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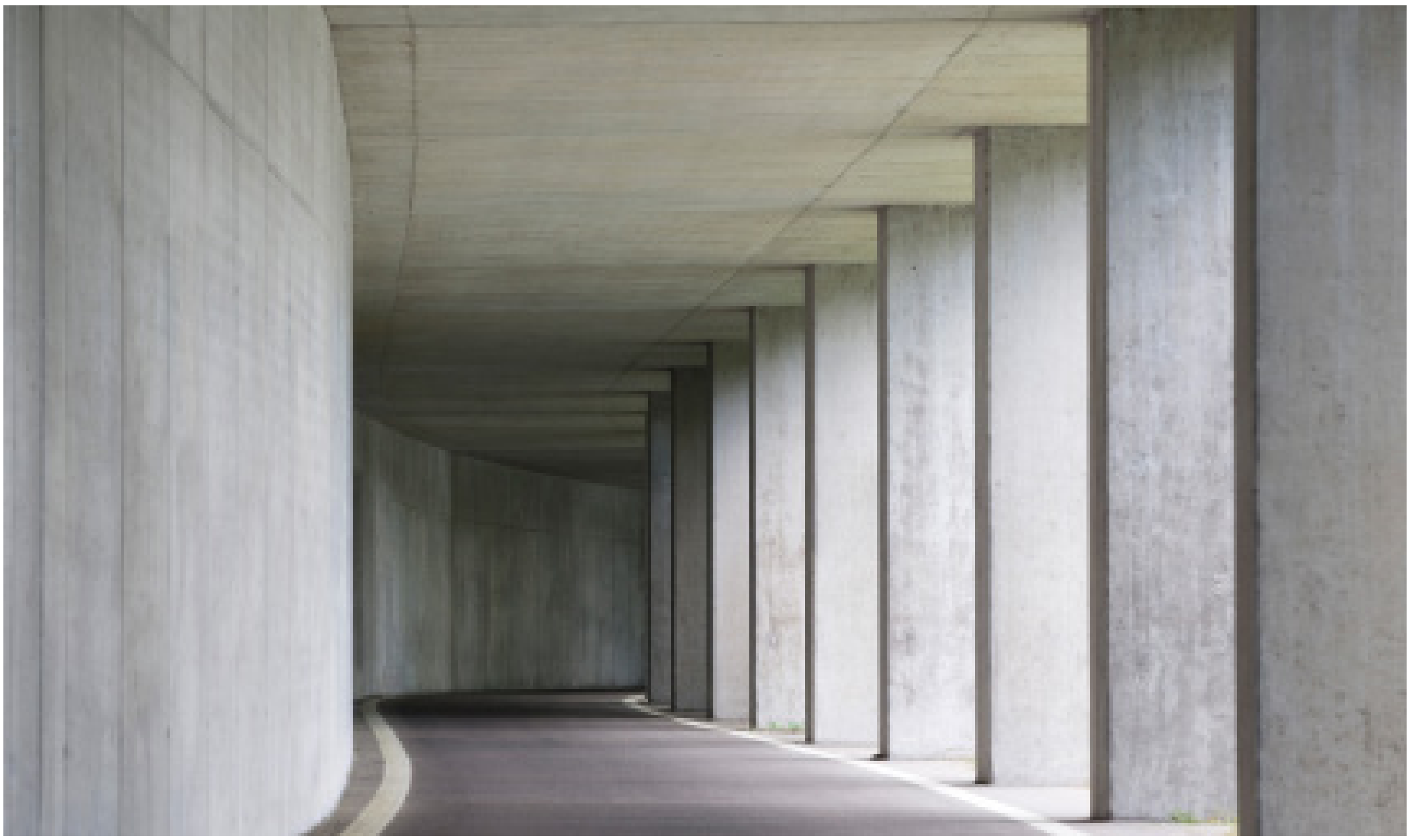
The forward environment holds opportunities and pitfalls

Capturing opportunities and managing risk in the forward environment



Overview

Chris Fletcher

Global Head
J.P. Morgan Outsourced Chief
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The views expressed in this paper are as of March 2024.

Over the past two years, extraordinary fiscal and monetary actions have been taken, helping to bring us to the present pandemic recovery. Moreover, it is very likely that the return and risk environment over the next 10 years will be substantially different from the past several years. As a result, active consideration, by investment committees, should be given to how to best organize and prepare for the post-pandemic recovery environment by re-examining the investment policy guidelines.

Our investment policy strategy and its articulation in the investment policy statement should be enabling in order to meet the potential rigors of the environment ahead. The foundational institutional principles by which investment management is conducted are not cyclical. However, the supporting tools, policy and practices should evolve on the margin, as each strategic 10- to 15-year environment is likely to be unique in terms of return, risk and, most importantly, the range of outcomes.

Specifically, there are several issues that investment committees will continue to face: the absolute level of return achievable within the capital markets generally, how to best utilize an organization's long-term investment mandate, establishing a sustainable distribution policy, and how best to manage portfolio risk without over penalizing an already return-challenged outlook.

Sincerely,

Chris Fletcher
Global Head
J.P. Morgan Outsourced Chief Investment Office

About the J.P. Morgan Outsourced Chief Investment Office

The J.P. Morgan Outsourced Chief Investment Office is a dedicated team of investment professionals leveraging the firm's global resources to provide customized investment strategies and advice for nonprofits, institutional families and family offices.

The investment policy statement (IPS) provides the mandate to navigate changing market conditions consistent with an organization's return objectives, risk tolerance, distribution needs and organizational preferences. J.P. Morgan's annual Long-Term Capital Market Assumptions (LTCMAs) provide the risk and return outlook by which investment fiduciaries and other senior decision makers may shape investment policy and drive smarter portfolios outcomes over a strategic timeframe.

The investment environment ahead: A world in transition creates new opportunities and risks

