bloomberg Eurozone Developed Markets Index -** Bloomberg Eurozone Developed Markets Large, Mid & Small Cap Total Return Index is a float market-cap-weighted equity benchmark that covers the top 99% of market cap of the measured market.

**Bloomberg Developed Markets ex Eurozone Index -** Bloomberg Developed Markets ex Eurozone Large & Mid Cap Total Return Index USD is a float market-cap-weighted equity benchmark that covers the top 85% of market cap of the measured market.

**Bloomberg Japan Large, Mid & Small Cap Index -** Bloomberg Japan Large, Mid & Small Cap Total Return Index is a float market-cap-weighted equity benchmark that covers the top 99% of market cap of the measured market.

**Bloomberg Developed Markets ex Japan Large & Mid Cap Index -** Bloomberg Developed Markets ex Japan Large & Mid Cap Total Return Index is a float market-cap-weighted equity benchmark that covers the top 85% of market cap of the measured market.

**FTSE Nareit All Equity REITs Index -** FTSE NAREIT All Equity REITS Total Return Index is a free float adjusted market capitalization weighted index that includes all tax qualified REITs listed in the NYSE, AMEX, and NASDAQ National Market.

**MSCI World ex USA Index -** The MSCI World ex USA Index captures large and mid-cap representation across 22 of 23 Developed Markets (DM) countries excluding the United States. With 817 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

**MSCI World ex USA Small Cap Index -** The MSCI World ex USA Small Cap Index captures small cap representation across 22 of 23 Developed Markets (DM) countries (excluding the United States). With 2,309 constituents, the index covers approximately 14% of the free float-adjusted market capitalization in each country.

**MSCI Emerging Markets IMI Index -** The MSCI Emerging Markets Investable Market Index (IMI) captures large, mid and small cap representation across Emerging Markets countries. The index covers approximately 99% of the free float-adjusted market capitalization in each country.

**Bloomberg Global Aggregate Index -** The Bloomberg GlobalAgg Index is a flagship measure of global investment grade debt from a multitude local currency markets. This multi-currency benchmark includes treasury, government-related, corporate and securitized fixed-rate bonds from both developed and emerging markets issuers.

**Bloomberg Global Treasury Index -** The Bloomberg Global Treasury Index tracks fixed-rate, local currency government debt of investment grade countries, including both developed and emerging markets. The index represents the treasury sector of the Global Aggregate Index and contains issues from 37 countries denominated in 24 currencies.

**Bloomberg Global Corporates Index -** The Bloomberg Global Aggregate Corporate Index is a flagship measure of global investment grade, fixed-rate corporate debt. This multicurrency benchmark includes bonds from developed and emerging markets issuers within the industrial, utility and financial sectors.

**Bloomberg Global High Yield Index Value - T**he Bloomberg Global High Yield Index is a multi-currency flagship measure of the global high yield debt market. The index represents the union of the US High Yield, the Pan-European High Yield, and Emerging Markets (EM) Hard Currency High Yield Indices. The high yield and emerging markets sub-components are mutually exclusive.

**Bloomberg US Aggregate Index -** The Bloomberg US Aggregate Bond Index is a broad-based benchmark that measures the investment-grade, US-dollar-denominated, fixed-rate taxable bond market, including Treasuries, government-related and corporate securities, mortgage-backed securities (agency fixed-rate and hybrid adjustable-rate mortgage pass-throughs), asset-backed securities, and commercial mortgage-backed securities.

**Bloomberg US Treasury Index -** The Bloomberg US Treasury Index measures US dollar-denominated, fixed-rate, nominal debt issued by the US Treasury. Treasury bills are excluded by the maturity constraint, but are part of a separate Short Treasury Index. STRIPS are excluded from the index because their inclusion would result in double-counting.

**Bloomberg US Treasury Bills 3-6 Months Index -** The Bloomberg US Treasury Bill: 3-6 Months Index tracks the market for treasury bills with 3 to 5.9999 months to maturity issued by the US government. US Treasury bills are issued in fixed maturity terms of 4-, 13-, 26- and 52-weeks.

