J.P.Morgan

PRIVATE BANK

THE POWER OF ALTERNATIVES

Investing in alternative assets for performance and diversification

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Alternative assets are a critical component of institutional portfolios. Successful investment requires detailed analysis, planning, and tolerance for illiquidity.

Many sophisticated long-term investors allocate significant portions of their portfolios to alternative investments, and with good reason: Alternatives can provide an opportunity for optimal returns while hedging against inflation. They may also reduce volatility, as most are not subject to daily market fluctuations.

Large family offices, on average, dedicate 45% of their portfolios to alternatives. Endowments and foundations often go even further: The largest foundations allocate 53% of their investments to alternatives;[2] the largest endowments, 65%.[3]

During the past 20 years, the portfolios of the largest endowments—those that invest most heavily in alternatives—have outperformed those of their smaller peers by a wide margin. Institutions with endowments of more than $5 billion in assets had a 20-year average annual return of 9.1% versus 7.9% for those with $1 billion to $5 billion in assets. But the smallest endowments, with less than $50 million in assets, had returns of only 4.8%.[4]

While alternative asset classes often have higher potential returns than many public market sectors, they also tend to have a wider dispersion of returns. This provides the opportunity for outperformance, but also presents significant downside risk. The success of an alternatives portfolio depends on the strategies used to construct and fund it, as well as a rigorous and sophisticated process for selecting suitable strategies, funds and managers.

PORTFOLIO PERCENTAGE DEDICATED TO ALTERNATIVES (ON AVERAGE)

45%
large family offices

53%
large foundations

65%
large endowments

[1] J.P. Morgan Global Family Offices Report 2024.

[2] "2023 Council on Foundations–Commonfund Study of Foundations," Council on Foundations and Commonfund Institute, 2023, page 8.

[3] "2023 Nacubo-Commonfund Study of Endowments," Nacubo and Commonfund Institute, 2024, pages 37, 38, 40.

[4] Nacubo and Commonfund, 2023, page 18.

01

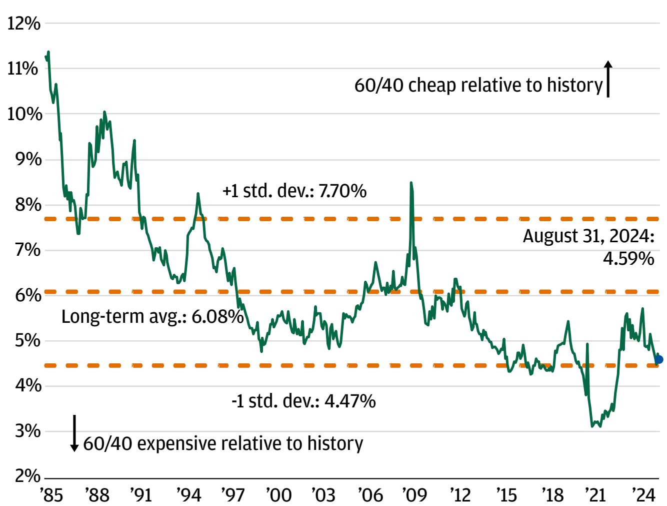
The potential for enhanced returns

In recent years, the 60/40 stock-bond portfolio has performed well (Exhibit 1A and Exhibit 1B). But in the current valuation environment, we have concerns about its prospects for continued strength.

Future performance of the 60/40 portfolio is unlikely to match that of recent years

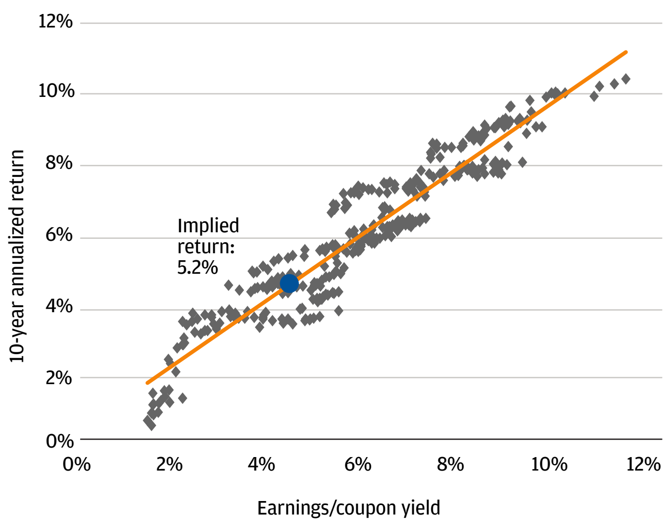
EXHIBIT 1A: EARNINGS/COUPON YIELD ON A 60/40 PORTFOLIO

Blended S&P 500 forward P/E and Bloomberg U.S. Agg. YTW



Sources: Bloomberg, FactSet, Standard & Poor's, Thomson Reuters, J.P. Morgan Asset Management. Historical forward P/E ratios are based on IBES aggregate estimates. Guide to the Markets—U.S. Data as of July 30, 2024.