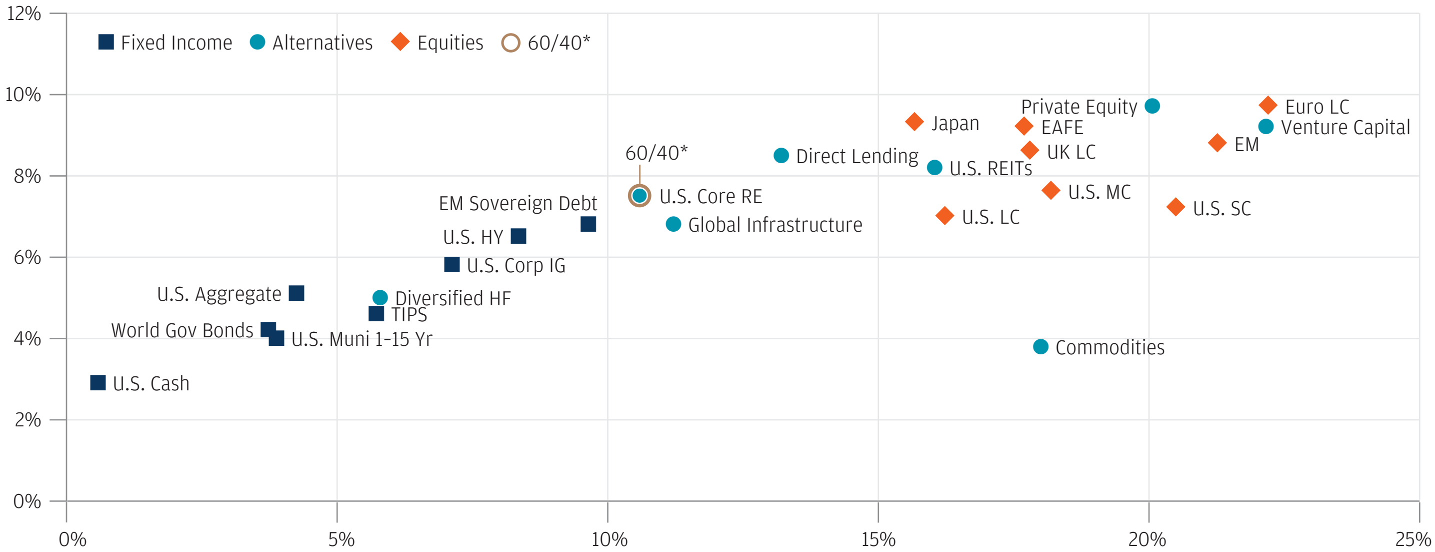
As of this writing, the LTCMAs envision a world in transition in terms of fiscal boosts from industrial policy, technology in transition, monetary policy moving from negative to positive real rates, and climate change policy moving from conventional to renewable energy. The outlook after a 40-year stretch of steadily declining inflation is one of two-way risks, even in the context of a slowing global economic growth path. These forecasted trends function alongside heightened geopolitical risks, less flexibility from central banks to respond to crises as in the past few years, and mounting sovereign debt alongside aging populations globally. Fortunately, the return and risk outlook of a basic 60/40 equity/fixed income portfolio is up to the challenge of changing economic and political conditions. More can be done, however, to capture the new opportunities and deal with the risks of the several transitions underway, primarily through an expanded alternative investment tool kit, and the potential for enhanced diversification and alpha based on access to top-tier managers across private equity and venture capital, private debt and real estate, and to a lesser extent, infrastructure and other real asset sub-strategies.

The LTCMAs: Public and private market return and risk outlook

J.P. Morgan Asset & Wealth Management's forward-looking rationale and statistical expectations are contained in the LTCMAs: an annual examination of the macro trends and micro fundamentals that are likely to drive market returns and risk in the 10-to-15-year period ahead. The public market assumptions are derived at the standard asset class level exclusive of any manager alpha expectations. Alternative asset returns are modeled at the average manager level inclusive of industry alpha leveraging widely used industry manager composites. These assumptions, historical comparisons and historical track records are synopsized in Exhibits 1, 2 and 3.

EXHIBIT 1: EVALUATING THE MODEL ALLOCATION RISK AND RETURN AMONG THE ASSET CLASS OPPORTUNITY SET

Forward-looking, Long-Term Capital Market Assumptions compound returns and annualized volatilities for the time period 2024-2034+

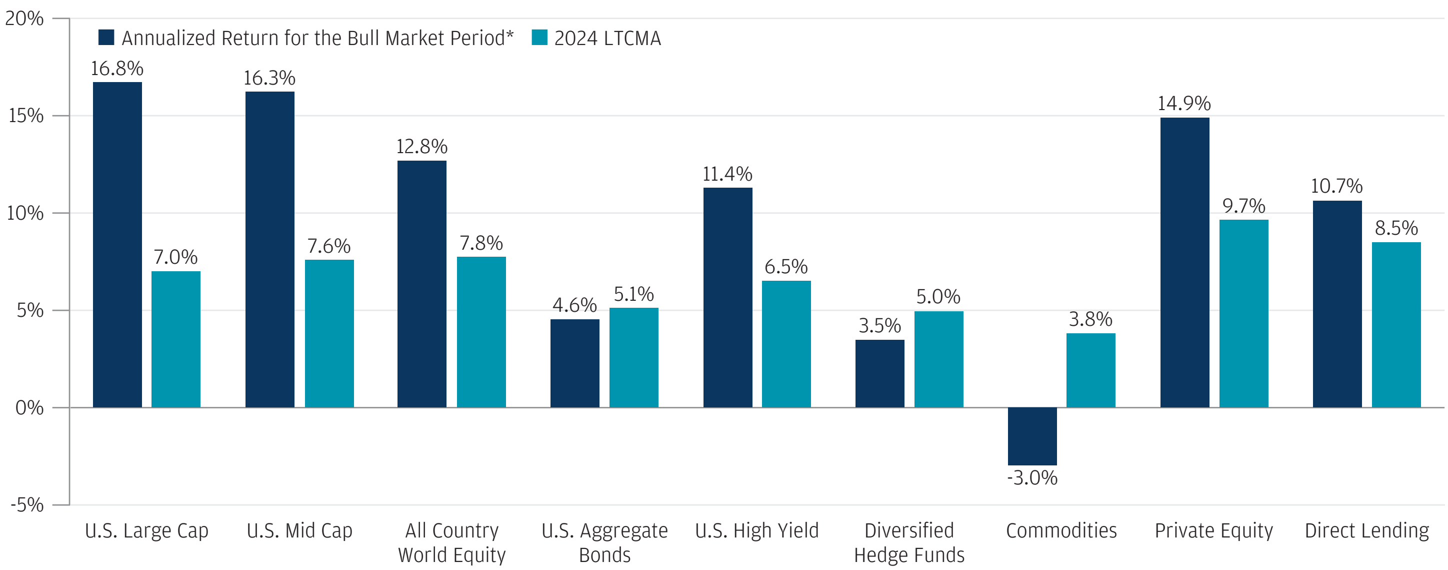


Source: J.P. Morgan Asset Management. Data as of September 30, 2023.

* 60/40 portfolio is 60% MSCI All Country World Index and 40% Bloomberg U.S. Aggregate Index. All statistics are pre-tax. Volatility is measured by standard deviation. Outlooks and past performance are not reliable indicators of future results. This chart should not be relied upon as a recommendation to buy or sell securities. Forecasts of financial market trends that are based on current market conditions constitute our judgment and are subject to change without notice. References to specific asset classes and financial markets are for illustrative purposes only and are not intended to be, and should not be interpreted as, recommendations. The return measures incorporate J.P. Morgan's proprietary projections of the return and volatility of each asset class over the long term, as well as estimates of the correlations among asset classes. Clearly, neither J.P. Morgan nor any other financial firm can predict how markets will perform in the future. In reviewing this material, please understand that references to expected returns are not promises, or even estimates, of actual returns one may achieve. They simply show what the long-term return should be, according to our best estimates. Actual performance may differ from these assumptions. For further information, see the important information at the end of this paper entitled "Understanding long-term estimates." Private equity and hedge funds are unlike other asset classes shown above, in that there is no underlying investable index. The return estimates shown above for these assets are our estimates of industry medians; the dispersion of returns among different managers in these asset classes is typically far wider than in traditional assets. Given the complex risk-reward tradeoff in these assets, we advise clients to rely on judgment rather than quantitative optimization approaches in setting strategic allocations to these asset classes.