**Bloomberg US Intermediate Treasury Index -** The Bloomberg US Treasury: Intermediate Index measures US dollar-denominated, fixed-rate, nominal debt issued by the US Treasury with maturities of 1 to 9.9999 years to maturity.

**Bloomberg US Long Treasury Index -** The Bloomberg US Treasury: Long Index measures US dollar-denominated, fixed-rate, nominal debt issued by the US Treasury with 10 years or more to maturity.

**Bloomberg US Strips 20+ Year Index -** Bloomberg US Strips 20+ Year Total Return Index Value Unhedged USD.

**Bloomberg US Credit Index -** The Bloomberg US Credit Index measures the investment grade, US dollar-denominated, fixed-rate, taxable corporate and government related bond markets. It is composed of the US Corporate Index and a non-corporate component that includes foreign agencies, sovereigns, supranationals and local authorities.

**Bloomberg US Intermediate Credit Index -** The Bloomberg US Intermediate Credit Index measures the performance of investment grade, US dollar-denominated, fixed-rate, taxable corporate and government-related debt with less than ten years to maturity. It is composed of a corporate and a non-corporate component that includes non-US agencies, sovereigns, supranationals and local authorities.

**Bloomberg US Long Credit Index -** The Bloomberg US Long Credit Index measures the performance of investment grade, US dollar-denominated, fixed-rate, taxable corporate and government-related debt with at least ten years to maturity. It is composed of a corporate and a non-corporate component that includes non-US agencies, sovereigns, supranationals and local authorities.

**Bloomberg US Govt Inflation-Linked Index -** Bloomberg US Govt Inflation-Linked All Maturities Total Return Index.

**Bloomberg US Agencies Index -** Bloomberg US Agencies Total Return Total Return Index Value Unhedged USD.

**Bloomberg US MBS Index -** The Bloomberg US Mortgage-Backed Securities (MBS) Index tracks fixed-rate agency mortgage-backed pass-through securities guaranteed by Ginnie Mae (GNMA), Fannie Mae (FNMA), and Freddie Mac (FHLMC). The index is constructed by grouping individual TBA-deliverable MBS pools into aggregates or generics based on program, coupon and vintage.

**Bloomberg CMBS Investment Grade Index -** The Bloomberg US CMBS Investment Grade Index measures the investment-grade market of US Agency and US Non-Agency conduit and fusion CMBS deals with a minimum current deal size of $300mn. The index includes both US Aggregate eligible (ERISA eligible) and non-US Aggregate eligible (non-ERISA eligible) securities.

**Bloomberg US Municipal Bond Index -** The Bloomberg US Municipal 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 prerefunded bonds.

**Bloomberg US Corporate High Yield Index -** The Bloomberg US Corporate High Yield Index is an unmanaged, US dollar-denominated, nonconvertible, non-investment-grade debt index. The index consists of domestic and corporate bonds rated Ba and below with a minimum outstanding amount of $150 million.

**Morningstar LSTA US Leveraged Loan Index -** The Morningstar LSTA US Leveraged Loan Index is a market-value weighted index designed to measure the performance of the US leveraged loan market.

**Bloomberg United Kingdom Aggregate Index -** Bloomberg Global Agg - United Kingdom Total Return Index Unhedged GBP.

**Bloomberg Global: United Kingdom Index -** The Bloomberg Global: United Kingdom Index measures the Investment grade Treasury bond market with a country of risk of United Kingdom and excluding European currency unit.

**Bloomberg Global Aggregate Corporate: United Kingdom Index -** Bloomberg Global Aggregate Corporate - United Kingdom.

**Bloomberg United Kingdom Inflation-Linked All Maturities Index -** Bloomberg UK Govt Inflation-Linked All Maturities Total Return Index.

