Capital Market Assumptions

10-YEAR OUTLOOK: 2025 EDITION

NORTHERN TRUST

As economic growth moderates and central banks in developed markets attempt to hit their 2% inflation targets, we think investors are turning their attention to uncovering the future drivers of economic expansion. Some countries may seize opportunities better than others, potentially resulting in diverging economic paths.

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As companies invest in artificial intelligence (AI), we expect **AI-Enabled Productivity** to enhance economic growth, especially in the U.S. This should help countries combat shifting demographic trends that potentially damage productivity while also boosting economic growth. We expect countries to utilize technological development as they are **Navigating the Energy Transition,** where they seek to create robust and rapid solutions to accommodate surging energy demand, establish energy security and meet commitments to mitigate climate change.

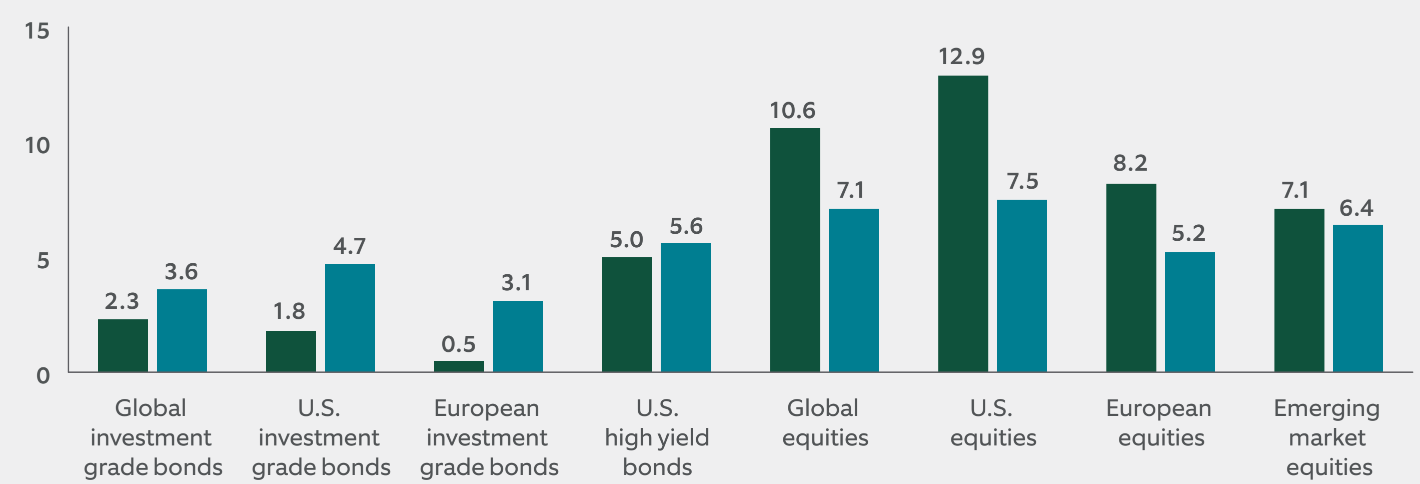
To enable these solutions, countries must closely examine global trade and supply chain opportunities and risks in a more politically fragmented world. However, we don't expect this to derail global trade. We see **Globalization: Bent, Not Broken,** albeit possibly realigned, as an ongoing force for global economic expansion.

EXHIBIT 1

Bonds Higher, Equities Lower

Annualized 10-Year Returns vs. Northern Trust 10-Year Return Forecasts (%)

■ 10-year return ■ Northern Trust 10-year return forecast



We expect higher bond returns and more modest equity returns over the next 10 years.

Sources: Northern Trust Asset Management, Factset. Annualized return data in local currency from September 30, 2014 to September 30, 2024. Index performance returns do not reflect any management fees, transaction costs or expenses. Please see index proxies and important forecast disclosures on pages 15 and 21. It is not possible to invest directly in any index. **Past performance is not indicative of future results.**

THEMES AND ASSET CLASS RETURNS OVERVIEW

Our 10-year themes identify the trends we see affecting the markets and economy over the next decade, providing the foundation for our asset class outlooks.

1

AI-Enabled Productivity

Increasing productivity through AI is emerging as a critical factor for economic growth in the face of challenging demographic changes. Historically, growth of the working age population has driven economic growth. However, fertility rates are declining (Exhibit 2), and governments are tightening their immigration policies for a variety of reasons, which likely will slow population growth. Further, life expectancies are increasing, resulting in a shrinking workforce as a percentage of total population in developed markets.

The potential impact of AI on productivity and economic growth is difficult to pin down and subject to great debate in academic and industry literature. While overall gains are acknowledged, the range of projections is wide. As examples, Daron Acemoglu, an economics professor at the Massachusetts Institute of Technology, argues that forecasting AI's effect is hard to predict and requires speculation. Based on his framework, he sees a gain of 0.55% in total factor productivity over the next 10 years.[1] In contrast, Goldman Sachs' Joseph Briggs predicts a 9.2% gain in total factor productivity and 6.1% increase in economic growth over the next decade.[2]

Regardless of the wide range of estimates, AI's asymmetrical profile is clear in our view, with far more potential for upside gain than downside loss. And while shorter-term gains may come in spurts, or be obfuscated by other data, we believe AI adoption and gains will likely be more evident long term, as the technology is adopted and use cases are refined.

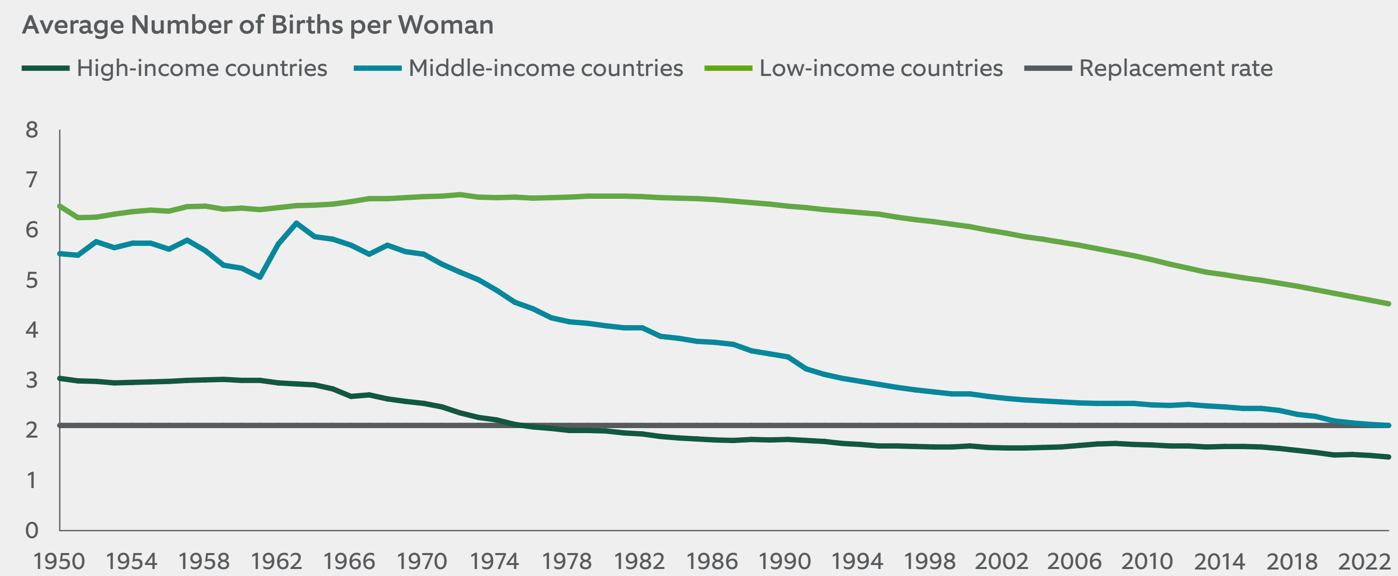
That said, AI could cause displacement in jobs and increase inequality. Potential AI productivity gains will likely differ across developed and developing economies due to the nature of existing work and respective states of technology. Within countries, impacts could also differ based on factors such as firm size, industry and adoption. Likewise, impacts on the labor market (acceleration, augmentation, automation) could vary.

Some **AI-Enabled Productivity** growth bottlenecks do exist. A key concern is the capacity of existing infrastructure to support AI's growing energy demand. In this regard, **Navigating the Energy Transition** is critical. Likewise, supplies of base materials for batteries, chips and other computing components are also key, and require attention in a world of **Globalization: Bent, Not Broken.**

As we look ahead to opportunities in an **AI-Enabled Productivity** world, we see potential winners and losers. Infrastructure (data centers, energy infrastructure) seems attractive, with potential opportunities to capitalize on this theme in private markets. Meanwhile, some of the losers may be highly indebted companies lacking the sufficient access to credit necessary to invest enough in AI in order to remain competitive.

EXHIBIT 2

AI May Aid Productivity as Population Growth Slows



Historically, population growth has helped drive economic growth. As fertility rates decline, we expect AI to step in to increase productivity.

Source: United Nations, Department of Economic and Social Affairs, Population Division (2024). World Population Prospects 2024, Online Edition, data from 1950 to 2023. The replacement rate of 2.1 is the estimated number of births per woman required to maintain the population.

[1] "The Simple Macroeconomics of AI" by Daron Acemoglu, Massachusetts Institute of Technology, April 5, 2024. Total factor productivity is a measure of product efficiency, calculated by dividing total production (output) by average costs (inputs).
[2] Goldman Sachs Global Investment research, "Top of Mind Issue 129: Gen AI: Too Much Spend, Too Little Benefit?," June 2024.

2

Navigating the Energy Transition

Global energy demand continues to increase and requires a robust set of options, innovations and finance mechanisms. Countries are seeking to satisfy surging demand for energy, secure more energy independence and meet commitments to slow climate change. To do so, many are diversifying their energy sources, improving energy technology and securing raw material supplies.

A Sustainable Green Transition, a theme we explored in our 2024 CMA research report, made clear that the green transition is essential for countries dependent on imported fossil fuels to improve their energy security. **Navigating the Energy Transition** is the current reality, whereby even as we are seeing increased green energy hitting the grid, we are still experiencing demand for fossil fuel as a response to physical risks, geopolitical risks, and growing overall energy requirements. Countries and regions are on various transition pathways and timeframes, which require vast amounts of capital to achieve goals. Independent and "friendly" sources of energy are needed because of geopolitical uncertainty in a **Globalization: Bent, Not Broken** world. Further, additional energy supply is required as demand for **AI-Enabled Productivity** ratchets up.

Indeed, electricity demand in the U.S. is expected to grow as a part of the AI boom, as current AI data centers require six to eight times as much power as traditional data centers.[3] As a result, we are seeing renewed interest in nuclear energy to power data centers. We also see evidence that traditional oil and gas companies are exploring avenues to directly supply data centers with energy,[4] by combining natural gas-fired power plants with carbon-capture technology.

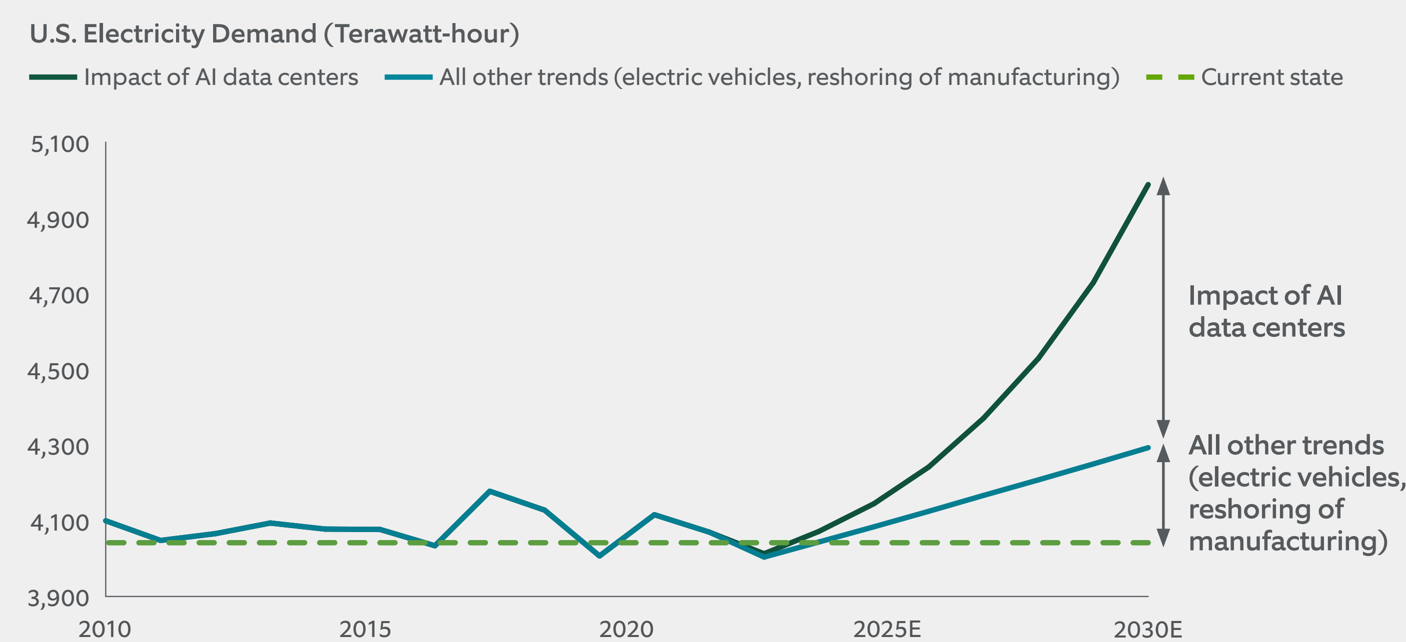
Alongside security and demand issues, sustainability goals seek to address physical climate risks. We expect adaptation to cost more — in terms of economic losses and inflationary pressures — than mitigating measures taken to prevent climate change. Physical climate risks, including hurricanes and droughts, can lead to lower economic growth and higher inflation.