** Reference page 12 for additional sources.

EXHIBIT 2: FOR PERSPECTIVE, ASSET CLASS RETURNS FOR THE 2009–2020 BULL MARKET* VERSUS THE 2024 LTCMA FORWARD-LOOKING ASSUMPTIONS



Sources: Bloomberg Finance L.P., data as of March 8, 2020, and J.P. Morgan Asset Management, data as of September 30, 2023.

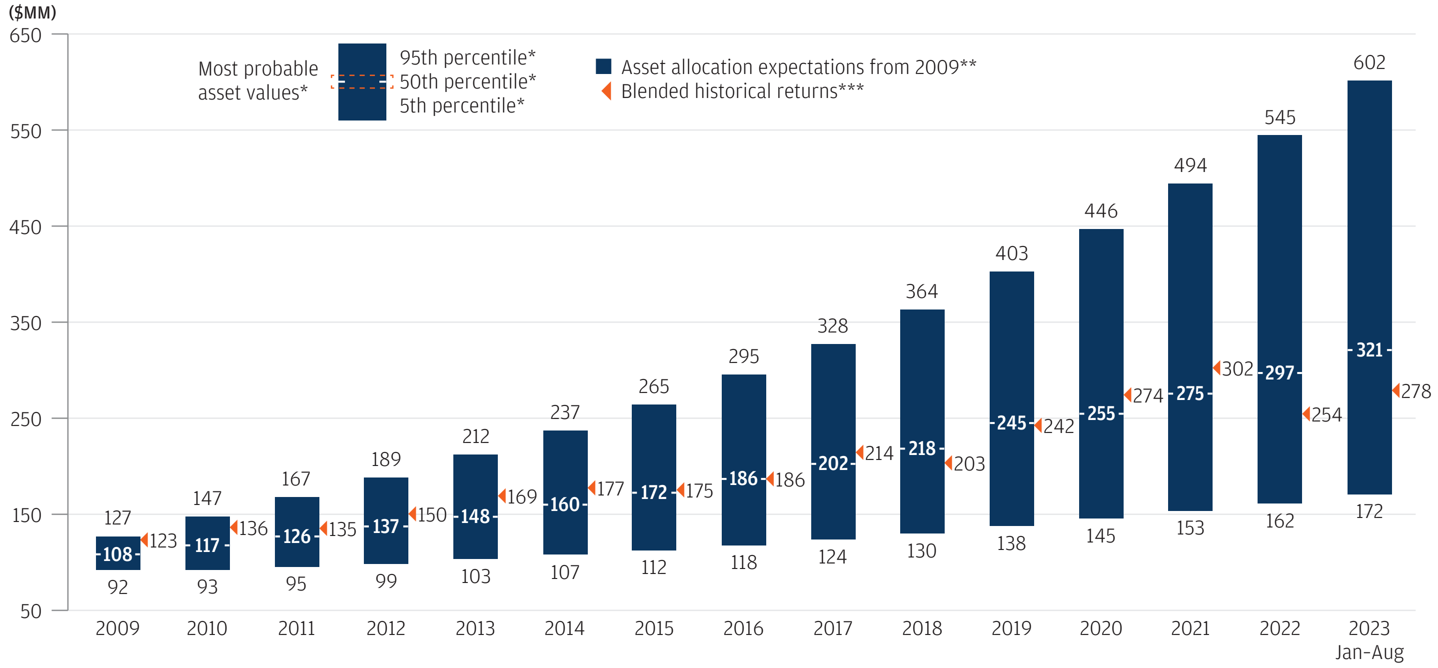
* Bull market refers to a time period of above-average equity market returns ranging from March 2009 through March 2020. For illiquid asset classes (Private Equity and Direct Lending), time period selected is March 2009 through December 2019.

** Reference page 12 for additional sources.

For illustrative purposes only. Estimates, forecasts and comparisons are as of the dates stated in the material.

EXHIBIT 3: LTCMA ASSUMPTIONS STAND THE TEST OF TIME

Simulated growth of 60% ACWI, 40% U.S. Aggregate allocation based on 2009 Capital Market Summary Assumptions compared against actual historical returns



IMPORTANT: The projections or other information generated by the Morgan Asset Projection System ("MAPS") regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual or estimated investment vehicle results and are based on simulated results using 2009 LTCMAs. The results may vary with each use and over time. Furthermore, the material is incomplete without reference to, and should be viewed in conjunction with, the verbal briefing provided by J.P. Morgan representative. For further information, see page entitled "Understanding long-term estimates."

Note: This is a past projection used for illustrative purposes only and does not represent investment in any particular vehicle. Past performance is no guarantee of future results. It is not possible to invest directly in an index.

* "Most probable asset values," denoted by the darkly shaded area, indicates the range in and around the 50th percentile. The "50th percentile" indicates the middle value of the entire range of probable asset values. The "95th percentile" value indicates that 95% of the probable asset values will be equal to or below that number; the "5th percentile" value indicates that 5% of the probable asset values will be equal to or below that number. Another way of looking at it is 90% of the probable asset values will be between those two figures.

** 2009 Asset Allocation expectations assume annual rebalancing, no taxes, and no cash flows.

*** Blended historical returns are calculated by assigning a relevant index to each asset class and blending the returns of those indices according to the asset allocation, which remains fixed for the entire period and assumes monthly rebalancing. Results do not reflect actual asset allocation or performance of any portfolio or account over this period. All returns are based on index data. Indices used: MSCI AC World Index, Bloomberg Barclays U.S. Aggregate Bond Index.

Simulated performance is not a reliable indicator of future results.

Portfolio opportunities for addressing the strategic environment

Real asset/inflation capture strategies

Real asset strategies outside of real estate have often received lower allocation weights within multi-asset class portfolios, as inflation was on a decades-long declining cyclical pattern, and the high and stable yields were bid down along with interest rates. With inflation expected to be on a balanced path averaging 2.5% in the United States and 2.9% globally over the next 10–15 years, real assets warrant a more serious look. As asset prices have been marked lower consistent with higher discount rates and changing fundamentals, distributable cash flow is now expected to be competitive with credit fixed income with relatively modest-to-low correlations to equities—the core risk in a multi-asset class portfolio.