**Bloomberg Sterling Gilt 0-12 Month Index -** Bloomberg Sterling Gilt 0-12 Month Total Return Index Unhedged.

**Bloomberg Euro Aggregate Index -** The Bloomberg EuroAgg Index is a benchmark that measures the investment grade, euro-denominated, fixed-rate bond market, including treasuries, government-related, corporate and securitized issues. Inclusion is based on currency denomination of a bond and not country of risk of the issuer.

**Bloomberg Euro Aggregate Treasury Index -** The Bloomberg Euro-Aggregate: Treasury Index is a benchmark that measures the Treasury component of the Euro-Aggregate. The index consists of fixed-rate, investment grade public obligations of the sovereign countries in the Eurozone. This index currently contains euro-denominated issues from 17 countries.

**Bloomberg Euro Aggregate Corporate Index -** The Bloomberg Euro-Aggregate: Corporates Index is a benchmark that measures the corporate component of the Euro Aggregate Index. It includes investment grade, euro-denominated, fixed-rate securities.

**Bloomberg Liquidity Screened Euro HY Index -** The Bloomberg Liquidity Screened Euro High Yield Bond Index is a more liquid version of the Euro High Yield Index that measures the market of EUR denominated, non-investment grade, fixed-rate, taxable corporate bonds. Securities in the index roll up to the Pan European Universal and the Global High-Yield Indices.

**Bloomberg Euro Govt Inflation-Linked AAA-AA All Maturities Index -** Bloomberg Eurozone All CPI Total Return Index Value Unhedged EUR.

**Bloomberg Euro Treasury Bills Index -** Bloomberg Euro TSYBills 03 Months Index Total Return Index Value Unhedged EUR.

**Bloomberg Asian Pacific Japanese Index Value -** The Japanese Aggregate Index contains fixed-rate investment-grade securities denominated in Japanese yen and registered as domestic bond. The index is composed primarily of local currency sovereign debt but also includes government-related, corporate, and securitized bonds.

**Bloomberg Asian-Pacific Japan Treasury Index -** The Bloomberg Asian-Pacific Japan Treasury Index measures nominal Japan Government Bonds.

**Bloomberg Asian-Pacific Japan Corporate Index -** The Bloomberg Asian-Pacific Japanese Corporate Index contains fixed-rate, investment-grade securities denominated in Japanese yen. Bonds draw from the financial, utility, and industrial sectors. Inclusion is based on currency of the issue and not the country of risk of the issuer.

**Bloomberg Japan Govt Inflation-Linked All Maturities Index -** Bloomberg Japan Govt Inflation-Linked All Maturities Forward Index Report.

**Bloomberg Global Aggregate ex-USD -** The Bloomberg Global Aggregate ex USD Index is a measure of investment grade debt from 24 local currency markets. This multi-currency benchmark includes treasury, government-related, corporate and securitized fixed-rate bonds from both developed and emerging markets issuers. Bonds issued in USD are excluded.

**Bloomberg Global Treasury ex-US -** The Bloomberg Global Treasury ex US Index is a subset of the flagship Global Treasury Index that does not have any exposure to US debt. This multi-currency benchmark includes investment grade, fixed-rate bonds issued by governments in their native currencies.

**Bloomberg Global Agg ex USD: Corporate -** The Bloomberg Global Aggregate Corporate ex USD Bond Index is a measure of global investment grade, fixed-rate corporate debt that excludes USD-denominated debt. This multi-currency benchmark includes bonds from developed and emerging markets issuers within the industrial, utility and financial sectors.

**Bloomberg EM USD Aggregate: Sovereign -** The Bloomberg EM USD Aggregate: Sovereign Index is a hard currency Emerging Markets debt benchmark that includes USD-denominated debt from sovereign EM issuers.

**Bloomberg EM USD Aggregate: Corporate -** The Bloomberg EM USD Aggregate: Corporate Index is a hard currency Emerging Markets debt benchmark that includes USD-denominated debt from corporate EM issuers.