We must, however, be aware of risks and limitations related to the energy transition. Similar to **AI-Enabled Productivity,** and linked to **Globalization: Bent, Not Broken,** there are concerns about the supply of critical materials to support the transition to, and growth of, the battery industry and alternative forms of energy. Reliable and adequate sources of these materials must be secured for countries to achieve their goals.

As a result of the combined **Navigating the Energy Transition** drivers (climate change risks, energy security and increasing energy demand), we see linkages to investment in infrastructure. Infrastructure is a key requirement for developing energy capacity as well as improving energy security (such as delivery/transport; grid expansion/modernization). Infrastructure investments are also required, particularly in vulnerable regions, for climate adaptation.

EXHIBIT 3

Power Demand Surge



We expect AI data centers to drive power demand.

Source: Wells Fargo Securities, LLC estimates, from 2010 to 2030 (years from 2023 to 2030 are estimated). A terawatt-hour represents a trillion watts of power used for one hour. The dotted line represents the trend of current demand.

[3] As generative AI asks for more power, data centers seek more reliable, cleaner energy solutions, Deloitte, November 19, 2024.
[4] Big Oil Eyes Powering Big Tech's Data Center Demand, Reuters, December 12, 2024.

3

Globalization: Bent, Not Broken

Global political tensions are morphing supply chains and trade pacts, likely leading to risks and opportunities over the next decade. U.S.–China relations will likely continue to play an outsized role, but increased fragmentation could hurt global economic growth and increase inflation. However, the world is still highly integrated, leading us to view further fragmentation as a risk but not a foregone conclusion.

While the rate of growth in global trade has slowed, we caution against confusing lower growth with deglobalization. For example, while net foreign direct investment (FDI) has declined as a percent of the global economy, the total stock of FDI has continued to grow. Further, trade of goods as a percent of the global economy has stalled, but services trade hit an all-time high (Exhibit 4). Some slowdown may be a natural transition after a period of robust growth, but may not necessarily be a long-term trend.

Notably, we are seeing shifts in the patterns of globalization and rerouting of trade. U.S. trade is moving away from China and toward the likes of Vietnam and Mexico.[5] Meanwhile Vietnam and Mexico are trading more with China.[5] The International Monetary Fund recently identified sharper declines in trade between regional blocs than trade within those blocs.

Increased fragmentation could lead to lower global growth and higher inflation, along with lower supply-chain resilience and market efficiency. Inversely, the trade realignment may produce investment opportunities and fewer unfriendly trade partners, potentially reducing risk for investors. With this in mind, investors may consider more selective investments in countries or industries, as opposed to larger trading blocs and broad indices.

The geopolitical environment may play a hand in shaping the globalization backdrop over the next decade. While we generally see the impact of global political events on financial markets as transitory, politics can drive business and government policies that impact investing longer term. Hot spots which could feed **Globalization: Bent, Not Broken** include the Russia–Ukraine War, Middle East conflict and U.S.-China tension.

How countries, regions or blocs react will likely be influenced by energy independence, technology and military security — reinforcing the importance of **AI-Enabled Productivity** and **Navigating the Energy Transition.**

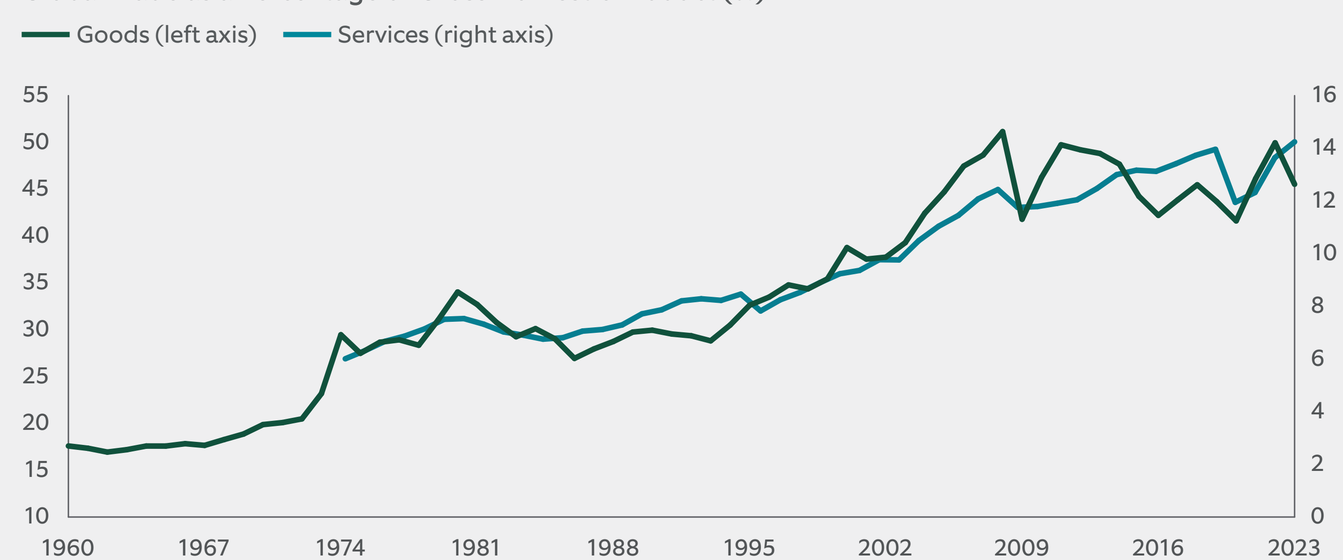
We take some comfort in signs that trade is being rerouted, not cut off, and that fragmentation may be overstated.

We believe the world is still highly integrated by a complex web of linkages that should provide incentive to continue to cooperate with global partners. So for now, increased fragmentation is a risk case, not a foregone conclusion. However, we do not dismiss this risk as there is potential for fragmentation to worsen, and of course consequences related to that downside scenario.

EXHIBIT 4

Global Trade Keeps Going

Global Trade as a Percentage of Gross Domestic Product (%)



Trade of goods as a percent of the global economy has stalled, but services trade hit an all-time high.

Source: World Bank, data from 1960 to 2023.

[5] "Global Supply Chains: The Looming 'Great Reallocation,'" Alfaro, Laura and Chor, Davin, September 2023.

4

Special Considerations

While our 10-year themes identify the trends we see affecting the markets and economy over the next decade, we acknowledge that there are many other noteworthy topics and market characteristics central to our discussions.

China

Given its economic size and trade influence, China is an inescapable topic when considering global market themes. The present question is whether the Chinese government can provide the appropriate reforms and stimulus to support their economy and internal consumer consumption. Our **Globalization: Bent, Not Broken** may play a key role, as domestic consumption is particularly important given limited global capacity to absorb China's sizeable exports.

China already accounts for 29% of global value-added manufacturing, versus 16% in the U.S. and 17% in the European Union.[6] Manufacturing overcapacity and threats of more tariffs likely will limit this economic lever. We think the path of the trade relationship between the U.S. and China will be critical. Meanwhile, China could look inward for growth, but that would require a structural shift away from the focus on technology and manufacturing. In addition, this would require policy measures to stabilize the real estate market, structural reforms that could reverse the impulse to save (such as social safety nets), and demand-side stimulus to jump-start spending.

Cryptocurrencies

The cryptocurrency market capitalization totals about $2 trillion,[7] too small to impact global growth and inflation. However, it is an increasingly prevalent topic and a market being looked at more and more by mainstream investors, and, therefore, deserving discussion and review. We also consider it as distinct from the underlying blockchain technology that supports it, which is a special consideration outside of the cryptocurrency ecosystem.

While not impactful at the total economy level, there may be space to consider cryptocurrencies relative to other alternative investments. Considering Bitcoin as the largest asset within this heterogeneous basket, Bitcoin has been shown, at a very small (3%) allocation, to enhance diversification of a traditional 60% equities/40% bond portfolio.[8] However, Bitcoin is highly speculative, cannot be evaluated through traditional analysis frameworks, and it comes with higher volatility and larger drawdown risk.

Market Concentration

The concentration of stocks (percentage weight of top 10 stocks in an index) in the U.S. equity market continues to grow. While not directly linked to the economy or inflation, and therefore not qualifying as one of our 10-year themes, U.S. stock concentration is an inescapable topic.

Interestingly, even with such high concentration, the S&P 500 Index shows less risk than the S&P 500 Equal Weight Index,[9] implying that recent top stock dominance is not contributing to risk in a degree that would outweigh the risk of the smaller cap names in the Index.

The question is: Have markets become more inelastic (set up for more severe volatility shocks) as a result of the concentration, especially when factoring in increased flows into exchange-traded funds and algorithmic trading? The CBOE Volatility Index spike in August 2024 may be an example of what could happen in such a concentrated market. Lower market elasticity could lead to faster drawdowns. In the end, we remain cognizant of risks associated with the growing U.S. dominance in equity markets, and concentration of the top 10 stocks within that market, but we maintain a constructive outlook.

Elections

Nearly half the world's population went to the polls in 2024.[10] As a result, voters kicked out incumbent governments, political extremes widened and, in some countries such as France, politics became even more fractured. The result being changes in leadership of many countries which could alter policies on anything from immigration to trade.

From a U.S. perspective, while leadership of the largest economy in the world is important, we note that there are presidential elections every four years, and congressional elections every two years. Therefore, as important as the impacts of the new administration will be, we felt longer-term impacts are too unknown to consider in our 10-year horizon. However, the U.S. election did inform our theme of **Globalization: Bent, Not Broken,** recognizing the importance policy plays on trade pacts, global trade integration and supply chains over the long term.

Government Debt

Growing debt and deficits are a concern to investors in a global environment of shifting demographics and aging populations. A government's ability to service its obligations is paramount, and it is, indeed, during periods of economic growth, such as the present, that those governments have a chance to rein in spending to save dry powder for a "rainy day."

However, tolerance for structural reforms is declining globally. This makes it difficult for governments to implement fiscal savings, while preparing for any unexpected shock, such as the next pandemic or global financial crisis. It is also difficult for countries pursuing fiscal reforms to make the investments needed to support security and innovation, as well as **Navigating the Energy Transition.**

In the case of the U.S., the country has ample capacity to pay its debt. It also has the benefit of reserve currency and safe-haven status as a support for its debt market. However, while much of current U.S. government funding is paying for the status quo (servicing debt, defense, Social Security, etc.), policy needs to support productivity and growth in the long term to ensure that debt as a percentage of the economy remains manageable.

[6] Sources: Macrobond, World Bank, U.S. as at 2021, E.U., China and World as at 2023. [7] Source: Grayscale Investments, market cap as of September 2024. [8] Source: Morningstar Direct, equities = ACWI, bonds = Bloomberg US Agg Index, daily data from July 31, 2010 to October 31, 2024.

[9] Source: Morningstar Direct, 3-year rolling standard deviation, December 31, 1972 to December 31, 2024.
[10] How this year of elections is set to reshape global politics, Reuters, July 9, 2024.

5

Fixed Income Forecasts

Interest rates and credit spreads drive our fixed income forecasts. We start by forecasting interest rates and inflation across maturities. We then forecast credit spreads across the credit-rating spectrum, grouped into investment grade bonds and high yield bonds.

Interest Rates

We believe the economy and inflation drive interest rates, and we expect moderate economic growth to persist and inflation to stay largely in check. **AI-Enabled Productivity** should at least partially offset potentially lower productivity from aging populations and waning birth rates. The timing and impact of **Navigating the Energy Transition** is uncertain, but the transition likely will slow growth and put upward pressure on inflation, resulting in a middling impact on interest rates. Difficult U.S.–China relations may fuel geopolitical disruption, but our **Globalization: Bent, Not Broken** theme indicates that trade likely will remain resilient, albeit through newly aligned trading partners.