EXHIBIT 1B: 60/40 EARNINGS/COUPON YIELD AND SUBSEQUENT 10-YEAR ANNUALIZED RETURNS: JAN. 1985–AUG. 2014



Sources: Standard & Poor's, Bloomberg, IBES, FactSet, J.P. Morgan Asset Management. Valuation is calculated by summing 60% weight to earnings yield on stocks (inverse of forward P/E) and a 40% weight to the yield-to-worst on the U.S. Aggregate. Earnings yield is the forward earnings yield (consensus analyst estimates of EPS over the next 12 months divided by price) as provided by IBES since December 1984 and by FactSet since January 2022. Percentages may not sum due to rounding. Returns are based on a 60% weighting in the S&P 500 Total Return Index and a 40% weighting in the U.S. Aggregate Total Return index. 60/40 is rebalanced annually. Returns are 120-month annualized total returns, measured monthly, beginning December 31, 1984. R^2 represents the percent of total variation in total returns that can be explained by valuations.

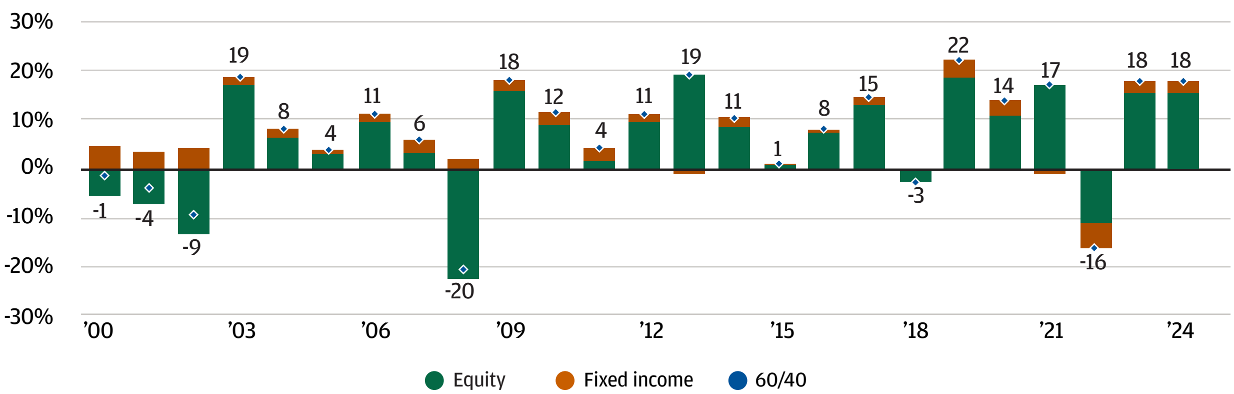
FOR DISCUSSION PURPOSES ONLY. Past performance is not indicative of future results. It is not possible to invest directly in an index.

We feel the current market presents new risks to the 60/40 portfolio, that inflation risk has become two-way, and correlations between stocks and bonds are mostly positive (Exhibit 2).