**Bloomberg EM Local Currency Government -** The Bloomberg Emerging Markets Local Currency Government Index is a flagship index that measures the performance of local currency Emerging Markets (EM) debt.

**Bloomberg Commodity Index -** Bloomberg Commodity Index is calculated on an ER basis and reflects commodity price movements. The index rebalances annually weighted 2/3 by trading volume, 1/3 by world production and weight-caps are applied at the commodity, sector and group levels. Roll period typically occurs from 6th-10th business day.

**S&P Global Natural Resources Index -** The index includes 90 of the largest publicly-traded companies in natural resources and commodities businesses that meet specific investability requirements, offering investors diversified, liquid and investable equity exposure across 3 primary commodity-related sectors: Agribusiness, Energy, and Metals & Mining.

**S&P Global Infrastructure Index -** The S&P Global Infrastructure Index is designed to track 75 companies from around the world chosen to represent the listed infrastructure industry while maintaining liquidity and tradability. To create diversified exposure, the index includes three distinct infrastructure clusters: energy, transportation, and utilities.

**HFRX Global Hedge Fund Index -** HFRX Indices utilize a rigorous quantitative selection process to represent the larger hedge fund universe including index types comprised specifically of liquid alternative UCITS funds, hedge funds or ESG funds.

**HFRI Fund Weighted Composite Index -** HFRI Indices are broadly constructed indices designed to capture the breadth of hedge fund performance trends across all strategies and regions.

**PitchBook Private Capital Indexes -** The PitchBook Private Capital Indexes are quarterly return benchmarks for the private market industry. The indexes provided are meant to be estimates of asset class performance, hypothetically creating a return if one had access to all active funds on a capital-weighted basis.

**Conference Board US Leading Index -** Leading indicators include economic variables that tend to move before changes in the overall economy. These indicators give a sense of the future state of an economy.

**US CPI Urban Consumers -** Consumer prices (CPI) are a measure of prices paid by consumers for a market basket of consumer goods and services.

# Endnotes

1. OATs (Obligations assimilables du Trésor) are government bonds issued by the French Treasury.

2. This is likely to be the case for industries with no proximity to peak demand (market saturation). In other words, the shape of the demand curve affects the amount of additional demand (and revenue) created for a given fall in prices.

3. World Bank: Climate Policies with Real-world results.

4. Implementing the Inflation Reduction Act: Columbia Climate School.

5. The earnings share represents total corporate earnings or profits as a percentage of nominal GDP.

6. A transformation that applies a ceiling and floor to data reducing the effect of outliers.

# Disclosure

**CAPITAL MARKET ASSUMPTIONS**

The capital market assumptions are BNY Advisors' estimates based upon historical market performance and the current market environment. References to future expected returns are not promises of actual returns that may be realized and should not be relied upon. Actual returns may vary significantly. In addition, the historical returns used as a basis for this analysis are based on information gathered by BNY or from third-party sources and have not been independently verified.

The forecasts contained herein are for illustrative purposes only and are not guarantees of performance. The forecasts have inherent limitations because they are not based on actual transactions. The forecasts are based upon historical returns of the selected investments and subjective estimates and assumptions about circumstances and events that may not have taken place and may never do so.

Some of the factors that could impact these forecasts include, but are not limited to:
- General economic conditions
- Financial market performance
- Interest rate levels
- Changes to current laws or regulations, and
- Future geopolitical conditions

Asset class returns are not reflective of anticipated returns for associated indexes.

The results do not represent, and are not necessarily indicative of, the results that may be achieved in the future.

Robust Strategic Asset Allocation (RSAA) is a framework for classifying the market environment with a combination of macroeconomic and market indicators with judgment. BNY Advisors has defined historical regimes for the period starting in May 1973.