In aggregate, we think a mix of trends will impact interest rates. We expect short-term rates to decline early in the 10-year investment horizon, causing the yield curve to steepen as the 10-year yield rises slightly.

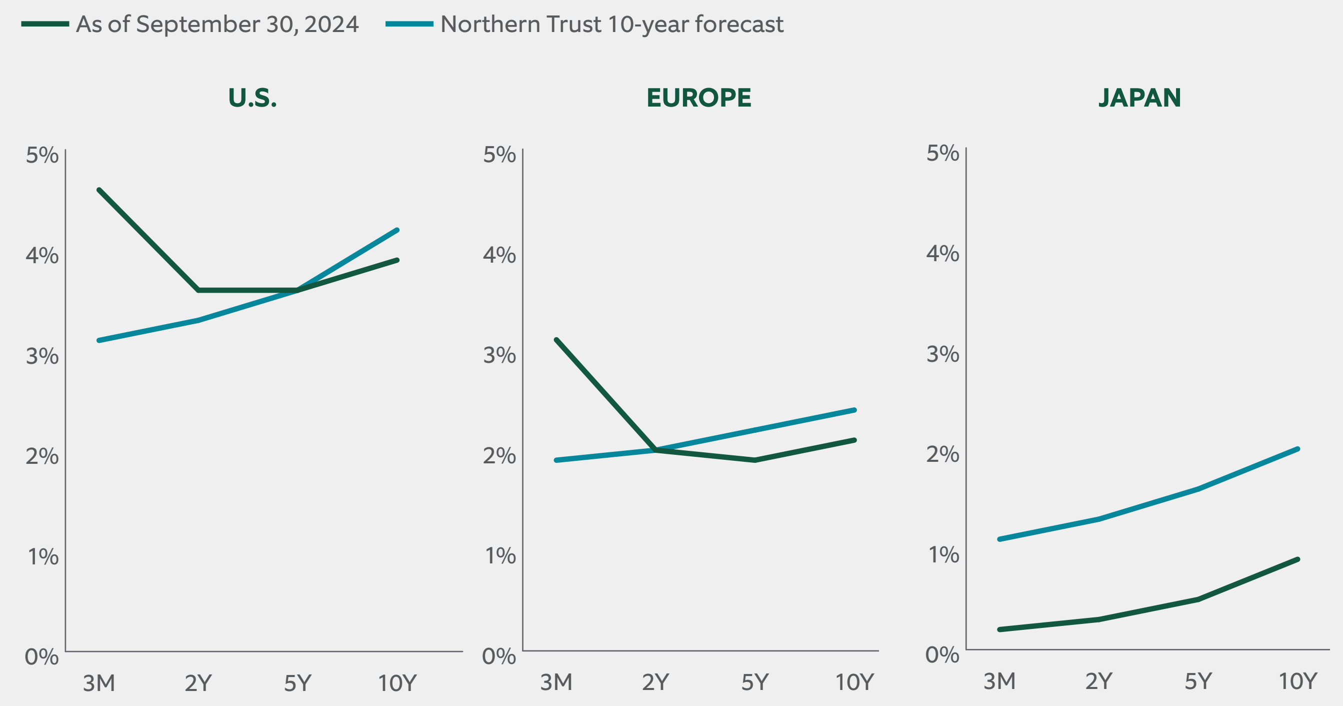
Credit Spreads

We believe credit spreads will increase from the current low levels but stay below the long-term average, supported by stable economic growth and solid credit fundamentals. The allocation to lower-rated bonds in the Bloomberg U.S. Corporate Bond Index has been steadily declining since 2019, which may provide some protection against unforeseen stress events.[11] Similarly, the quality of the high yield market has meaningfully improved with higher interest coverage ratios and lower leverage justifying lower spreads and default rates than longer-term averages.

EXHIBIT 5

Steeper Global Yield Curves

Northern Trust 10-Year Forecasted Global Yield Curves (%)



We expect steeper yield curves will lower cash returns and lift intermediate investment grade bonds.

Sources: Northern Trust, FactSet. Data as of September 30, 2024. German yields, often cited as the euro area benchmark, are used as a proxy for Europe. The 10-year forward rates represent market expectations of rates in 10 years. Please see important forecast disclosures on page 21. **Past performance is not indicative of future results.**

[11] Source: FactSet. In the Bloomberg U.S. Aggregate Corporate Index, the allocation to bonds with a credit rating of Baa, the lowest investment grade category, fell to 48% in September 2024 from 52% in January 2019.

Return Forecasts

Cash

With many central banks in the midst of a rate cutting cycle, we expect yields to decline in most countries. We forecast a 3.3% average annual return in the U.S., 2.1% in Europe and 3.5% in the U.K. In Japan, the central bank has been moving its policy rate out of negative territory, so we believe the cash return will rise to 0.8%.

Inflation-Linked

We believe inflation will be contained and consistent with market forecasts, leading to inflation-linked bond returns in line with Treasurys of similar duration. We forecast U.S. real yields between 1.2%–1.7% and inflation in the low 2% range.

Investment Grade

As the Federal Reserve continues its cutting cycle, we expect more accommodative short-term rates, minimal movement in intermediate-maturity Treasury yields and a modest increase in 10-year yields over the next 10 years. With minimal movement in intermediate-maturity bond yields, we expect returns for the U.S. bond market to largely align with starting point yields plus an additional “roll return” generated through rebalancing a constant duration portfolio along an upward sloping yield curve.

The average credit spread above Treasury yields for U.S. investment grade corporate bonds is below the 20-year average.[12] While we believe this reflects strong fundamentals, as noted earlier we forecast some widening of U.S. corporate spreads closer to the long-term average as investors demand more compensation for bearing credit risk. Higher credit spreads have mixed impacts as price adjustments interact with higher reinvestment rates. We forecast the average annual U.S. investment grade corporate bond return to outpace similar-maturity Treasury returns by 0.9%. On average, we expect investment grade bonds to return 4.7% in the U.S., 3.1% in Europe (Germany) and 1.4% in Japan.

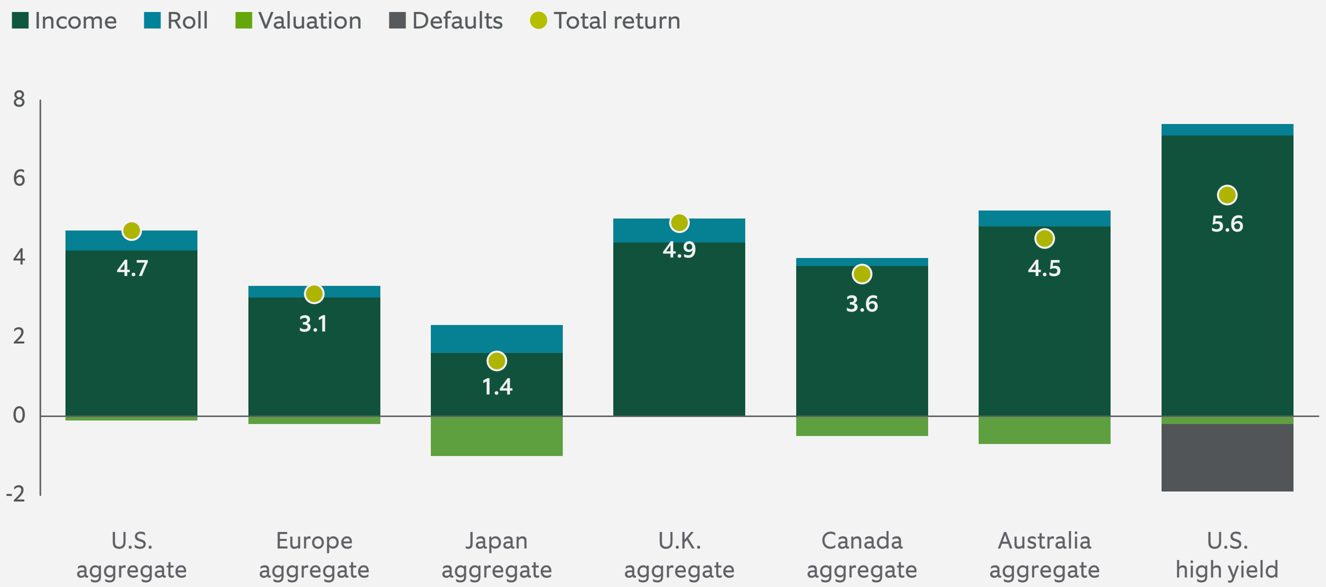
High Yield

High yield credit spreads have fallen considerably but they still offer a meaningful premium over Treasurys. We expect spreads to increase but remain below long-term norms, supported by improved fundamentals and modest economic growth. Similarly, we expect default rates to resemble levels reasonably consistent with the past 10 years at 2.75%, sitting below the long-term average.

EXHIBIT 6

Finding Income Globally

Northern Trust 10-Year Annualized Fixed Income Return Forecasts (%)



We expect upward sloping yield curves to offer positive roll contributions while rate increases offset the impact from lower valuations.

Sources: Northern Trust, FactSet, as of September 30, 2024. “Aggregate” means the aggregate bond market, which may include investment-grade corporate bonds, mortgages and government bonds. Income return calculated as yield to worst, which is the yield on a callable bond, where the issuer may pay off a bond before its maturity date, that assumes a bond is called at the earliest opportunity. Please see index proxies and important forecast disclosures on pages 15 and 21. It is not possible to invest directly in any index.

[12] FactSet, Bloomberg U.S. Aggregate Corporate Index as of September 30, 2024.

6

Equity Forecasts

We began our equity forecasting process with a quantitative analysis to understand which variables drive equity returns over time, using a modified version of the Grinold-Kroner expected return model.[13]

We modified the model by breaking down expected earnings growth into revenue growth and profit margin growth. We applied this model to developed markets and emerging markets, with regional forecasts based on country forecasts weighted by market size. Markets notably have supported higher valuations over the past two years, so we raised the valuation ceiling on equities versus prior year, supporting higher share prices. We also have assumed potential for further margin expansions driven by **AI-Enabled Productivity.**

Key Forecast Building Blocks

1 | **Revenue growth** is based on our economic growth forecasts weighted by each equity index's geographic exposures.

2 | **Share count** reflects the expected change in the outstanding shares in an index due to repurchases or new issuance.

3 | **Profit margin** represents companies' ability to turn revenue per share into earnings through profit margins.

4 | **Valuation impact** is based on expected changes in price-to-earnings ratios.

5 | **Dividend yield** estimates are based on current levels, adjusted based on any expected changes to the amount of cash companies return to shareholders.

Over the past 15 years, performance continues to diverge between the U.S. and developed markets outside the U.S. Given the increasing structural differences between the two regions in terms of sector composition and economic growth, we are separating our developed markets discussion this year into the two regions.

Return Forecasts

U.S. Equity

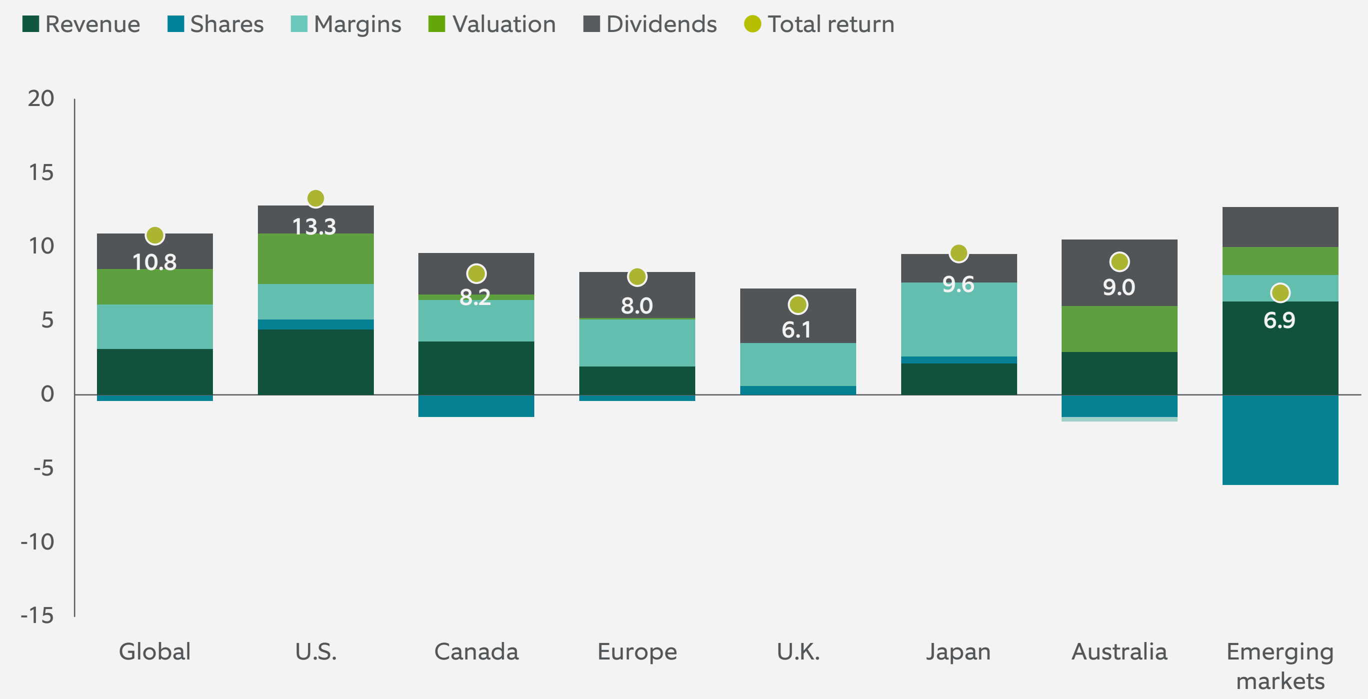
We expect revenues of U.S. companies to increase 3.4% a year on average over the next 10 years, supported by a healthy economy. Profit margins historically have expanded at a stable pace and we expect this trend to continue at a rate of 2.1% annually driven by **AI-Enabled Productivity** and an extension of, and possibly additional, tax cuts under the new U.S. administration.