The U.S. real estate dislocation of the last couple of years has rebased asset values, creating more attractive entry points, even as starting yields, net operating cash flow growth and inflation capture are generally competitive with other risk asset categories, particularly from the higher-growth segments such as cell towers, data and logistics centers, etc. Additionally, the real asset investment space has opportunities beyond real estate and infrastructure, including timber assets, broad commodities and gold, which have substantial diversification characteristics and ample alpha-generating potential. Alternative power assets will increasingly become a part of the real asset arsenal over time.

The non-U.S. equity return premium

As investment committees contemplate a normalized return environment ahead and balance this with consistently elevated distribution needs, we expect that more mainstream asset classes—such as U.S. large capitalization equity—may not meet the distribution-plus-inflation return requirement.

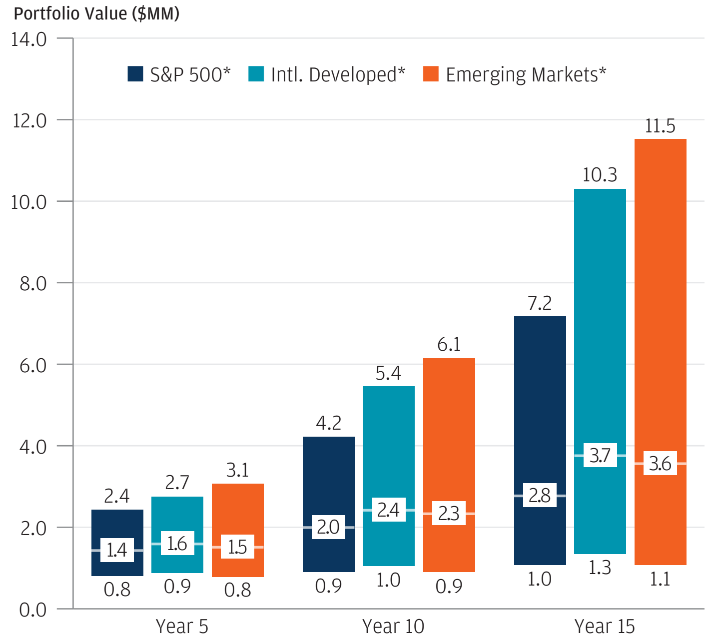
According to the 2024 LTCMAs, most risk assets should produce returns in line with or above their long-term historical averages. With U.S. large cap equity returns at 7.00%, and core fixed income returns as expressed by U.S. aggregate bonds at 5.10% as an anchor of portfolio allocations, additional return opportunities can complement U.S. portfolios in order to meet the operating return requirement of distributions-plus-inflation, expenses and possible taxes.

There are multiple options to enhance returns within the context of the LTCMAs outlook. Equity investing outside the United States presents an attractive opportunity on both cyclical and strategic bases. Returns for broad emerging markets and Asia ex-Japan are projected to be 8.80% and 8.90% compounded, respectively, over the next 10-15 years, representing a premium of almost 200 basis points above U.S. large cap equity. Exhibit 4 highlights the impact of a 2.40% and 2.80% premium for non-U.S. developed and emerging markets, respectively, compounded over 15 years. As a starting point for geographic diversification, investors should focus on the MSCI All Country World Index, which, as of December 31, 2023, weighed U.S. equity at 62%, developed non-U.S. at 28% and emerging markets at 10%. It is important to note that the aforementioned "non-U.S. equity return premium" is supported by the heightened value of the U.S. dollar versus almost all other currencies (particularly the euro and yen), as well as the historically deep discount that Japanese, European and emerging market equities trade at relative to U.S. markets.

Improved return slightly out on the equity risk curve is available through non-U.S. developed equity market investing. Large cap equity returns for the Euro area are expected to generate 9.70%, while Japan's are anticipated at 9.30%. EAFE (developed markets ex. U.S.) volatility is projected at 17.64% versus 16.19% for U.S. large cap equity.

EXHIBIT 4: U.S. LARGE CAP VERSUS INTL. DEVELOPED VERSUS EM: THE IMPACT OF THE POTENTIAL RETURN PREMIUM OVER TIME

Assumptions: Initial value = $1MM; no outflows



Sources: Intl. Developed represented by MSCI EAFE Index, Emerging Markets represented by MSCI EM Index.

IMPORTANT: The projections or other information generated by the Morgan Asset Projection System ("MAPS") regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual or estimated investment vehicle results and are not guarantees of future results. The results may vary with each use and over time.

Furthermore, the material is incomplete without reference to, and should be viewed in conjunction with, the verbal briefing provided by J.P. Morgan representative. For further information, see the important information at the end of this paper entitled "Understanding long-term estimates.

Note: Calculations based on assumptions listed.

* "Most probable wealth values," denoted by the area closest to the white line, indicates the range in and around the 50th percentile. The "50th percentile" indicates the middle wealth value of the entire range of probable wealth values. The "95th percentile" wealth value indicates that 95% of the probable wealth values will be equal to or below that number; the "5th percentile" wealth value indicates that 5% of the probable wealth values will be equal to or below that number. CVaR here is defined as the average allocation value in the worst 5% of the simulations.

This chart should not be relied upon as a recommendation to buy or sell securities. Forecasts of financial market trends that are based on current market conditions constitute our judgment and are subject to change without notice. References to specific asset classes and financial markets are for illustrative purposes only and are not intended to be, and should not be interpreted as, recommendations.

The return measures incorporate J.P. Morgan's proprietary projections of the return and volatility of each asset class over the long term, as well as long-term estimates of the correlations among asset classes. Clearly, neither J.P. Morgan nor any other financial firm can predict how markets will perform in the future. In reviewing this material, please understand that references to returns are not promises, or even estimates, of actual returns one may achieve. They simply show what the long-term return should be, according to our best estimates. Actual performance may differ from these assumptions.

Private markets as a means to capture innovation, growth and alpha in the global economy