The asset classes referenced in our capital market assumptions are represented by broad-based indices which have been selected because they are well known and are easily recognizable by investors. Indices have limitations because indices have volatility and other material characteristics that may differ from an actual portfolio. For example, investments made for a portfolio may differ significantly in terms of security holdings, industry weightings and asset allocation from those of the index. Also, the indices noted in this presentation are unmanaged, are not available for direct investment, and are not subject to management fees, transaction costs or other types of expenses that a portfolio may incur. Finally, the performance of the indices reflects reinvestment of dividends and, where applicable, capital gain distributions. Therefore, investors should carefully consider these limitations and differences when evaluating the index performance.

The indices may be trademarks of various organizations and in those cases have been licensed for use by BNY and are used solely herein for comparative purposes. The foregoing index licensers are not affiliated with BNY, do not endorse, sponsor, sell or promote the investment strategies mentioned in this presentation and they make no representation regarding advisability of investing in the strategies described herein. Description of the indices are available upon request.

**RISKS**

**All investments involve risk including loss of principal. Certain investments involve greater or unique risks that should be considered along with the objectives, fees, and expenses before investing.**

**Asset allocation and diversification cannot assure a profit or protect against loss.**

**Equities** are subject to market, market sector, market liquidity, issuer, and investment style risks to varying degrees. Investing in foreign denominated and/or domiciled securities involves special risks, including changes in currency exchange rates, political, economic, and social instability, limited company information, differing auditing and legal standards, and less market liquidity. These risks generally are greater with emerging market countries. Risks of investing in real estate securities are similar to those associated with direct investments in real estate, including falling property values due to increasing vacancies or declining rents resulting from economic, legal, political or technological developments, lack of liquidity, limited diversification and sensitivity to certain economic factors such as interest rate changes and market recessions.

**Currencies** are subject to the risk that those currencies will decline in value relative to a local currency, or, in the case of hedged positions, that the local currency will decline relative to the currency being hedged. Each of these risks could increase the fund's volatility.

**Bonds** are subject to interest-rate, credit, liquidity, call and market risks, to varying degrees. Generally, all other factors being equal, bond prices are inversely related to interest-rate changes and rate increases can cause price declines. The use of derivatives involves risks different from, or possibly greater than, the risks associated with investing directly in the underlying assets.

**Derivatives** can be highly volatile, illiquid, and difficult to value and there is the risk that changes in the value of a derivative held by the portfolio will not correlate with the underlying instruments or the portfolio's other investments. Investing in **foreign-denominated and/or domiciled securities** involves special risks, including changes in currency exchange rates, political, economic, and social instability, limited company information, differing auditing and legal standards, and less market liquidity. These risks generally are greater with Emerging Markets USD Aggregate Index (Emerging Markets Bonds) emerging market countries

**High yield bonds** involve increased credit and liquidity risk than higher-rated bonds and are considered speculative in terms of the issuer's ability to pay interest and repay principal on a timely basis.

**Mortgage-backed securities:** Ginnie Maes and other securities backed by the full faith and credit of the United States are guaranteed only as to the timely payment of interest and principal when held to maturity. The market prices for such securities are not guaranteed and will fluctuate. Privately issued mortgage-related securities also are subject to credit risks associated with the underlying mortgage properties. These securities may be more volatile and less liquid than more traditional, government-backed debt securities. Municipal income may be subject to state and local taxes. Some income may be subject to the federal alternative minimum tax for certain investors. Capital gains, if any, are taxable.

**Asset class comparisons** such as comparing equities to bonds have limitations because different asset classes may have characteristics that materially differ from each other. Because of these differences, comparisons should not be relied upon solely as a measure when evaluating an investment for any particular portfolio. Comparisons are provided for illustrative purposes only. Although stocks have greater potential for growth than bonds, they also have much higher levels of risk. With stocks, the prices can rise and fall for a variety of reasons, including factors outside of the company's control. Bonds may be considered relatively safer. Because they're a debt security, they function as an IOU. The company pays interest to the bondholder, and once the bond matures, the bondholder receives the principal back. Bonds aren't completely risk-free; there is the possibility of the issuer defaulting on its bonds, and if sold prior to maturity the market value may be higher or lower than the purchase value. But compared to stocks, historically there's been less volatility.