[13] The Grinold-Kroner model calculates the total expected return for a stock as the sum of returns from dividends, earnings growth and stock price changes. See Richard Grinold and Kenneth Kroner, *The Equity Risk Premium,* Investment Insights (Barclays Global Investors, July 2002).

EXHIBIT 7

U.S. Setting the Pace

10-Year Annualized Equity Return Contribution by Country (%)



Past positive equity returns driven largely by margin expansion while U.S. supportive of higher valuation.

Sources: Northern Trust, FactSet, data from September 30, 2014 to September 30, 2024. Index performance returns do not reflect any management fees, transaction costs or expenses. Please see index proxies page 15. It is not possible to invest directly in any index. **Past performance is not indicative of future results.**

Combining expected revenue growth and profit margin expansion, we are constructive on the earnings outlook for U.S. equities, enough to outweigh potential modest contractions in the near term. Including our expectation of a 2.6% dividend yield (the long-term average),[14] we forecast U.S. equities to return 7.5% annualized in the next 10 years.

U.S. Small Caps

The resilient growth of the U.S. economy should help elevate the returns of small cap stocks. Our expectation for declining interest rates should further support performance where close to 40% of small cap companies' debt is floating interest rates, thus lowering borrowing costs.[15] If the new administration's re-shoring efforts come to pass, it would likely boost small cap earnings.

We expect small cap revenues to grow at 4.5% annualized over the next 10 years outpacing larger cap companies.[16] Close to 80% of small cap company sales come from the U.S. versus the 60% domestically sourced in larger cap companies. We expect profit margins to continue to expand, albeit with more volatility than in the past 10 years, at a pace of 0.9% a year on average. Small cap valuations are currently discounted relative to large caps and we anticipate a slight valuation expansion of 0.2% a year. Adding in an expected dividend yield contribution of 1.5% brings our forecast for U.S. small caps to 9.6% annualized for the next 10 years.

Developed Markets ex-U.S.

Economic growth for developed markets outside of the U.S. (developed ex-U.S.) has fallen short of U.S. growth for years, which has dampened the region's stock returns. The U.S. grew at an average 10-year annualized rate of 2.3% versus 1.4% outside the U.S. in the last five calendar years.[17] We expect the economic growth differences to continue in the next 10 years, with an expected 2.0% annualized growth in the U.S. versus 1.3% outside of the U.S.

Developed ex-U.S. companies have historically shown to turn just 40% of economic growth into revenue versus the 80% translation found in the U.S., and we expect that to continue in the next 10 years.[18] While developed ex-U.S. price-to-earnings multiples have been attractive relative to the U.S., we don't expect significant expansion because of the region's slower economic growth outlook. We foresee some profit margin expansion because of **AI-Enabled Productivity** and lower interest rates, though we believe it will fall shy of revenue growth expectations.

For the next 10 years, we expect developed ex-U.S. revenue growth of 1.8% per year, profit margin expansion of 1.0% and slight valuation expansion contribution of 0.1%. We expect the 10-year average dividend yield of 3.1% to continue along with a slight detraction from share issuance at 0.6%. This brings our forecasted annualized return for the region to 5.8% for the next 10 years. Developed ex-U.S. equities continue to play a critical role in portfolio diversification due to their differences in sector exposures, multiple currencies, and interest-rate sensitivity versus what you would find in the U.S. equity market.

Emerging Markets

Emerging markets have delivered lower returns versus developed markets since the Global Financial Crisis, despite what we view as solid fundamentals through revenue growth, profit margins, valuations and dividend yields. Heavy share issuance has offset those strong fundamentals, suppressing stock performance (Exhibit 8). From a valuation perspective, emerging market companies are trading at a discounted price-to-earnings multiple versus developed markets while carrying a favorable earnings outlook.[19]

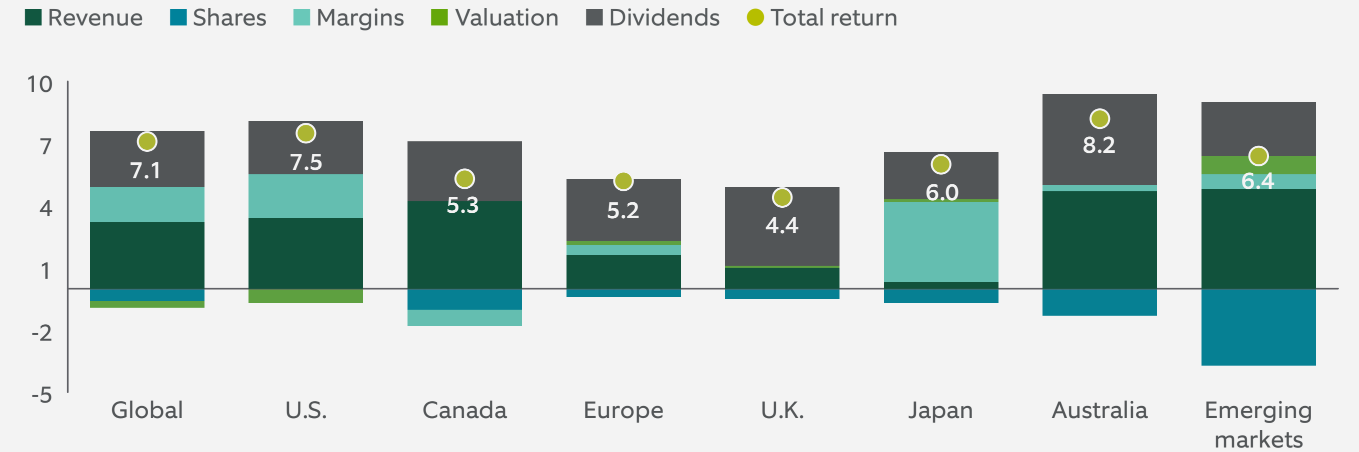
China, which represents 28% of the MSCI Emerging Markets Index,[20] dominates the performance and outlook of emerging markets. In late 2024, China introduced stimulus to boost demand and stabilize its volatile real estate market, which sparked a surge in stocks. We are somewhat skeptical of the ability of the planned stimulus to sustain a cyclical turnaround or resolve China's deeper structural issues. Additionally, the potential of more punitive U.S. tariffs on Chinese goods has become a risk, as discussed on **Globalization: Bent, Not Broken.**

We expect emerging market revenue growth of 4.8% a year on average over the next 10 years and a slightly positive annual profit margin growth of 0.7%. If we were to exclude China, we see a marginal change to expected revenue growth and profit margins to 4.5% and 0.8% respectively driven by India, Korea and Taiwan as the next three largest weights in the MSCI Emerging Markets Index.[21] Further, we expect a valuation expansion of 0.9% per year and a 2.6% contribution from dividends. Share issuance will likely continue to be a large detractor, notably driven by China, reducing expected returns by 3.7% per year. This leads us to an annualized forecasted return of 6.4%, but like developed ex-U.S. equities, we believe emerging markets still plays an important diversification role in a portfolio.

EXHIBIT 8

Decent, but Diluted

Northern Trust 10-Year Annualized Equity Return Forecasts by Country/Region (%)



We expect decent returns supported by revenue growth and dividends, but muted by share issuance in some cases.

Source: Northern Trust Asset Management. "Shares" means the effect on equity returns from share issuance or repurchases. Index performance returns do not reflect any management fees, transaction costs or expenses. Please see index proxies and important forecast disclosures on pages 15 and 21. It is not possible to invest directly in any index.

[14] Sources: FactSet, MSCI USA Index. The long-term average dividend yield is from January 1980 to September 2024. [15] Sources: CME Group, Shah, Payal, Tap into Small-Cap Stocks Through the Russell 2000 Reconstitution, June 21, 2024. [16] Sources: FactSet, MSCI USA Small Cap Index, MSCI USA Index, as of September 30, 2024. [17] Source: IMF, gross domestic product average of last five calendar years of rolling 10-year real gross domestic product, 2021 to 2024 (estimated). [18] Sources: IMF, FactSet, MSCI USA Index, MSCI World ex USA Index. The statistics are calculated as rolling 10-year growth of sales per share as a percent of rolling gross domestic product growth from 1998 to 2024.

[19] Sources: FactSet, MSCI World Index and MSCI Emerging Markets Index. Discount of emerging markets to developed markets indexes calculated as the price-to-earnings (expected in the next 12 months) as of September 30, 2024. [20] Sources: FactSet, MSCI Emerging Markets Index, as of September 30, 2024. [21] Sources: FactSet, MSCI Emerging Markets Index, India weighting 19%, South Korea weighting 10% and Taiwan weighting 18%, as of September 30, 2024.

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Real Assets Forecasts

The industry term "real assets" is clumsy. The primary real assets (global natural resources, real estate and infrastructure) are financial instruments; as such, they aren't technically real assets. But they do play key roles in the investment portfolio. Natural resources can provide protection against unexpected inflation, while real estate and infrastructure offer additional risk exposures for portfolio diversification and higher yields than traditional equities.

Global Natural Resources

We believe continued strong fundamentals (persistent cash flows, tight commodity markets, stronger balance sheets and lower capital expenditures) should support natural resources as a hedge against higher inflation and escalation of conflicts around the world. We expect companies **Navigating the Energy Transition,** especially natural resource firms, to benefit from commodity demand as the increasing use of electricity for power, such as for cars, requires meaningful amounts of industrial metals. Additionally, we expect natural resource companies to support the transition via innovation.

As investors contend with **Globalization: Bent, Not Broken** via global political risks, natural resources also may serve to mitigate disruptions to energy supplies (Russia–Ukraine war) and agricultural production (the biggest exporters of food commodities are most vulnerable to flooding and drought).

We believe valuations are attractive at a 25% discount versus global equities, well beyond the 20-year historical average discount of 14%. We forecast a 6.2% annualized return, supported by strong expected revenue growth (our highest expected revenue growth among real assets). This is accompanied with a positive 0.1% premium in valuations and a yield of 3.6%. The positive results are slightly offset by margin compression, cutting down the total expected return by 0.6%.

Global Listed Infrastructure

Infrastructure companies are likely to benefit from two of our themes: **AI-Enabled Productivity** and **Navigating the Energy Transition.** Growing global power demand presents a growth opportunity for the global utility sector, which as a regulated industry, historically experienced moderate growth. With the retirement of coal plants in developed markets and the increased investment into natural gas, nuclear and renewable energy, the earnings growth potential has doubled.[22]

As we continue to see a future decline in interest rates, we think listed infrastructure will benefit because of its reliance on debt. Over the 10-year forecast horizon, a transition into sustainable infrastructure solutions should support growth. Further, listed infrastructure can serve as a partial inflation hedge because companies often engage in longer duration contracts tied to inflation.

While we expect similar revenue growth per share and yield as the real estate asset class. Listed infrastructure includes a slight premium in valuations as investors are expected to be willing to pay more for infrastructure earnings given the asset classes' positive longer-term outlook. We forecast a 6.6% annualized return over the next 10 years.

Global Real Estate

We have a positive 10-year outlook for global real estate on expectations of falling interest rates. However, we expect some hiccups along the way, with almost $2 trillion of commercial real estate loans scheduled to mature within the next three years. In the U.S., office developers continue to contend with high vacancy rates. Further, regional banks — the most significant lender in commercial real estate — face increasing pressure to shrink their exposure to the sector, though alternative lenders are starting to step in.