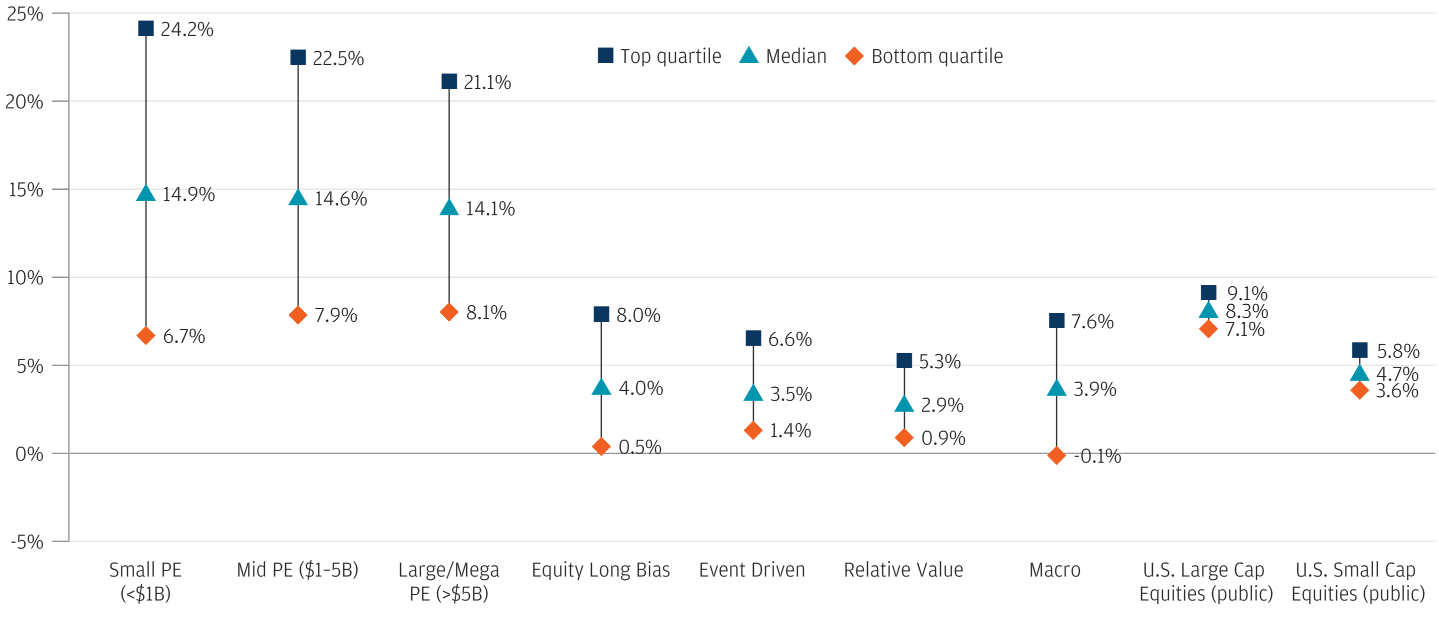
The public markets, primarily through the S&P 500's "Magnificent 7" stocks, have provided investors with significant return opportunities with the arrival of artificial intelligence ("AI") on the mainstream investment scene in March 2023. Likewise, in the healthcare space, publicly traded Pharma/Biotech and Medtech companies have generated outsized returns (and risk) as their early-stage investments have come to commercial fruition. But the private markets, of which private equity in general and venture capital and growth equity in particular, offer dedicated investment disciplines to capture early-stage high growth and innovation on a more focused consistent basis than public broad index or public growth benchmark options. While the standards for going public have increased substantially over the past 20 years, and the number of companies going public has decreased, the private markets offer an enormous opportunity, as investor interest and capital flows into the private markets have increased substantially.

While the private markets at the average manager level have generated absolute returns higher than public markets, the potential for generating significant excess returns through identifying top performers tends to be higher in the private markets as well. To be clear, top public market managers, particularly in the growth space, also offer the potential to achieve significant alpha, but a combination of public and private vehicles offers the best means to capture the full cycle from early-stage private through public market ongoing development to maximize the return potential of this portion of a portfolio.

Private markets are not without additional risks associated with illiquidity, operating risks, the quality of execution vehicles and other market conditions. These risks are captured in the wide dispersion of returns endemic to private market investing, and highlight the skill necessary to capture the full alpha potential of the space through the due diligence/manager selection process. The investment policy mandate enables the acceptance of private market illiquidity, the necessity of higher strategy returns in a portion of the portfolio, and the means by which the investment opportunities are to be executed.

EXHIBIT 5: HISTORICALLY, MANAGER DISPERSION IN ALTERNATIVES HAS BEEN WIDE (AND THIS SHOULD CONTINUE), UNDERSCORING THE IMPORTANCE OF MANAGER SELECTION

Historical annualized returns by manager percentile ranking (internal rate of return for PE and VC, time-weighted returns for the other asset classes, USD)

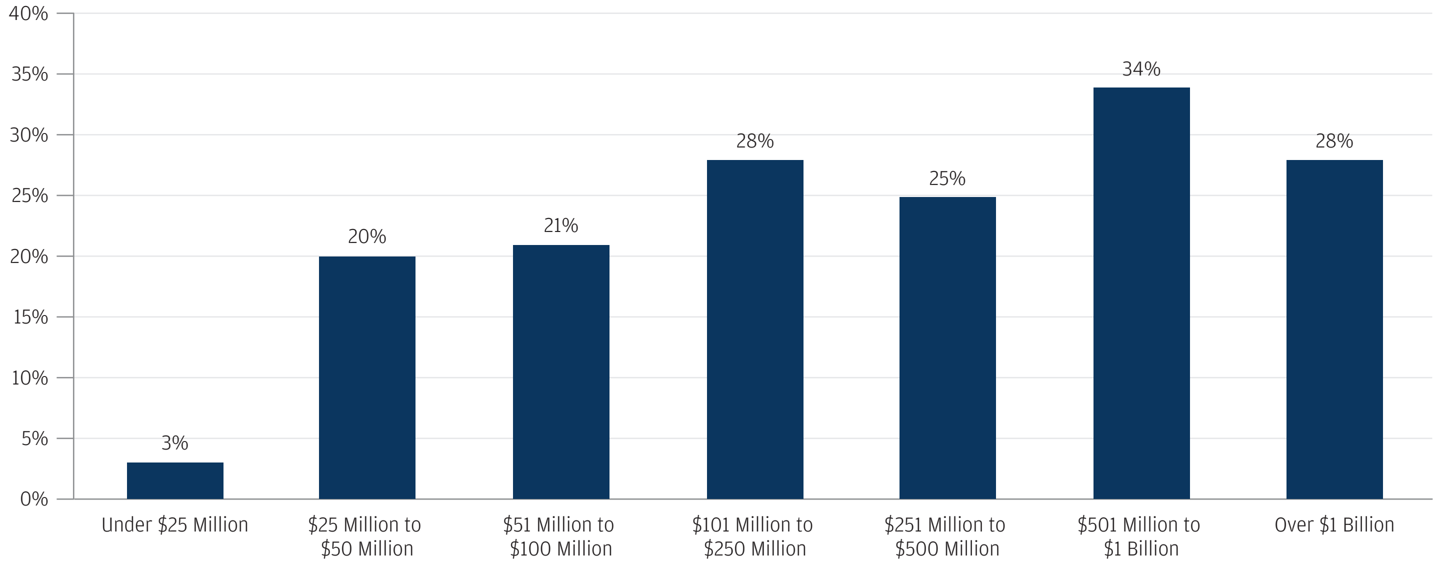


Sources: Burgiss Private iQ, HFR, Inc., Morningstar, J.P. Morgan Asset Management. Data as of December 31, 2022.

* Includes buyout and expansion capital funds. Represents vintages from 2006 to 2022.