**FOR INSTITUTIONAL, PROFESSIONAL, QUALIFIED INVESTORS AND QUALIFIED CLIENTS ONLY. FOR GENERAL PUBLIC DISTRIBUTION IN THE US ONLY.**

This material should not be considered as investment advice or a recommendation of any investment manager or account arrangement, and should not serve as a primary basis for investment decisions. Any statements and opinions expressed are those of the author as at the date of publication, are subject to change as economic and market conditions dictate, and do not necessarily represent the views of BNY. The information has been provided as a general market commentary only and does not constitute legal, tax, accounting, other professional counsel or investment advice, is not predictive of future performance, and should not be construed as an offer to sell or a solicitation to buy any security or make an offer where otherwise unlawful. The information has been provided without taking into account the investment objective, financial situation or needs of any particular person. BNY is not responsible for any subsequent investment advice given based on the information supplied. This is not investment research or a research recommendation for regulatory purposes as it does not constitute substantive research or analysis. This information may contain projections or other forward-looking statements regarding future events, targets or expectations, and is only current as of the date indicated. There is no assurance that such events or expectations will be achieved, and actual results may be significantly different from that shown here. The information is based on current market conditions, which will fluctuate and may be superseded by subsequent market events or for other reasons. References to specific securities, asset classes and financial markets are for illustrative purposes only and are not intended to be and should not be interpreted as recommendations. Past performance is no guarantee of future results. Information and opinions presented have been obtained or derived from sources which BNY believed to be reliable, but BNY makes no representation to its accuracy and completeness. BNY accepts no liability for loss arising from use of this material. BNY, BNY Mellon and Bank of New York Mellon are the corporate brands of The Bank of New York Mellon Corporation and may also be used to reference the corporation as a whole and/or its various subsidiaries generally.

**All investments involve risk including loss of principal.**

**Not for distribution to, or use by, any person or entity in any jurisdiction or country in which such distribution or use would be contrary to local law or regulation.** This information may not be distributed or used for the purpose of offers or solicitations in any jurisdiction or in any circumstances in which such offers or solicitations are unlawful or not authorized, or where there would be, by virtue of such distribution, new or additional registration requirements. Persons into whose possession this information comes are required to inform themselves about and to observe any restrictions that apply to the distribution of this information in their jurisdiction.

**ISSUING ENTITIES**

**This material is only for distribution in those countries and to those recipients listed, subject to the noted conditions and limitations: For Institutional, Professional, Qualified Investors and Qualified Clients. For General Public Distribution in the US Only. • United States:** by BNY Mellon Securities Corporation (BNYMSC), 240 Greenwich Street, New York, NY 10286. BNYMSC, a registered broker-dealer and FINRA member, has entered into agreements to offer securities in the US on behalf of certain BNY Investments firms. • **Europe (excluding Switzerland):** BNY Mellon Fund Management (Luxembourg) S.A., 2-4 Rue Eugène Ruppert L-2453 Luxembourg. • **UK, Africa and Latin America (ex-Brazil):** BNY Mellon Investment Management EMEA Limited, BNY Mellon Centre, 160 Queen Victoria Street, London EC4V 4LA. Registered in England No. 1118580. Authorised and regulated by the Financial Conduct Authority. • **South Africa:** BNY Mellon Investment Management EMEA Limited is an authorised financial services provider. • **Switzerland:** BNY Mellon Investments Switzerland GmbH, Bärengasse 29, CH-8001 Zürich, Switzerland. • **Middle East:** DIFC branch of The Bank of New York Mellon. Regulated by the Dubai Financial Services Authority. • **Singapore:** BNY Mellon Investment Management Singapore Pte. Limited Co. Reg. 201230427E. Regulated by the Monetary Authority of Singapore. • **Hong Kong:** BNY Mellon Investment Management Hong Kong Limited. Regulated by the Hong Kong Securities and Futures Commission. • **Japan:** BNY Mellon Investment Management Japan Limited. BNY Mellon Investment Management Japan Limited is a Financial Instruments Business Operator with license no 406 (Kinsho) at the Commissioner of Kanto Local Finance Bureau and is a Member of the Investment Trusts Association, Japan and Japan Investment Advisers Association and Type II Financial Instruments Firms Association. • **Brazil:** ARX Investimentos Ltda., Av. Borges de Medeiros, 633, 4th floor, Rio de Janeiro, RJ, Brazil, CEP 22430-041. Authorized and regulated by the Brazilian Securities and Exchange Commission (CVM). • **Canada:** BNY Mellon Asset Management Canada Ltd. is registered in all provinces and territories of Canada as a Portfolio Manager and Exempt Market Dealer, and as a Commodity Trading Manager in Ontario. All entities are subsidiaries of The Bank of New York Mellon Corporation.