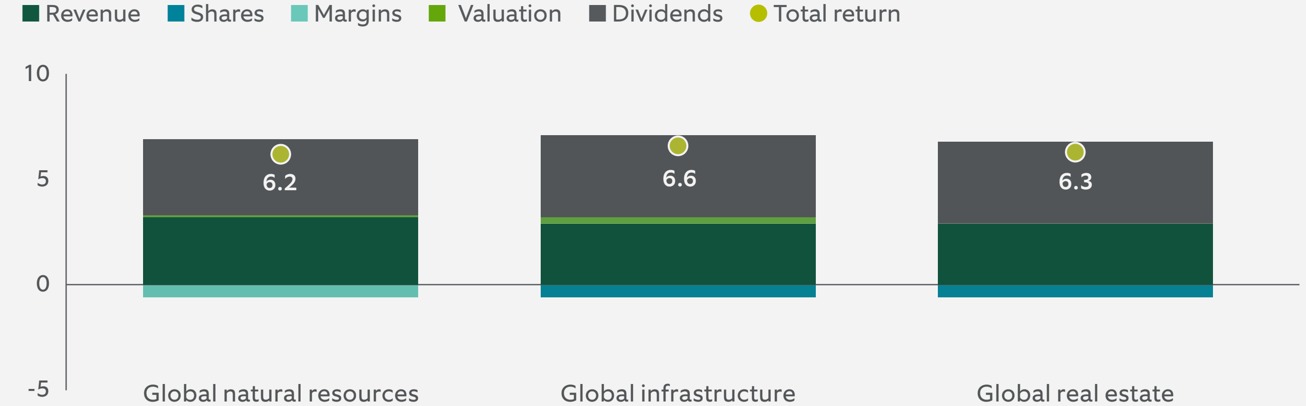
We expect deal volume and commercial real estate prices to level out from declines over the past few years because of falling borrowing costs. However, we believe more sizeable areas of the market will spark long-term, structural growth. These include data centers for **AI-Enabled Productivity,** warehouses to support e-commerce, healthcare real estate for aging populations, and residential real estate to mitigate housing shortages.

We expect a 6.3% annualized return over the next 10 years, assuming revenue growth of 2.9%, no significant change in profit margins or valuations, a slight decrease of 0.6% due to share dilution and a 3.9% dividend yield.

EXHIBIT 9

Inflation Hedges

Northern Trust 10-Year Annualized Real Assets Return Forecasts (%)



Real assets should provide support amid unexpected inflation and global political risks.

Sources: Northern Trust Asset Management, Bloomberg. Forecasts are as of September 30, 2024. Please see index proxies and important forecast disclosures on pages 15 and 21. It is not possible to invest directly in any index.

[22] Source: CBRE Investment Management. The five-year annualized earnings growth rate ended 2017 was about 3% and the five-year annualized earnings estimated growth rate ending in 2024 is about 6%.

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Alternatives Forecasts

Private Credit

Our private credit return assumption shifted upwards from the forecast found in our 2024 edition, mostly because of the removal of the 2% "haircut" on returns. The haircut was added to reflect private credit's vulnerability to rising interest rates, an environment we no longer expect in the next 10 years.

Private credit likely will continue to capture market share in the lower middle market as traditional bank lenders' appetite for smaller businesses wane. We also expect declining interest rates will provide a tailwind for merger and acquisition (M&A) activity, especially for private equity sponsors that continue to sit on record levels of dry powder. Although we expect lower rates to compress yields to some extent, we believe private credit deployment will increase in conjunction with the expected pickup in M&A activity.

We forecast an 8.4% annualized return for private credit, which is a 2.5% premium over our high yield bond forecast. This spread represents a combination of average active manager alpha, an illiquidity premium and the positive growth outlook for the asset class.

Private Equity and Venture Capital

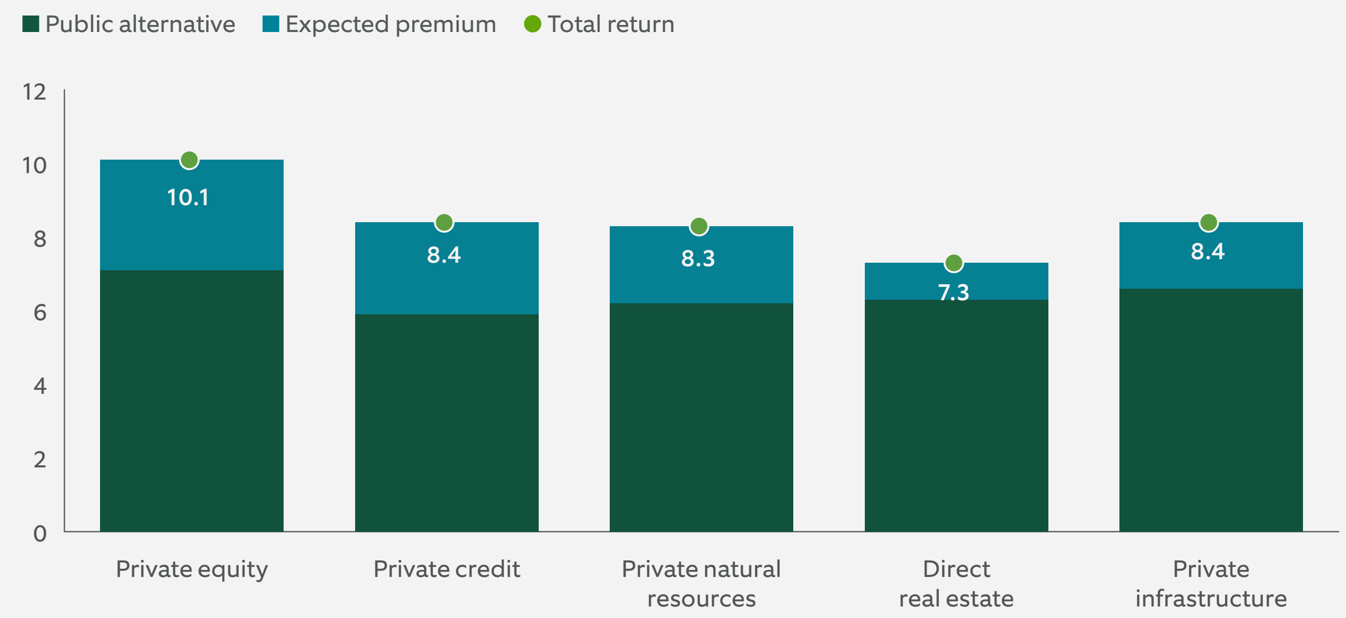
Private equity outperformance over public equities has narrowed over the past few years as general M&A multiples remained low while public valuation multiples rebounded.[23] With interest rates expected to continue to decline and portfolio companies' strong fundamental performance likely to persist, we expect **growth equity** returns within private equity to revert back to their historical long-term outperformance bands.

Venture capital deal activity remains down by approximately a third of the volume in early 2022, but the excitement over the possibilities of **AI-Enabled Productivity** will likely continue to trigger increasing investment. Even if the AI wave fades, we think this sentiment will extend to any future technological innovation. Companies within the buyout sector would also benefit by putting these technologies to good use to improve operational efficiencies and entice buyers. We forecast a 10.1% annualized return for private equity and venture capital combined, which is a 3.0% premium over our global equity forecast. This includes 11.6% for venture capital, 11.0% for growth equity and 9.5% for buyout.

EXHIBIT 10

Private Equity Leads

Northern Trust 10-Year Annualized Private Investments Return Forecasts (%)



Excitement over the possibilities of AI-Enabled Productivity will likely continue to trigger increasing investment in venture capital.

Sources: Northern Trust Asset Management, Bloomberg. Forecasts are as of September 30, 2024. The expected premium is the additional return expected over a public market alternative. Please see index proxies and important forecast disclosures on pages 15 and 21. It is not possible to invest directly in any index.

[23] Source: Pitchbook, valuations from 2014 to 2024. Multiples represent the value of a company for every one dollar of profit, calculated as enterprise value divided by earnings before interest, taxes, depreciation and amortization (EBITDA). Enterprise value is the total value of a company including market capitalization, debt and cash.

Hedge Funds

Over the last six years, hedge funds have captured nearly 75% of the return of public equities with less than half the volatility, providing solid risk-adjusted returns. By definition, hedge funds are in essence a truly unconstrained active manager with the ability to provide alpha through nimble trading around traditional investments. Long exposures would be subject to the market dynamics and macroeconomic outlook of all asset classes discussed, with the ability to take short positions to create the opposite effect, or achieve a hedged position.

For a sense of alpha-generating trends, we updated our broad hedge fund alpha by decade chart. Alpha generation had been in persistent decline, falling from an annualized 8.7% in the 1990s to 3.2% in the 2000s — and then falling to negative 0.4% in the 2010s. But, thus far this decade (now over 40% done), alpha has moved higher — still negative but closer to zero. We expect a durable economic and market outlook over the next 10 years may prove more favorable for some hedge fund strategies.

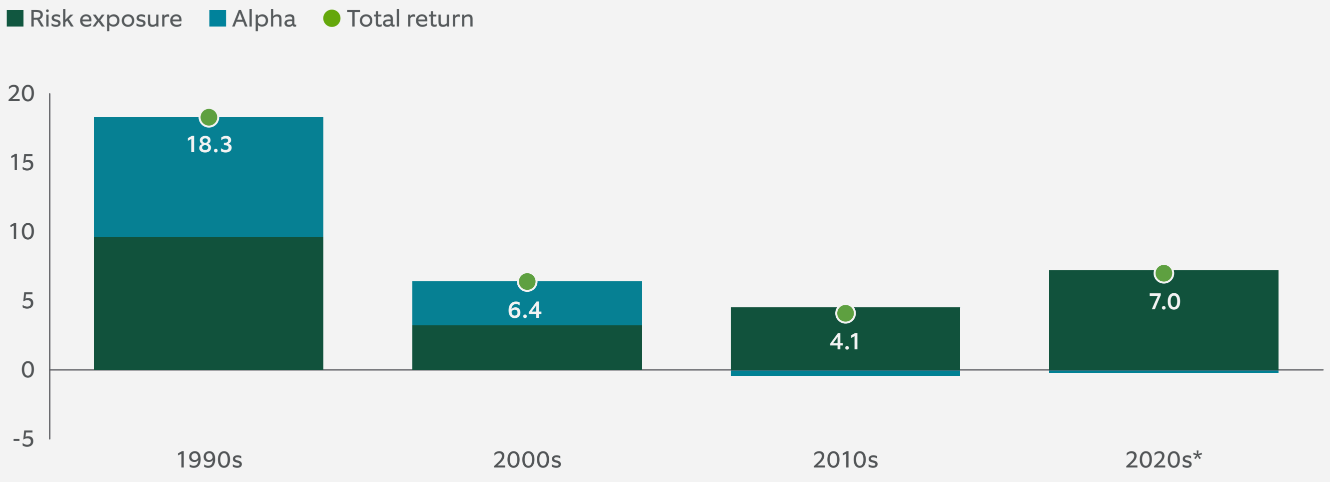
Exhibit 12 shows our forecasts for different types of hedge funds. Our most promising forecast goes to macro funds, which invest in equities, fixed income, currencies and commodities based on economic variables and capital flows. Their unconstrained nature allows macro investors to exploit opportunities from geopolitical issues in **Globalization: Bent, Not Broken** and lean in on momentum from **AI-Enabled Productivity.**

Relative value funds could also take advantage of arbitrage opportunities that stem from geopolitical tensions. When combining the forecasts for each strategy sleeve according to the most recent asset values within the HFRI Fund Weighted Index, we derive an overall hedge fund annualized expected return of 5.5% over the next 10 years.

EXHIBIT 11

Hedge Fund Alpha Shows Signs of Turning

Northern Trust 10-Year Hedge Fund Return by Decade (%)



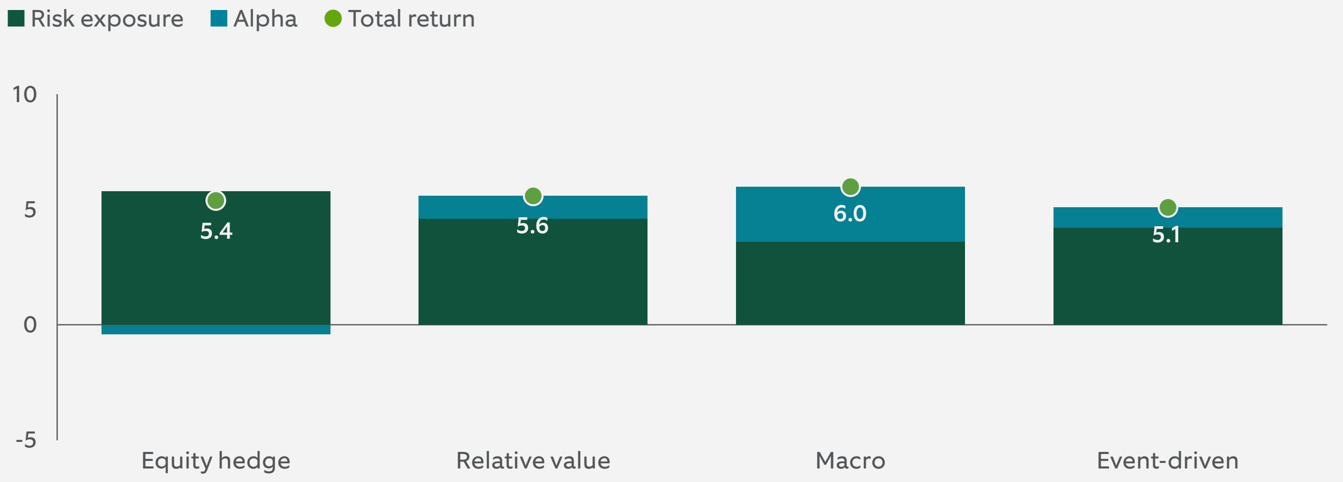
Hedge fund alpha has been in a persistent decline over the past decades. Thus far this decade, alpha has moved higher — still negative but closer to zero.