Stock-bond correlations have been largely positive the past 60 years

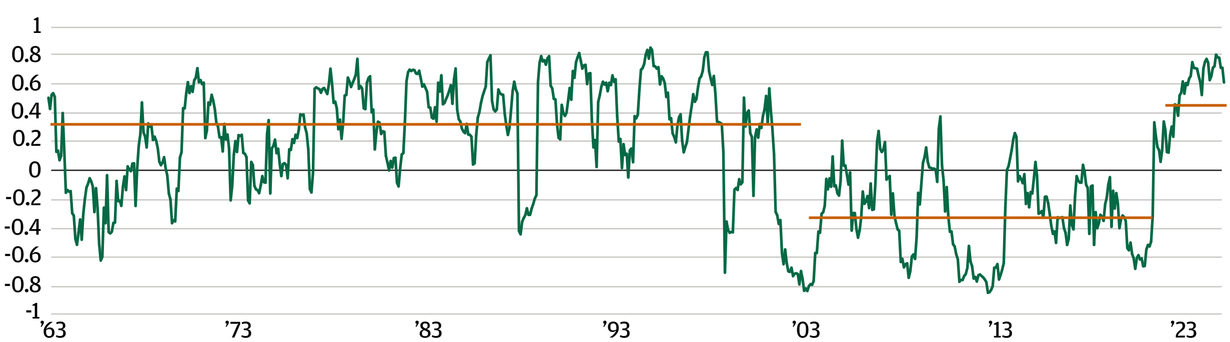
EXHIBIT 2: 60/40 ANNUAL RETURN DECOMPOSITION

%, total return



S&P 500/U.S. 10-YEAR TREASURY CORRELATION

Rolling 12-month correlation based on total returns



Regime	Average correlation
'63–'99	0.28
'00–'20	-0.32
'21–'24*	0.47
'63–'24*	0.09

Sources: Bloomberg, Haver Analytics, FactSet, LSEG, Standard & Poor's, J.P. Morgan Asset Management.
(Top) The 60/40 portfolio is 60% invested in the S&P 500 Total Return Index and 40% invested in the Bloomberg U.S. Aggregate Total Return Index.
* 2024 correlations are through 3Q24.

Data are based on availability as of November 30, 2024.

Over the coming 10 to 15 years, we expect the 60/40 stock-bond portfolio to provide an average annual return of 6.4%. Endowments, on average, target returns of 7%,[5] while family offices are aiming for 11%.[6] To reach those numbers, investors typically have two choices:

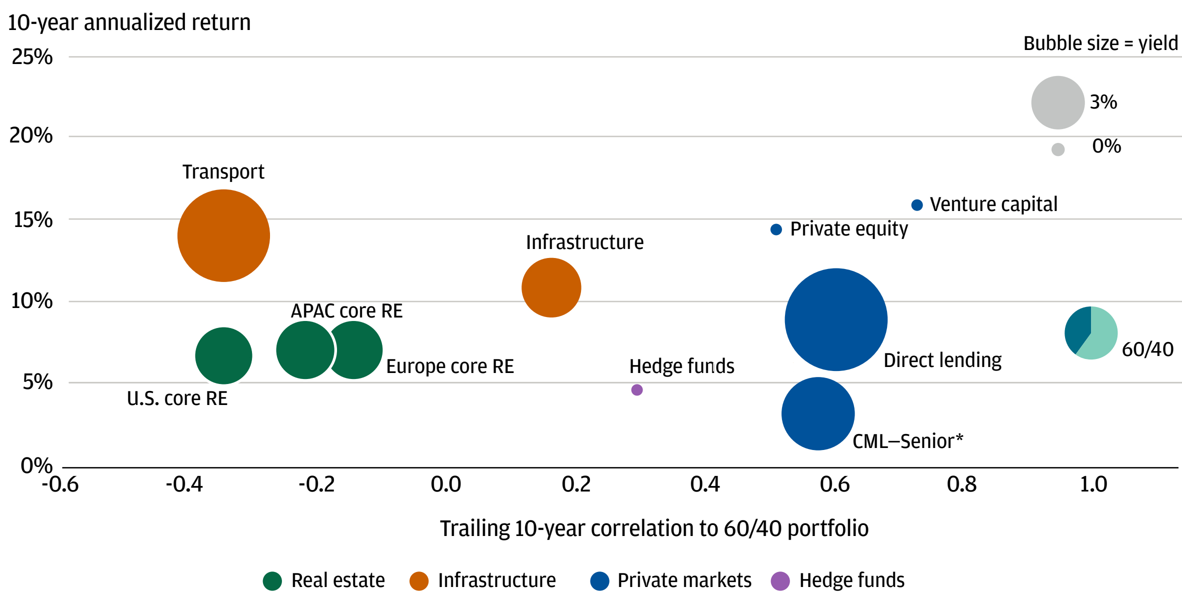
They can either embrace more market directionality—or optimize their investments in alternatives. For long-term investors with some tolerance for illiquidity, we believe investing in alternative assets could be the more suitable strategy.

Alternative investment portfolios can allow investors to invest in a wider range of asset classes, from private equity to venture capital, real estate and transport, many of which often have median returns more favorable to that of public market investments. Alternatives can also allow investors to spread risk, enabling better risk-adjusted returns, and often, better absolute returns (Exhibit 3).

Some alternatives have a low correlation with public market assets, performing independently of market fluctuations. Alternatives can also reduce the potential drawdown of the traditional 60/40 portfolio.