EXHIBIT 6: ALLOCATIONS OF U.S. ENDOWMENTS TO PRIVATE EQUITY: A TRADEOFF OF LIQUIDITY FOR RETURNS?

Institutions increase their allocation to alternative strategies as their asset size grows



Source: 2021 NACUBO-Commonfund Study of Endowments, fiscal year ending June 30, 2021. For illustrative purposes only.

Tactical execution as a return enhancer

Traditional portfolio thinking asserts that over the long term, strategic asset allocation drives more than 80% of all portfolio returns, and studies of pension fund attribution have tended to validate that assertion.[1] Broadly speaking, we could agree that strategic asset allocation is where the majority of the return and risk of the portfolio will come from.

However, tactical allocation, or any deviation from the strategic asset allocation, may also contribute as an alpha source, considering the expected rise in market volatility, the differing stages in the economic cycle of the various regional blocks, and the obvious use of tactical changes to reduce or add risk as the economic cycle turns. Public equity is the most likely source of tactical alpha, as the largest allocation in a portfolio, as well as the largest contributor to portfolio risk. Over- and underweights to benchmark weights are the first level of potential alpha. There are also many sub-asset class levers within the overall equity allocation that can be tapped into as a source of tactical alpha, such as growth versus value, broad emerging markets versus Asia ex-Japan, commodity producers versus commodity consumers, etc.

Outside of equity, there is ample opportunity to add value, most notably, the substantial outperformance of gold versus broad commodities over the 10 years ending in December 2023. Within the fixed income space, we expect interest rate volatility to persist, and therefore duration modification as a tactical call may have a multi-year benefit. The inclusion of TIPS[2] into portfolios provides another example of both total value-added and true portfolio diversification throughout the length of the current inflationary period. The tactical allocation tool should take on greater importance, considering the relative return opportunities that may be created as central banks eventually recede from the scene and fundamentals become more important in determining security prices.

Finally, cost reduction is always on the table in terms of the impact on returns. Active to passive tradeoffs, as well as share class migration within active and passive execution, play an ongoing role in the meeting of future returns.

[1] Brinson, Hood, and Beebower, "Determinants of Portfolio Performance," 1985-1994.
[2] Treasury Inflation Protected Securities (TIPS).

Recalibrating a sustainable spending policy

We expect that investment committees are not extrapolating the last five years of returns and will react to rising volatility.

However, some organizations may feel the heat more acutely as they consider the broader institutional implications of higher uncertainty, and the impact this may have on achieving organizational goals. Whatever the organizational situation may be, any material change in portfolio returns and volatility for more than a year or so will begin to affect an organization's rolling distributions along with other policies whose benefit was enhanced by well-above-average capital markets in 2023.

Consider a 65% U.S. large cap equity, 35% U.S. aggregate bonds portfolio. Applying the forward-looking return and risk estimates for that mix,[3] along with a 2.50% inflation assumption, indicates that the annual spending rate would have to be limited to 2.60% in order for the probability of preserving the real value of the portfolio to be above 70% in year 15.[4] For most institutions with a 4.5% to 5.0% distribution rate, the difference between the base case portfolio return and the required return to simply break even on a real value basis will need to be found in strategic and tactical alpha, traditional manager outperformance, and the potential for meaningful return premiums in illiquid investment for above-average manager selection.

Ultimately, when determining whether an institution can maintain its current spending policy, its asset allocation and execution capabilities should be taken into consideration. However, the overall capital markets environment has the most impact on the return outlook. More nuanced distribution policies and/or fundraising at some point need to be brought into consideration.

The investment policy statement revisited

We would advise that the overall tone of an investment policy statement (IPS) be one that enables investment practitioners to use the full bandwidth of available investment options, subject to restrictions that define an organization's core risk tolerance.

General policy guidance that allows greater executional flexibility enhances the likelihood of achieving an institution's objectives, particularly when the overall conditions of the capital markets are less hospitable.

In order for the IPS to effectively support all other aspects of the investment process, it should:

- Enable rather than constrain investment practitioners by restricting high-level IPS language that has unintended micro consequences
  - For example, IPS language around leverage often unintentionally disallows managers that need leverage to conduct their business
- Be expansive about risk and return objectives
  - It is helpful to have more nuance and color around risk tolerance in its different forms, especially where multiple investment pools are used to handle distribution/operating risk and dampen overall investment risk from other asset pools
- Create a flexible policy around distribution
  - This is especially true, as one-year time periods can experience substantial portfolio declines/increases that will ultimately impact the best intentions of longer-term distribution policy guidelines
- Employ allocation variance bands that reflect higher expected volatility within and between asset classes (such as +/- 15% ranges around the target allocation)

Allocation bands that are too restrictive may force asset realignment during volatile periods, which could have unintended consequences on tactical positioning and risk management.

[3] J.P. Morgan 2024 Long-Term Capital Market Assumptions. Compound return assumptions for U.S. large cap equities and U.S. aggregate bonds are 7.00% and 5.10%, respectively. Annualized volatility (risk) assumptions are 16.19% and 4.28%, respectively.
[4] J.P. Morgan, Morgan Asset Projection System (MAPS).

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Understanding long-term estimates

Our investment management research incorporates our proprietary projections of the expected returns and volatility of each asset class over the long term, as well as estimates of the correlations among asset classes. Clearly, financial firms cannot predict how markets will perform in the future. But we do believe that by analyzing current economic and market conditions and historical market trends, and then, most critically, making projections of future economic growth, inflation, and real yields for each country, we can estimate the long-term performance for an entire asset class, given current and our estimated equilibrium levels. The "equilibrium" level shows the average or central tendency of a market or macroeconomic variable such as yield or credit spread that is expected to prevail over the long term, because the level represents the value inherent in a given market. The return assumptions are based on our proprietary process of using a building block approach for each of the asset classes. For instance, the building blocks for equity consist of our projections on inflation, real earnings growth, dividend yield and the impact of valuations. The building blocks for fixed income consist of our projections for future yields and the change in bond prices. The estimates for alternatives are driven by our historical analysis and judgment about the relationship to public markets. It is possible—indeed, probable—that actual returns will vary considerably from this expectation, even for a number of years. But we believe that market returns will always at some point return to the equilibrium trend. We further believe that these kinds of forward-looking assessments are far more accurate than historical trends in deciding what asset class performance will be, and how best to determine an optimal asset mix.

In reviewing this material, please understand that all references to expected return are not promises, or even estimates, of actual returns one may achieve. The assumptions are not based on specific products and do not reflect fees, such as investment management fees, oversight fees, transaction costs or other expenses, that could reduce return. They simply show what the long-term return should be, according to our best estimates of current and equilibrium conditions. Also note that actual performance may be affected by the expertise of the person who actually manages these investments, both in picking individual securities and possibly adjusting the mix periodically to take advantage of asset class undervaluations and overvaluations caused by market trends.