Sources: Northern Trust Asset Management, Bloomberg. Data from December 31, 1990 to September 30, 2024. * 2020s through September 30, 2024. **Past performance is no guarantee of future results.**

EXHIBIT 12

Macro Funds Show Promise

Northern Trust 10-Year Annualized Hedge Fund Return Forecasts by Hedge Fund Strategy (%)



The unconstrained nature of macro funds to exploit opportunities from global political trends in Globalization: Bent, Not Broken and lean in on momentum from AI-Enabled Productivity.

Sources: Northern Trust Asset Management, Bloomberg. Forecasts are as of September 30, 2024. See definitions for the types of hedge funds in glossary. Please see index proxies and important forecast disclosures on pages 15 and 21. It is not possible to invest directly in any index.

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How Have We Done?

We are frequently asked about the accuracy of our forecasts. In response, Exhibit 13 shows our forecasts from five years ago (before the 2024 edition, we created five-year forecasts) versus actual results. We review our accuracy across the major asset classes: cash, fixed income (investment grade and high yield) and equities (developed and emerging markets). We then aggregated the asset classes at the portfolio level — including the risk asset portfolio, the risk-control portfolio and the strategic asset allocation (SAA) portfolio (a balanced mix of the two component portfolios). In addition, we provide the actual returns alongside the forecasts from our 2019 five-year forecasts across all asset classes and all regions within each asset class.

Results

The five-year forecasts we published in 2019 proved too optimistic in fixed income and very conservative in developed equities. In the first two calendar years of the five-year period, all fixed income assets were on pace to outperform our forecasts. However, inflation and rising rates in 2022 roiled bond markets, resulting in a 13.0% loss in the Bloomberg U.S. Aggregate Bond Index for the year. The bond market recovered in the following years, but not enough to catch up with our forecast, especially for investment grade bonds. However, our forecasts for U.S. inflation-linked and global high yield were fairly in line with actual results, being off 0.02% and -0.70% respectively.

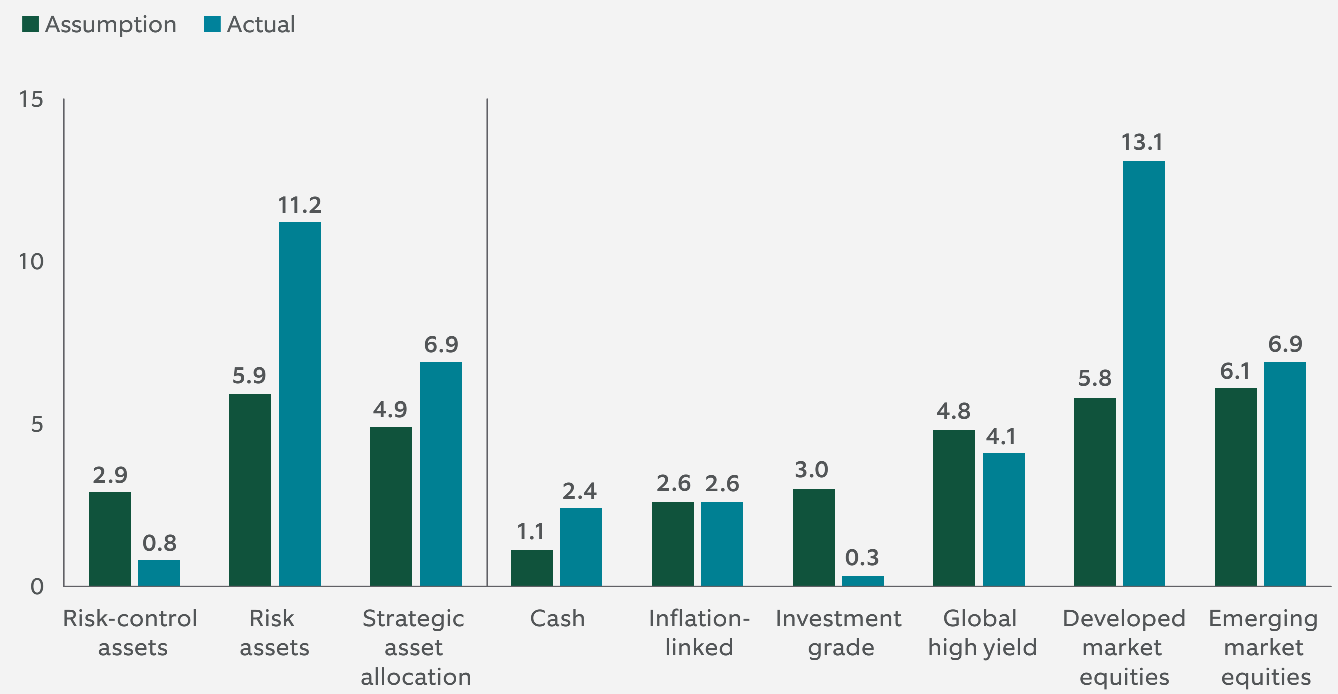
In equity markets, our 2019 five-year forecast was too pessimistic on developed market returns — mostly due to the U.S. equity returns coming in at 15.4% versus a 5.7% forecast. However, emerging markets were in line, only off by 0.83%. Little did we suspect the huge optimism fueling the AI boom.

At the portfolio level, a combination of too-optimistic risk-control forecasts and very pessimistic risk asset forecasts put our 4.9% 2019 forecast below the 6.9% actual. The risk asset portfolio's actual return (11.2%) out-paced our forecast (5.9%). This was thanks to the strong U.S. equity return and the strength of natural resources, with a 10.5% return against an 6.1% forecast. Natural resources fulfilled its role in the earlier parts of the five-year period, characterized by growing and ultimately problematic inflation pressures.

EXHIBIT 13

Five Years in the Rearview Mirror

Northern Trust Five-Year Annualized Return, 2019–2024 (%)



Our 2019 forecasts proved too optimistic in fixed income and conservative in developed equities, while our inflation-linked bonds, emerging markets and high yield forecasts were more in the neighborhood.

Sources: Northern Trust Asset Management, Bloomberg. Annualized Return data in local currency from September 30, 2019 to September 30, 2024. Please see index proxies and important forecast disclosures on pages 15 and 21. It is not possible to invest directly in any index. **Past performance is not indicative of future results.**

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Detailed Long-Term Forecast

All Returns in % Annualized				Long-Term Return Forecast by CMA Year						10-Year Actual Return
		Asset Class	Proxy Index	2025	2024^	2023	2022	2021*	2019	
FIXED INCOME	U.S.	Cash	3-Month U.S. T-Bill	3.3	2.9	2.8	0.3	0.1	1.1	1.7
		Inflation-Linked	Bloomberg U.S. TIPS	4.0	4.4	3.4	2.2	2.4	2.6	2.5
		Investment Grade	Bloomberg U.S. Aggregate	4.7	4.7	3.7	2.4	2.3	3.0	1.8
		High Yield	Bloomberg U.S. High Yield	5.6	6.7	7.4	3.5	5.5	5.0	5.0
		Municipal	Bloomberg Municipal	4.0	3.6	3.2	2.0	2.6	2.4	2.5
	Canada	Cash	3-Month Canada T-Bill	3.0	2.4	3.3	0.2	0.2	0.7	1.6
		Inflation-Linked	FTSE Canada Real Return Bond	2.5	3.5	3.5	2.0	2.2	2.0	1.9
		Investment Grade	FTSE Canada Universe	3.6	4.2	3.9	2.4	1.9	2.6	2.3
		High Yield	BofAML Canadian High Yield	5.6	6.0	6.0	3.8	5.2	4.5	5.3
	Europe	Cash	3-Month German Bunds	2.1	1.5	0.3	-0.4	-0.5	-0.3	0.5
		Inflation-Linked	Bloomberg Euro Inflation-Linked	3.0	2.0	2.2	1.0	1.5	1.0	3.3
		Investment Grade	Bloomberg Euro Aggregate	3.1	3.4	2.1	1.0	1.0	1.2	0.5
	U.K.	Cash	3-Month Gilts	3.5	2.6	2.1	0.2	0.1	0.3	1.2
		Inflation-Linked	Bloomberg Inflation-Linked Gilt	3.2	4.0	3.3	1.0	1.3	2.2	0.8
		Investment Grade	Bloomberg Sterling Aggregate	4.9	4.9	2.9	1.5	1.3	2.2	0.8
	Japan	Cash	3-Month JGB	0.8	0.3	0.1	-0.1	-0.1	-0.1	0.0
		Inflation-Linked	Bloomberg Inflation-Linked JGB	1.5	0.0	0.1	0.2	0.5	0.2	0.4
		Investment Grade	Bloomberg Japanese Aggregate	1.4	0.2	0.3	0.2	0.2	0.2	0.1
	Australia	Cash	3-Month Australian Gov't Bond	4.0	3.0	3.2	0.3	0.2	0.8	2.0
		Inflation-Linked	Bloomberg Inflation-Linked Aus	4.2	4.0	N/A	N/A	N/A	N/A	3.1
		Investment Grade	Bloomberg Global Agg Aus	4.5	4.2	3.7	1.5	1.2	2.2	2.8
	Global	Inflation-Linked	Bloomberg Global Inflation-Linked	3.3	3.6	2.9	0.5	1.8	2.0	2.5
		Investment Grade	Bloomberg Global Aggregate	3.6	3.7	2.7	1.5	1.6	2.1	2.3
		High Yield	Bloomberg Global High Yield	5.9	7.2	7.5	4.0	5.6	4.8	5.0

All Returns in % Annualized				Long-Term Return Forecast by CMA Year						10-Year Actual Return
		Asset Class	Proxy Index	2025	2024^	2023	2022	2021*	2019	
EQUITIES	Developed markets	U.S.	MSCI USA IMI	7.5	6.3	6.0	4.3	4.7	5.7	12.9
		U.S. Small Cap	Russell 2000	9.6	7.5	7.3	5.3	5.8	7.0	8.8
		Canada	MSCI Canada IMI	5.3	6.9	6.6	5.2	4.5	4.5	8.0
		Europe	MSCI Europe ex U.K. IMI	5.2	6.0	6.1	4.7	5.4	6.0	8.2
		U.K.	MSCI U.K. IMI	4.4	6.8	7.5	6.2	5.6	7.4	6.1
		Japan	MSCI Japan IMI	6.0	6.0	6.3	4.1	3.8	4.5	9.6
		Australia	MSCI Australia IMI	8.2	7.2	6.4	4.7	5.8	5.7	9.0
	Region	Developed Markets	MSCI World IMI	7.1	6.3	6.2	4.5	4.8	5.7	11.1
		Emerging Markets	MSCI Emerging Markets IMI	6.4	5.9	5.8	5.3	5.4	6.1	7.1
		Global Equities	MSCI AC World IMI	7.1	6.3	6.1	4.6	4.9	5.8	10.6
REAL ASSETS		Natural Resources	S&P Global Natural Resources	6.2	7.9	7.3	5.0	3.6	6.1	5.2
		Listed Real Estate	MSCI ACWI IMI Core Real Estate	6.3	8.3	6.8	5.1	6.3	6.3	6.0
		Listed Infrastructure	S&P Global Infrastructure	6.6	6.4	6.0	5.5	5.8	5.8	7.3
ALTERNATIVES	Global	Private Natural Resources	Cambridge Assoc. Natural Resources	8.3	9.4	9.3	7.0	4.6	8.1	2.4
		Private Real Estate	Cambridge Assoc. Real Estate	7.3	9.7	9.8	8.0	8.4	10.0	7.8
		Private Infrastructure	Cambridge Assoc. Infrastructure	8.4	9.4	9.0	8.5	8.8	7.7	9.7
		Private Equity	Cambridge Assoc. Private Equity	10.1	9.6	9.6	7.6	7.9	7.7	13.7
		Venture Capital	Cambridge Assoc. Venture Capital	11.6	10.8	11.0	8.5	8.9	N/A	14.7
		Buyout	Cambridge Assoc. Buyout	9.5	9.4	9.5	7.3	7.6	N/A	13.7
		Growth	Cambridge Assoc. Growth	11.0	10.2	10.3	8.0	8.4	N/A	13.0
		Private Credit	Cambridge Assoc. Private Credit	8.4	6.9	6.5	6.0	7.6	6.8	7.7
		Hedge Funds	HFRI Fund Weighted	5.5	4.5	5.4	2.9	2.6	3.7	5.1
		HF-Equity Hedge	HFRI Equity Hedge	5.4	5.0	4.9	3.3	2.2	3.2	6.1
		HF-Relative Value	HFRI Relative Value	5.6	5.8	6.0	3.5	3.2	4.0	4.2
		HF-Macro	HFRI Macro	6.0	5.6	5.1	3.5	2.3	3.6	3.2
		HF-Event Driven	HFRI Event Driven	5.1	4.9	6.2	3.3	3.3	5.0	5.2