Alternatives offer a range of options for both return and diversification

EXHIBIT 3: ALTERNATIVE ASSET STRATEGIES: 10-YEAR CORRELATIONS, 10-YEAR ANNUALIZED TOTAL RETURNS (3Q14–2Q24)



Sources: Burgiss, Cliffwater, Gilberto-Levy, HFRI, MSCI, NCREIF, FactSet, J.P. Morgan Asset Management. Correlations are based on quarterly returns over the past 10 years from 3Q14 to 2Q24. A 60/40 portfolio is composed of 60% stocks and 40% bonds. Stocks are represented by the S&P 500 Total Return Index. Bonds are represented by the Bloomberg U.S. Aggregate Total Return Index. Ten-year annualized returns are calculated from 3Q14 to 2Q24. Indices and data used for alternative asset class returns and yields are as described on pages 12, 13 and 17 of the J.P. Morgan Asset Management Guide to Alternatives. Yields are based on latest available data as described on page 12 of the J.P. Morgan Asset Management Guide to Alternatives. Data are based on availability as of November 30, 2024.

* CML is commercial mortgage loans.

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[5] Nacubo and Commonfund, 2023, page 23.
[6] J.P. Morgan Private Bank, 2024 Global Family Office Report, page 3.

02

Selecting the appropriate alternatives strategies

In addition to the potential for attractive absolute returns, specific classes of alternative investments can have other additional benefits.

Real assets have a low correlation with traditional assets. Some, such as real estate, energy infrastructure and transportation, tend to generate steady cash flow and safeguard against inflation. Because they provide essential services, they may be more resilient in downturns. Others, such as agricultural land and trees, may produce income via carbon credits.

Hedge funds are designed to diversify portfolios with strategies that aim to produce positive returns even in poor or declining markets.

Private equity can increase access to attractive, actively managed and rapidly scaling private companies, especially as the number of public companies continues to decline.

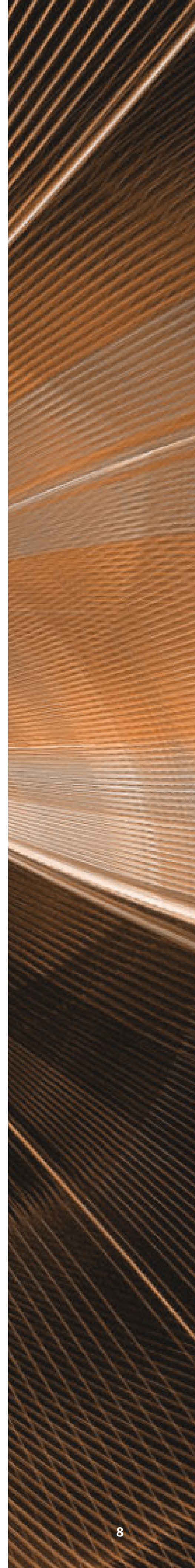
Private credit although less liquid than the bond market, often provides insulation. It is often viewed as an extension to existing fixed income allocations, serving as a potential income enhancer, diversifier and alternative to public markets.

03

A unique approach to portfolio construction

J.P. Morgan builds comprehensive private investment portfolios over multi-year periods, seeking to enhance return while mitigating risk. We generally recommend portfolios that are diversified across strategy, geography, industry, vintage year, general partner and partner.

Our approach to allocations is based on rigorous analysis and data-supported insights, tailored to the needs and preferences of our clients. These clients may have particular priorities for income, diversification and growth. They may also have varying time horizons, cash flow needs and ability to remain invested in illiquid markets.



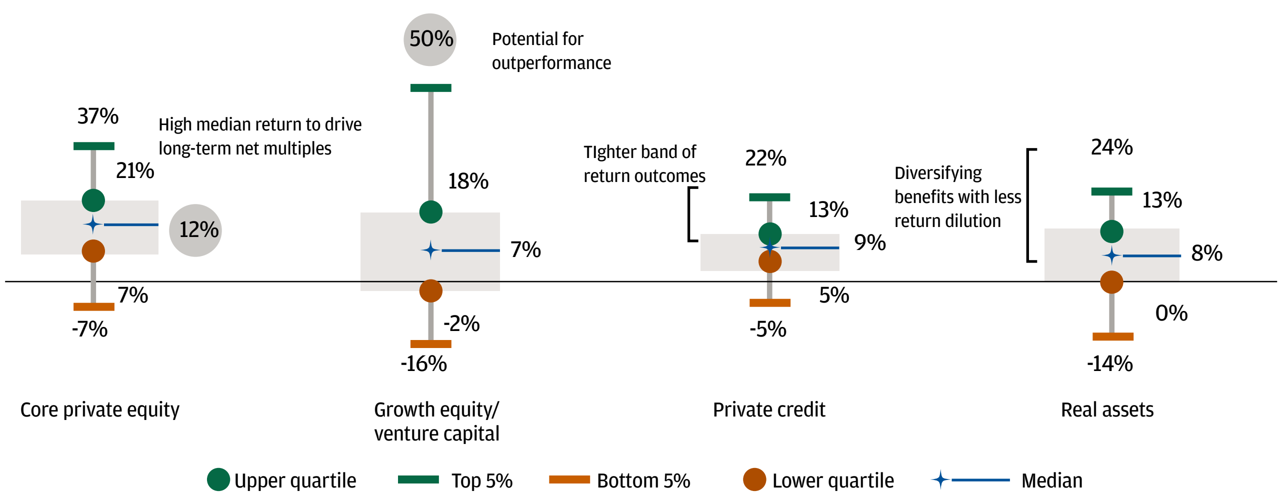
For many of our clients, core private equity is an appropriate anchor for an alternatives portfolio. It offers the highest median potential return and meaningful upside potential if you were to invest with the most successful funds and managers (Exhibit 4).