**BNY COMPANY INFORMATION**

**BNY Investments** is one of the world's leading investment management organizations, encompassing BNY's affiliated investment management firms and global distribution companies. BNY is the corporate brands of The Bank of New York Mellon Corporation and may also be used to reference the corporation as a whole and/or its various subsidiaries generally. • **Mellon Investments Corporation (MIC)** is a registered investment advisor and subsidiary of The Bank of New York Mellon Corporation. MIC is composed of two divisions: **Mellon**, which specializes in index management, and **Dreyfus**, which specializes in cash management and short duration strategies. • **Insight Investment -** Investment advisory services in North America are provided through two different investment advisers registered with the Securities and Exchange Commission (SEC) using the brand Insight Investment: Insight North America LLC (INA) and Insight Investment International Limited (IIIL). The North American investment advisers are associated with other global investment managers that also (individually and collectively) use the corporate brand Insight. Insight is a subsidiary of The Bank of New York Mellon Corporation. • **Newton Investment Management -** "Newton" and/or "Newton Investment Management" is a corporate brand which refers to the following group of affiliated companies: Newton Investment Management Limited (NIM), Newton Investment Management North America LLC (NIMNA) and Newton Investment Management Japan Limited (NIMJ). NIMNA was established in 2021, NIMJ was established in March 2023. NIM and NIMNA are registered with the Securities and Exchange Commission (SEC) in the United States of America as an investment adviser under the Investment Advisers Act of 1940. Newton is a subsidiary of The Bank of New York Mellon Corporation. • **ARX** is the brand used to describe the Brazilian investment capabilities of BNY Mellon ARX Investimentos Ltda. ARX is a subsidiary of The Bank of New York Mellon Corporation. • **Walter Scott & Partners Limited** (Walter Scott) is an investment management firm authorized and regulated by the Financial Conduct Authority, and a subsidiary of The Bank of New York Mellon Corporation. • **Siguler Guff -** The Bank of New York Mellon owns a 20% interest in Siguler Guff & Company, LP and certain related entities (including Siguler Guff Advisers LLC). • **BNY Mellon Advisors, Inc.** (BNY Advisors) is an investment adviser registered as such with the US Securities and Exchange Commission ("SEC") pursuant to the Investment Advisers Act of 1940, as amended. BNY Advisors is a subsidiary of The Bank of New York Mellon Corporation. • **BNY Wealth** is among the nation's leading wealth managers and delivers wealth planning, investment management and financial management services to financially successful individuals, family offices, charitable gift programs, endowments, and foundations. These services are provided through several subsidiaries of The Bank of New York Mellon Corporation.

BNY Advisors' Investment Institute (Investment Institute) consists of our macroeconomic research, asset allocation, manager research and operational due diligence teams.



**NOT FDIC INSURED | NO BANK GUARANTEE | MAY LOSE VALUE**



BMAIAM-657639-2024-12-17 | BABR-657649-2024-12-17 | GU-602 - 17 - December 2025