Source: Northern Trust Asset Management. ^Starting with the 2024 edition, we changed the long-term investment horizon to 10 years from five years. * The naming convention was changed to the forward year starting with the 2021 edition, which was published in 2020. For each CMA edition, the long-term forecast period is as follows: 2025 (9/30/2024 to 9/30/2034), 2024 (6/30/2023 to 6/30/2033), 2023 (6/30/2022 to 6/30/2027), 2022 (6/30/2021 to 6/30/2026), 2021 (6/30/2020 to 6/30/2025), 2019 (6/30/2019 to 6/30/2024). Forecasts listed here represent total return forecasts for primary asset classes, annualized using geometric averages. Forecasted returns are based on estimates and reflect subjective judgments and assumptions. They are not necessarily indicative of future performance, which could differ substantially. 10-year actual returns are listed in local currency (with the exception of real assets, which are in USD) and annualized for the 10-year period ending 9/30/2024. **Past performance does not guarantee future results.** Index performance returns do not reflect any management fees, transaction costs or expenses. Indexes are the property of their respective owners, all rights reserved. Please see important forecast disclosures on page 21. It is not possible to invest directly in any index. **Past performance is not indicative of future results.**

11

Glossary and Index Definitions

Glossary

Alpha: Alpha is the additional return a portfolio or strategy provides beyond what would be expected for the amount of risk it takes.

Artificial Intelligence: The capability of computer systems or algorithms to imitate intelligent human behavior.

Bloomberg U.S. Corporate Index: The index measures the U.S. investment grade, fixed-rate, taxable corporate bond market.

Bond maturity: The date when a company must pay the bond owner the face value of the bond.

Buyouts (private equity): When a mature, typically public company is purchased by either a private equity firm or its existing management team.

CBOE Volatility Index (VIX Index): The index measures investors' consensus view of future expected volatility of the stock market as represented by the S&P 500 Index.

Credit spread: Often the difference between yields of a corporate bond and a government bond, such as a Treasury, of similar maturity. Investors demand additional yield as extra compensation for assuming the risk of default.

Dividend yield: Annualized dividend income from a stock divided by the stock price.

Duration: Duration measures the sensitivity of a security or portfolio to changes in interest rates. It often is used as a measure of risk to interest rate moves for fixed income securities and funds.

Equity hedge strategies: Equity hedge strategies are hedge funds that maintain positions both long and short in primarily equity and equity derivative securities. In long transactions, the buyer purchases a security and gains from the total return of the security. Short selling is a transaction in which borrowed securities are sold with the intention to repurchase them at a lower price at a later date and return them to the lender, representing a gain for the short seller. A derivative is a financial instrument in which the value depends on the value of an underlying asset or factor such as a stock price, an interest rate, or exchange rate.

Event-driven hedge fund strategies: Event-driven funds invest based on views around mergers, restructurings, distress and other corporate actions.

Fertility rate: The average number of births per woman.

Foreign direct investment: Direct investment by a firm in one country (the source country) in productive assets in a foreign country (the host country).

Growth equity: A private equity investment in an established, growing company.

Illiquidity premium: Compensation for the risk of loss relative to an investment's fair value if an investment needs to be converted to cash quickly.

Macro hedge funds: These funds invest in equities, fixed income, currencies and commodities based on economic variables and capital flows.

MSCI Emerging Markets Index: The index measures the performance of large- and mid-cap stocks across 24 emerging markets countries.

Price-to-earnings multiple: The price of a stock or equity index divided by actual or estimated earnings, often used to determine whether a stock or the market is cheap or expensive versus peers or historical averages.

Private credit: Private credit investors loan money to companies that may have trouble obtaining bank loans or raising debt on the public market. They can offer relatively attractive returns versus other debt, but they also can be more illiquid and risky.

Private equity: Stakes or ownership in businesses that do not trade on public stock markets.

Reinvestment rate: The amount of interest that can be earned when money is taken out of one fixed-income investment and put into another.

Relative value hedge funds: These funds invest where they believe there is a valuation discrepancy in the relationship between multiple securities.

S&P 500 Index: A gauge of the large-cap U.S. equity market, includes 500 companies that represent approximately 80% of the market capitalization of publicly traded U.S. equities.

S&P 500 Equal Weight Index: The index has the same constituents as the capitalization weighted S&P 500, but each company is allocated a fixed weight of about 0.2%.

Starting point yield: The yield of a bond or bond index at the beginning of a period, often to be compared to a yield at the end of a period.

Valuations: The process of determining the value of an asset based on the analysis of variables related to investment returns or comparisons with similar assets.

Venture capital: The equity financing of new or growing private companies.

Yield curve: The relationship between yields and maturities, usually for government-issued bonds.

Yield curve steepening: When the difference between short-term yields and long-term yields increases.

Index Definitions

3-Month Australia Gov't Bond: JP Morgan GBI Index that tracks performance of Australian government bonds with a maturity of 3 months.

3-Month Canada T-Bill: The FTSE Canada Treasury Bill Index Series consists of benchmarks to track the performance of Government of Canada Treasury Bills, with separate indices for 1-month, 2-month, 3-month, 6-month, and 1-year T-Bills. Each index is designed to reflect the performance of a portfolio that only owns a single security, the current on the run T-Bill for the relevant term, switching into the new T-Bill at each auction.

3-Month German Bunds: JP Morgan GBI Index that tracks German Government issues short-term debt securities with a maturity of 3 months.

3-Month Gilts: JP Morgan GBI Index that tracks performance of UK government bonds (gilts) with a maturity of 3 months.

3-Month JGB: JP Morgan Index that tracks performance of Japanese government bonds with a maturity of 3 months.

3-Month U.S. T-Bill: The FTSE 3-Month U.S. T-Bill Index Series is intended to track the daily performance of 3-Month U.S. Treasury bill.

Bloomberg Euro Aggregate: The Bloomberg Euro Aggregate Bond Index is a broad-based flagship 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. The Euro Aggregate is a component of other flagship indices, such as the multi-currency Global Aggregate Index and Pan-European Aggregate Index.

Bloomberg Euro Inflation-Linked: The Bloomberg Euro Government Inflation-Linked Bond Index measures the performance of the Bloomberg World Government Inflation-Linked Bond (WGILB) index from European Union member states that also participate in the European Monetary Union.

Bloomberg Global Aggregate Australia: The Bloomberg Global Aggregate Australia Index contains fixed-rate investment-grade securities denominated in Australian dollar and registered as domestic bond. The index is composed primarily of local currency sovereign debt but also includes government-related, corporate, and securitized bonds. The Bloomberg Global Agg Australia Index is a subset of the Asian-Pacific Aggregate and the Global Aggregate Index in its entirety.

Bloomberg Global Aggregate: The Bloomberg Global Aggregate Index is a flagship measure of global investment grade debt from 28 local currency markets. This multi-currency benchmark includes treasury, government-related, corporate and securitized fixed-rate bonds from both developed and emerging markets issuers. There are four regional aggregate benchmarks that largely comprise the Global Aggregate Index: the U.S. Aggregate, the Pan-European Aggregate, the Asian-Pacific Aggregate, and the Canadian Aggregate Indices. The Global Aggregate Index also includes Eurodollar, Euro-Yen, and 144A Index-eligible securities, and debt from five local currency markets not tracked by the regional aggregate benchmarks (CLP, COP, MXN, PEN, and ILS).

Bloomberg Global High Yield: The Bloomberg Global High Yield Index is a multi-currency flagship measure of the global high yield debt market. The index represents the union of the U.S. High Yield, the Pan-European High Yield, and Emerging Markets (EM) Hard Currency High Yield Indices. The high yield and emerging markets sub-components are mutually exclusive. Until January 1, 2011, the index also included CMBS high yield securities. The Global High Yield Index is a component of the Multiverse Index, along with the Global Aggregate, Euro Treasury High Yield, and EM Local Currency Government indices.

Bloomberg Global Inflation-Linked: The Bloomberg Global Inflation-Linked Index measures the performance of investment-grade, government inflation-linked debt from 12 different developed market countries. Investability is a key criterion for inclusion of markets in this index, and it is designed to include only those markets in which a global government-linked fund is likely and able to invest. Markets tracked by the index include the United Kingdom, Australia, Canada, Sweden, United States, France, Italy, Japan, Germany, New Zealand, Denmark, and Spain.

Bloomberg Global Inflation-Linked U.S. TIPS: The Bloomberg U.S. Treasury Inflation-Linked Bond Index (Series-L) measures the performance of the U.S. Treasury Inflation Protected Securities (TIPS) market. Federal Reserve holdings of U.S. TIPS are not index eligible and are excluded from the face amount outstanding of each bond in the index.

Bloomberg Inflation-Linked Australia: The index is designed to measure the performance of a segment of the Australian bond market comprised of inflation-linked fixed income securities.

Bloomberg Inflation-Linked Gilt: The index is designed to measure the performance of a segment of the UK Gov bond (Gilts) market comprised of inflation-linked fixed income securities.

Bloomberg Inflation-Linked JGB: The index is designed to measure the performance of a segment of the Japanese bond market comprised of inflation-linked fixed income securities.

Bloomberg Japanese Aggregate: 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. The Japanese Aggregate Index is a subset of the Asian-Pacific Aggregate and the Global Aggregate Index in its entirety.

Bloomberg Municipal 1–10: The Bloomberg Municipal 1–10 Year Blend 1–12 Year Index Year Blend measures the performance of short and intermediate 1–12 Year Index components of the Municipal Bond Index — an unmanaged, market value-weighted index which covers the U.S. investment grade, tax-exempt bond market.

Bloomberg Municipal: The Bloomberg Municipal Bond Index is a flagship measure of the U.S. municipal tax-exempt investment grade bond market. Included in the index are securities from all 50 U.S. States and four other qualifying regions (Washington DC, Puerto Rico, Guam, and the Virgin Islands). The index includes state and local general obligation bonds and revenue bonds. All bonds in the Municipal Bond Index are tax exempt and hence are not eligible for other indices that include taxable bonds, such as the Bloomberg U.S. Aggregate.

Bloomberg Sterling Aggregate: The Bloomberg Barclays Sterling Aggregate Bond Index is a flagship benchmark that measures the investment grade, sterling-denominated, fixed-rate bond market, including treasuries, government-related, corporate and securitized issues. Inclusion is based on the currency denomination of a bond, not country of risk of the issuer. The Sterling Aggregate is a component of other Bloomberg Barclays flagship indices such as the multi-currency Global Aggregate and Pan-European Aggregate Indices

Bloomberg U.S. Aggregate: The Bloomberg U.S. Aggregate Bond Index is a broad-based flagship benchmark that measures the investment grade, U.S. dollar-denominated, fixed-rate taxable bond market. The index includes Treasuries, government-related and corporate securities, fixed-rate agency MBS, ABS and CMBS (agency and non-agency). Provided the necessary inclusion rules are met, U.S. Aggregate-eligible securities also contribute to the multi-currency Global Aggregate Index and the U.S. Universal Index.

Bloomberg U.S. Corporate Index: The index measures the U.S. investment grade, fixed-rate, taxable corporate bond market.

Bloomberg U.S. High Yield: The Bloomberg U.S. Corporate High Yield Bond Index measures the USD-denominated, high yield, fixed-rate corporate bond market. Securities are classified as high yield if the middle rating of Moody's, Fitch and S&P is Ba1/BB+/BB+ or below. Bonds from issuers with an emerging markets country of risk, based on the indices' EM country definition, are excluded. The U.S. Corporate High Yield Index is a component of the U.S. Universal and Global High Yield Indices.

Bloomberg U.S. Inflation-Linked 1-10 Year Notes: The index measures the performance of the U.S. Treasury Inflation Protected Securities (TIPS) market with less than 10 years to maturity. Federal Reserve holdings of U.S. TIPS are not index eligible and are

Index Definitions continued

excluded from the face amount outstanding of each bond in the index. To be included in the index, securities must have at least one and up to, but not including, ten years to maturity.

BofAML Canadian High Yield: This index tracks the performance of the U.S Dollar and Canadian Dollar denominated below investment grade corporate debt publicly issued by Canadian Issuers in the Canadian or U.S. domestic markets.