For the purpose of this analysis, volatility is defined as a statistical measure of the dispersion of return for a given allocation and is measured as the standard deviation of the allocation's arithmetic return. The Sharpe ratio is a return/risk measure, where the return (the numerator) is defined as the incremental annual return of an investment over the risk-free rate. Risk (the denominator) is defined as the standard deviation (volatility) of the allocation's return less the risk-free rate. The risk-free rate utilized is J.P. Morgan's long-term assumption for Cash. Correlation is a statistical measure of the degree to which the movements of two variables, in this case asset class returns, are related. Correlation can range from -1 to 1, with 1 indicating that the returns of two assets move directionally in concert with one another, i.e., they behave in the same way during the same time. A correlation of 0 indicates that the returns move independently of each other, and -1 indicates that they move in the opposite direction.

Index definitions

All index performance information has been obtained from third parties and should not be relied upon as being complete or accurate. Indices are not investment products available for purchase. They are unmanaged and generally do not take into account fees or expenses. Furthermore, while some alternative investment Indices may provide useful indications of the general performance of the alternative investment industry or particular alternative investment strategies, all alternative investment indices are subject to selection, valuation, survivorship and entry biases, and lack transparency with respect to their proprietary computations. A benchmark is a standard against which the performance of a security, mutual fund or investment manager can be measured. Generally, broad market and market-segment stock and bond indices are used for this purpose.

Bloomberg Commodity Spot Index measures price movements of the commodities included in the BCOMSP and select subindexes. The DJ-UBS Commodity Spot Index provides a general estimate of trends in commodity prices. It does not account for the effects of rolling futures contracts or the costs associated with actually holding physical commodities, and is thus not replicable with positions in the underlying commodity futures contracts. Source: Bloomberg Finance L.P.

Bloomberg Euro-Aggregate Index ("Euro Agg") 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. Source: Bloomberg Finance L.P.

Bloomberg Municipal 1-15 Year Index ("U.S. Muni 1-15Yr Blend") measures the performance of USD-denominated long-term, tax-exempt bond market with maturities of 1-15 years, including state and local general obligation bonds, revenue bonds, insured bonds, and pre- refunded bonds.

Bloomberg U.S. Aggregate Index ("U.S. Agg") represents securities that are SEC-registered, taxable and dollar denominated. The index covers the U.S. investment grade, fixed-rate bond market, with index components for government and corporate securities, mortgage pass-through securities, and asset-backed securities. Index Rules include: (1) Must have at least one year to final maturity regardless of call features. (2) Must have at least $250 million par amount outstanding. Asset-backed securities must have at least $500 million deal size and $25 million tranche size. For commercial mortgage-backed securities, the original transaction must have a minimum deal size of $500 million, and a minimum tranche size of $25 million; the current outstanding transaction size must be at least $300 million to remain in the index. (3) Must be rated investment grade

(Baa3/ BBB- or higher) by at least two of the following ratings agencies: Moody's, S&P, Fitch. If only two of the three agencies rate the security, the lower rating is used to determine index eligibility. If only one of the three agencies rates a security, the rating must be investment grade. (4) Must be fixed rate, although it can carry a coupon that steps up or changes according to a predetermined schedule. (5) Must be dollar denominated and non-convertible. (6) Must be publicly issued. However, 144A securities with Registration Rights and Reg-S issues are included. Source: Bloomberg Finance L.P.

Bloomberg U.S. Corporate Bond Index ("U.S. Inv Grade Corporate Bonds") measures the investment grade, fixed-rate, taxable corporate bond market. It includes USD denominated securities publicly issued by US and non-US industrial, utility and financial issuers. (Future Ticker: I02765US).

Bloomberg U.S. Corporate High Yield 2% Issuer Index ("U.S. HY") measures the performance of high yield corporate bonds, with a maximum allocation of 2% to any one issuer.

Bloomberg U.S. Long Government Index ("U.S. Long") includes fixed income securities issued by the U.S. Treasury (not including inflation-protected bonds) and U.S. government agencies and instrumentalities, as well as corporate or dollar-denominated foreign debt guaranteed by the U.S. government, with maturities greater than 10 years. Source: Bloomberg Finance L.P.

Bloomberg U.S. Treasury Bill: 1-3 Months Index ("U.S. Cash") tracks the market for treasury bills with 1 to 2.9999 months to maturity issued by the US government. US Treasury bills are issued in fixed maturity terms of 4-, 13-, 26- and 52-weeks. (Future Ticker: I00078US)

Bloomberg U.S. Treasury Inflation-Linked Bond Index (Series-L) ("TIPS") measures the performance of the US Treasury Inflation Protected Securities (TIPS) market. Federal Reserve holdings of US TIPS are not index eligible and are excluded from the face amount outstanding of each bond in the index. (Future Ticker: I00062US)

Cliffwater Direct Lending Index ("Direct Lending") seeks to measure the unlevered, gross of fee performance of US middle market corporate loans, as represented by the asset-weighted performance of the underlying assets of Business Development Companies that satisfy certain

J.P. Morgan EMBI Global Diversified Index ("Emerging Markets Sovereign Debt") tracks liquid, US Dollar emerging market fixed and floating-rate debt instruments issued by sovereign and quasi-sovereign entities. The index was launched in July 1999 with daily historical index levels dating back to December 1993.

FTSE/NAREIT Equity Index ("FTSE NAREIT") is a free float-adjusted market capitalization weighted index that includes all tax-qualified REITs in the NYSE, AMEX and NASDAQ markets. Source: NAREIT.

HFRI Hedge Fund of Funds ("FOF") Diversified Index includes multiple managers through funds or managed accounts. The strategy designs a diversified portfolio of managers with the objective of significantly lowering the risk (volatility) of investing with an individual manager. The Fund of Funds manager has discretion in choosing which strategies to invest in for the portfolio. A manager may allocate funds to numerous managers within a single strategy, or with numerous managers in multiple strategies. The minimum investment in a Fund of Funds may be lower than an investment in an individual hedge fund or managed account. The investor has the advantage of diversification among managers and styles with significantly less capital than investing with separate managers. HFRI performance is an estimate for the most recent 180 days. Source: HFRI.

J.P. Morgan CEMBI/CEMBI Broad Index ("EM Corp") series was created in response to investor demand for a liquid global emerging market corporate benchmark and the rapid increase in corporate issuance. A diversified version for CEMBI/CEMBI Broad is also available, providing a more evenly distributed weighting among the countries, decreasing larger countries and increasing smaller ones. The CEMBI defines emerging market countries with a combination of World Bank– defined per capita income brackets and relevant OECD status. The CEMBI Broad is a more inclusive global corporate benchmark and serves to expand upon CEMBI. Source: J.P. Morgan.