Cambridge Assoc. Buyout: The Cambridge Associates LLC U.S. Buyout Index is a horizon calculation based on data compiled from 2,123 buyout and growth equity funds, including fully liquidated partnerships, formed between 1986 and 2018.

Cambridge Assoc. Growth: The Cambridge Associates LLC U.S. Growth Equity Index is a horizon calculation based on data compiled from 2,123 buyout and growth equity funds, including fully liquidated partnerships, formed between 1986 and 2018.

Cambridge Assoc. Infrastructure: The Cambridge Associates LLC Infrastructure Index is a horizon calculation based on data compiled from 93 infrastructure funds, including fully liquidated partnerships, formed between 1993 and 2015. Private indexes are pooled horizon internal rate of return (IRR) calculations, net of fees, expenses, and carried interest.

Cambridge Assoc. Natural Resources: The Cambridge Associates LLC Natural Resources Index is a horizon calculation based on data compiled from 377 natural resources funds, (including 80 energy upstream and royalties, 180 U.S. private equity energy, 71 ex U.S. private equity energy, and 46 timber funds), including fully liquidated partnerships, formed between 1986 and 2016. Private indexes are pooled horizon IRR calculations, net of fees, expenses, and carried interest.

Cambridge Assoc. Private Credit: The Cambridge Associates Private Credit Index contains the historical performance records of 180+ private investment fund managers and 737 institutional quality funds raised between 1986 and 2024. These funds have a total capitalization of USD $760 billion.

Cambridge Assoc. Private Equity: The Cambridge Associates LLC Private Equity Index® is a horizon calculation based on data compiled from 1,468 U.S. private equity funds (buyout, growth equity, private equity energy and subordinated capital funds), including fully liquidated partnerships, formed between 1986 and 2017.

Cambridge Assoc. Real Estate: The Cambridge Associates LLC Real Estate index is a horizon calculation based on data compiled from 1,021 real estate funds (including opportunistic and value-added real estate funds), including fully liquidated partnerships, formed between 1986 and 2017.

Cambridge Assoc. Venture Capital: The Cambridge Associates LLC Venture Capital Index® is a horizon calculation based on data compiled from 1,807 U.S. venture capital funds (1,161 early stage, 210 late and expansion stage, and 436 multi-stage funds), including fully liquidated partnerships, formed between 1981 and 2018.

FTSE Canada Real Return Bond: The FTSE Canada Real Return Bond Index is designed to be a broad measure of the performance of Canadian inflation indexed bonds issued in Canadian Dollars.

FTSE Canada Universe: The FTSE Canada Universe Bond Index is designed to track the performance of the investment-grade, fixed-rate, government and corporate bonds denominated in Canadian Dollars (CAD). The index includes securities issued by entities incorporated both in Canada and outside of Canada.

HFRI Equity Hedge: Investment Managers who maintain positions both long and short in primarily equity and equity derivative securities. A wide variety of investment processes can be employed to arrive at an investment decision, including both quantitative and fundamental techniques; strategies can be broadly diversified or narrowly focused on specific sectors and can range broadly in terms of levels of net exposure, leverage employed, holding period, concentrations of market capital-izations and valuation ranges of typical portfolios. EH managers would typically maintain at least 50% exposure to, and may in some cases be entirely invested in, equities, both long and short.

HFRI Event-Driven: Investment Managers who maintain positions in companies currently or prospectively involved in corporate transactions of a wide variety including but not limited to mergers, restructurings, financial distress, tender offers, shareholder buybacks, debt exchanges, security issuance or other capital structure adjustments. Security types can range from most senior in the capital structure to most junior or subordinated, and frequently involve additional derivative securities. Event-Driven exposure includes a combination of sensitivities to equity markets, credit markets and idiosyncratic, company specific developments. Investment theses are typically predicated on fundamental characteristics (as opposed to quantitative), with the realization of the thesis predicated on a specific development exogenous to the existing capital structure.

HFRI Fund Weighted: The HFRI Fund Weighted Composite Index is a global, equal-weighted index of single-manager funds that report to HFR Database. Constituent funds report monthly net of all fees performance in U.S. Dollar and have a minimum of $50 million under management or $10 million under management and a twelve (12) month track record of active performance. The HFRI Fund Weighted Composite Index does not include Funds of Hedge Funds.

HFRI Macro: Investment Managers which trade a broad range of strategies in which the investment process is predicated on movements in underlying economic variables and the impact these have on equity, fixed income, hard currency and commodity markets. Managers employ a variety of techniques, both discretionary and systematic analysis, combinations of top-down and bottom-up theses, quantitative and fundamental approaches and long- and short-term holding periods. Although some strategies employ RV techniques, macro strategies are distinct from RV strategies in that the primary investment thesis is predicated on predicted or future movements in the underlying instruments, rather than realization of a valuation discrepancy between securities. In a similar way, while both macro and equity hedge managers may hold equity securities, the overriding investment thesis is predicated on the impact movements in underlying macroeconomic variables may have on security prices, as opposes to EH, in which the fundamental characteristics on the company are the most significant are integral to investment thesis.

HFRI Relative Value: Investment Managers who maintain positions in which the investment thesis is predicated on realization of a valuation discrepancy in the relationship between multiple securities. Managers employ a variety of fundamental and quantitative techniques to establish investment theses, and security types range broadly across equity, fixed income, derivative or other security types. Fixed income strategies are typically quantitatively driven to measure the existing relationship between instruments and, in some cases, identify attractive positions in which the risk-adjusted spread between these instruments represents an attractive opportunity for the investment manager. RV position may be involved in corporate transactions also, but as opposed to ED exposures, the investment thesis is predicated on realization of a pricing discrepancy between related securities, as opposed to the outcome of the corporate transaction.

MSCI AC World IMI: The MSCI ACWI Investable Market Index (IMI) captures large-, mid- and small-cap representation across 23 Developed Markets (DM) and 24 Emerging Markets (EM) countries. With 8,640 constituents, the index is comprehensive, covering approximately 99% of the global equity investment opportunity set.

MSCI ACWI IMI Core Real Estate: The MSCI ACWI IMI Core Real Estate Index is a free float-adjusted market capitalization index that consists of large-, mid- and small-cap stocks across 23 Developed Markets (DM) and 24 Emerging Markets (EM) countries engaged in the ownership, development and management of specific core property type real estate. The index excludes companies, such as real estate services and real estate financing companies, that do not own properties.

Index Definitions continued

MSCI Australia IMI: The MSCI Australia Investable Market Index (IMI) is designed to measure the performance of the large-, mid- and small-cap segments of the Australia market. With 230 constituents, the index covers approximately 99% of the free float-adjusted market capitalization in Australia.

MSCI Canada IMI: The MSCI Canada Investable Market Index (IMI) is designed to measure the performance of the large-, mid- and small-cap segments of the Canada market. With 279 constituents, the index covers approximately 99% of the free float-adjusted market capitalization in Canada.

MSCI Emerging Markets IMI: The MSCI Emerging Markets Investable Market Index (IMI) captures large-, mid- and small-cap representation across 24 Emerging Markets (EM) countries. With 3,266 constituents, the index covers approximately 99% of the free float-adjusted market capitalization in each country.

MSCI Europe ex U.K. IMI: The MSCI Europe ex UK IMI Index is an equity index which captures large-, mid- and small-cap representation across 14 of 15 Developed Market (DM) countries in Europe excluding the UK. With 973 constituents, the index is comprehensive, covering approximately 99% of the free float-adjusted market capitalization in each country.

MSCI Japan IMI: The MSCI Japan Investable Market Index (IMI) is designed to measure the performance of the large-, mid- and small-cap segments of the Japan market. With 1,020 constituents, the index covers approximately 99% of the free float-adjusted market capitalization in Japan.

MSCI U.K. IMI: The MSCI United Kingdom Investable Market Index (IMI) is designed to measure the performance of the large-, mid- and small-cap segments of the UK market. With 298 constituents, the index covers approximately 99% of the free float-adjusted market capitalization in the UK.

MSCI USA IMI: The MSCI USA Investable Market Index (IMI) is designed to measure the performance of the large-, mid- and small-cap segments of the U.S. market. With 2,319 constituents, the index covers approximately 99% of the free float-adjusted market capitalization in the U.S.

MSCI World IMI: The MSCI World Investable Market Index (IMI) captures large-, mid- and small-cap representation across 23 Developed Markets countries. With 5,374 constituents, the index is comprehensive, covering approximately 99% of the free float-adjusted market capitalization in each country.

Russell 2000: The Russell 2000® Index measures the performance of the small-cap segment of the U.S. equity universe. The Russell 2000 Index is a subset of the Russell 3000® Index which is designed to represent approximately 98% of the investable U.S. equity market. It includes approximately 2,000 of the smallest securities based on a combination of their market cap and current index membership. The Russell 2000 is constructed to provide a comprehensive and unbiased small-cap barometer and is completely reconstituted annually to ensure larger stocks do not distort the performance and characteristics of the true small-cap opportunity set.

S&P 500 Equal Weight: The index has the same constituents as the capitalization weighted S&P 500, but each company is allocated a fixed weight of about 0.2%.

S&P 500: A gauge of the large-cap U.S. equity market, includes 500 companies that represent approximately 80% of the market capitalization of publicly traded U.S. equities.

S&P Global Infrastructure: 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.

S&P Global Natural Resources: The index includes 90 of the largest publicly traded companies in natural resources and commodities businesses that meet specific investability requirements, offering investors diversified and investable equity exposure across three primary commodity-related sectors: agribusiness, energy, and metals and mining.

About the CMA Process

Every year, Northern Trust's Capital Market Assumptions (CMA) Working Group gathers to develop long-term financial market forecasts. The team adheres to a forward-looking, historically aware approach. This involves understanding historical relationships between asset classes and the drivers of those asset class returns, but also debating how these relationships will evolve in the future.

Our forward-looking views are encapsulated in our annual list of CMA themes, which — combined with our quantitative analysis — guide our expectations for long-term asset class returns. The CMA return forecasts are combined with other portfolio construction tools (standard deviation, correlation, etc.) to annually review and/or update the recommended strategic asset allocations for all Northern Trust managed portfolios and multi-asset class products.

The CMA Working Group is composed of senior professionals from across Northern Trust globally, including top-down investment strategists, bottom-up research analysts and client-facing investment professionals.

About Northern Trust

Northern Trust is a preeminent global financial institution that provides asset servicing, investment management and wealth management services for institutions, high-net-worth individuals and families. For more than 130 years, Northern Trust has earned distinction as an industry leader for exceptional service, financial expertise, integrity and innovation. Today, we have more than 23,000 employees around the globe and manage more than $1.6 trillion (as of December 31, 2024) in assets for our clients.

We earn our clients' trust by staying true to our steadfast fiduciary heritage and providing exceptional service tailored to each client's specific needs. Our market-leading technological capabilities allow us to deliver the highest level of service to our clients with speed and precision.

Learn More

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NORTHERN TRUST

IMPORTANT INFORMATION

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CMA model expected returns are based on IPC forecasted returns and reflect Northern Trust's Investment Policy Committee's forward-looking annual capital market assumptions. The Capital Market Assumptions Working Group, a subset of IPC members, publishes its assumptions as a white paper report. Forecasted returns are annual returns (geometric basis). The model cannot account for the impact that economic, market and other factors may have on the implementation and ongoing management of an actual investment strategy. Model outcomes do not reflect actual trading, liquidity constraints, fees, expenses, taxes and other factors that could impact future returns. The model assumptions are passive only. References to expected returns are not promises or even estimates of actual returns an investor may achieve. The assumption, views, techniques and estimates set out are provided for illustrative purposes only. Forecasts of financial market trends that are based on current market conditions constitute the CMA Working Group judgment and are subject to change without notice. "Expected" or "alpha" return estimates are subject to uncertainty and error. The ability to achieve similar outcomes is subject to risk factors over which Northern Trust may have no or limited control.

Past performance is not a guarantee of future results. Performance returns and the principal value of an investment will fluctuate. Performance returns contained herein are subject to revision by NTAM. Comparative indices shown are provided as an indication of the performance of a particular segment of the capital markets and/or alternative strategies in general. Index performance returns do not reflect any management fees, transaction costs or expenses. It is not possible to invest directly in any index. Net performance returns are reduced by investment management fees and other expenses relating to the management of the account. Gross performance returns contained herein include reinvestment of dividends and other earnings, transaction costs, and all fees and expenses other than investment management fees, unless indicated otherwise. For U.S. NTI prospects or clients, please refer to Part 2a of the Form ADV or consult an NTI representative for additional information on fees.

Forward-looking statements and assumptions are NTAM's current estimates or expectations of future events or future results based upon proprietary research and should not be construed as an estimate or promise of results that a portfolio may achieve. Actual results could differ materially from the results indicated by this information.

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