MSCI All Country (AC) Asia ex-Japan Index ("Asia ExJ") is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of Asia, excluding Japan. As of March 2008, the MSCI AC Asia ex-Japan Index consisted of the following 11 developed and emerging market country indices: China, Hong Kong, India, Indonesia, Korea, Malaysia, Pakistan, the Philippines, Singapore, Taiwan and Thailand. Source: MSCI Barra.

MSCI All Country (AC) World Index ("ACWI") is a free float-adjusted market capitalization index that is designed to measure equity market performance in the global developed and emerging markets. Source: MSCI Barra.

MSCI EAFE Index ("EAFE": Europe, Australasia, Far East) is a free float-adjusted market capitalization index that is designed to measure the equity market performance of developed markets, excluding the United States and Canada. As of June 2007, the MSCI EAFE Index consisted of the following 21 developed market country indices: Australia, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland and the United Kingdom. Source: MSCI Barra.

MSCI Emerging Markets Index ("EM") is a free float-adjusted market capitalization index that is designed to measure equity market performance of emerging markets. As of November 2008, the MSCI Emerging Markets Index consisted of the following 24 emerging market country indices: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Egypt, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, Morocco, Pakistan, Peru, the Philippines, Poland, Russia, South Africa, Taiwan, Thailand and Turkey. Source: MSCI Barra.

MSCI Europe Index ("EUR LC") is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of the developed markets in Europe. As of June 2007, the MSCI Europe Index consisted of the following 16 developed market country indices: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom. Source: MSCI Barra.

MSCI Japan Index ("Japan") is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of the Japanese developed market. Source: MSCI Barra.

MSCI United Kingdom Index ("UK Large Cap") is a free-float weighted equity index tracking the investable market of public equities in the United Kingdom. It was developed with a base value of 100 as of December 31, 1969.

Russell 2000 Index ("U.S. SC") 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 representing approximately 10% of the total market capitalization of that index. It includes approximately 2,000 of the smallest securities based on a combination of their market cap and current index membership. The index 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. Source: Russell Indexes.

Russell Midcap Index ("U.S. MC") measures the performance of the mid-cap segment of the U.S. equity universe. The Russell Midcap Index is a subset of the Russell 1000 Index. It includes approximately 800 of the smallest securities based on a combination of their market cap and current index membership. The Russell Midcap Index represents approximately 31% of the total market capitalization of the Russell 1000 companies. The index is constructed to provide a comprehensive and unbiased barometer for the mid-cap segment. The Index is completely reconstituted annually to ensure larger stocks do not distort the performance and characteristics of the true mid-cap opportunity set. Source: Russell Indexes.

S&P 500 Index ("U.S. LC"), widely regarded as the best single gauge of the U.S. equities market, includes a representative sample of 500 leading companies in leading industries of the U.S. economy. Although the S&P 500 focuses on the large-cap segment of the market, with 75% coverage (based on total stock market capitalization) of U.S. equities, it is also an ideal proxy for the total market. Source: Standard & Poor's.

World Government Bond Index ("World Government Bonds") measures the performance of fixed-rate, local currency, investment-grade sovereign bonds. The WGBI is a widely used benchmark that currently comprises sovereign debt from over 20 countries, denominated in a variety of currencies, and has more than 25 years of history available.

Indices for Exhibit 1: Evaluating the model allocation risk and return among the asset class opportunity set

FIXED INCOME

U.S. Cash: Underlying index for forward-looking assumption is Bloomberg U.S. Tr Bills: 1-3 Months TR Index Value Unhedged

TIPS: Underlying index for forward-looking assumption is Bloomberg US Treasury Inflation Notes TR Index

U.S. Aggregate Bonds: Underlying index for forward-looking assumption is Bloomberg US Aggregate TR Index

U.S. Inv Grade Corporate Bonds: Underlying index for forward-looking assumption is Bloomberg US Corporate TR Index

U.S. High Yield Bonds: Underlying index for forward-looking assumption is Bloomberg US High Yield 2% Issr Cap TR Index

World Government Bonds: Underlying index for forward-looking assumption is FTSE World Government Bond Index (WGBI) USD

Emerging Markets Sovereign Debt: Underlying index for forward-looking assumption is J.P. Morgan EMBI Global Diversified Composite

U.S. Muni 1-15 Yr Blend: Underlying index for forward-looking assumption is Bloomberg 1-15 Year Blend (1-17) TR Index

ALTERNATIVES

Private Equity: Forward-looking assumptions are based on Burgiss composite of Growth and Buyout private equity funds

U.S. Core Real Estate: Underlying index for forward-looking assumption is US Core Real Estate

U.S. REITs: Underlying index for forward-looking assumption is FTSE NAREIT All Equity REITS TR

Global Core Infrastructure: Underlying index for forward-looking assumption is Global Infrastructure Equity USD Unhedged

Diversified Hedge Funds: Underlying index for forward-looking assumption is HFRI FOF Diversified Index

Direct Lending: Underlying index for forward-looking assumption is Cliffwater Direct Lending Index

Commodities: Underlying index for forward-looking assumption is Bloomberg Commodity Index TR

Venture Capital: Forward-looking assumptions are based on a Burgiss composite of Venture Capital funds.

EQUITIES

U.S. Large Cap: Underlying index for forward-looking assumption is S&P 500 TR Index

U.S. Mid Cap: Underlying index for forward-looking assumption is Russell Midcap TR Index

U.S. Small Cap: Underlying index for forward-looking assumption is Russell 2000 TR Index

Euro Area Large Cap: Underlying index for forward-looking assumption is MSCI EMU Net Return EUR Index

Japanese Equity: Underlying index for forward-looking assumption is MSCI Japan TR Index Local

UK Large Cap: Underlying index for forward-looking assumption is MSCI UK TR Index Local

EAFE Equity: Underlying index for forward-looking assumption is MSCI EAFE TR Index USD

Emerging Markets Equity: Underlying index for forward-looking assumption is MSCI Emerging Market TR Index USD

Indices for Exhibit 2: For perspective, asset class returns for the 2009–2020 bull market* versus the 2024 LTCMA forward-looking assumptions

U.S. Large Cap: Underlying index for forward-looking assumption is S&P 500 TR Index

U.S. Mid Cap: Underlying index for forward-looking assumption is Russell Midcap TR Index

All Country World Equity: Underlying index for forward-looking assumption is MSCI ACWI TR Index USD

U.S. Aggregate Bonds: Underlying index for forward-looking assumption is Bloomberg US Aggregate TR Index

U.S. High Yield: Underlying index for forward-looking assumption is Bloomberg US High Yield 2% Issr Cap TR Index

Diversified Hedge Funds: Underlying index for forward-looking assumption is HFRI FOF Diversified Index

Commodities: Underlying index for forward-looking assumption is Bloomberg Commodity Index TR

Private Equity: Underlying index for forward-looking assumption is Burgiss composite of Growth and Buyout funds

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