Varying alternatives strategies capture return, yield, inflation protection and risk mitigation

EXHIBIT 4: THE ROLE AND NET IRRs OF SELECTED ALTERNATIVES STRATEGIES

Strategy	Core private equity	Growth equity/ venture capital	Private credit	Real assets
Role in portfolios	Portfolio anchor	Return enhancer	Diversifier	Diversifier
Why	Highest median return with meaningful upside potential	Potential for outperformance that can be accretive to overall returns	More senior capital position and yield generation has historically led to a tighter band of return outcomes	Hard assets may offer yield and inflation protection, which can de-risk the portfolio without sacrificing total return

Industry net IRRs by strategy



Source: Burgiss. Data as of June 30, 2024 IRR: internal rate of return.

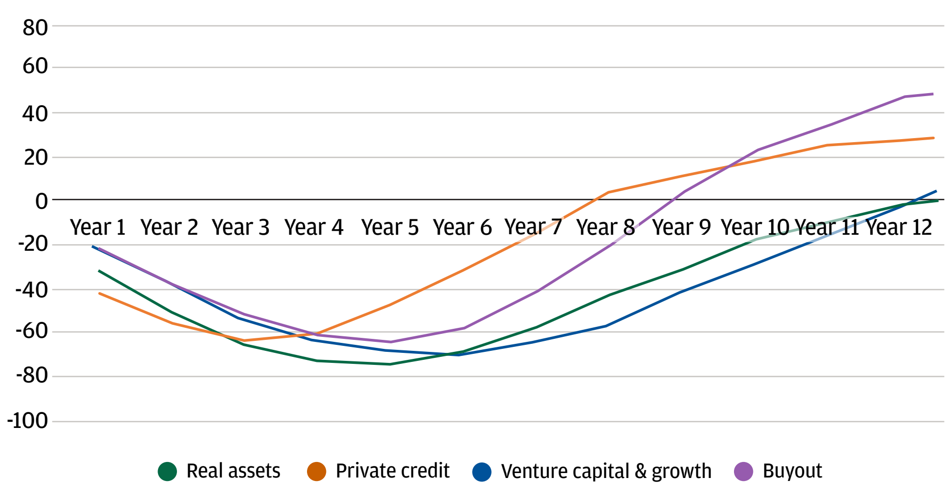
Growth funds and venture capital offer significant potential for return enhancement; however, selecting the right managers is crucial, as these strategies are characterized by the widest dispersion of returns.

Investments in credit and real assets can play a vital role in portfolio diversification. Because of the nature of the underlying investments and the structure of these assets, they offer exposure to different risk factors and return drivers. Private credit tends to have more predictable cash flows than private equity, offering interest payments, and, in some cases, principal repayment at maturity. Real assets often generate cash flows through rental income, lease payments or usage fees. However, these are often linked to the operational performance of the asset and market demand.

As highlighted, the cash flow profile of each strategy is an important consideration (Exhibit 5). The cash flow curve for credit, for example, is relatively shallow because of the consistent cash yield received on assets. Buyout and venture capital funds, by contrast, return capital only upon a successful exit. In determining the proper allocation for each client, we consider the institution's investment objectives and priorities, as well as its tolerance for illiquidity and various levels of drawdown.

Cash flow profiles differ across alternatives

EXHIBIT 5: MEDIAN NET CASH-FLOW PROFILE BY STRATEGY



Source: Burgiss data on median net cash flow for vintages 2005 to 2017, as of June 30, 2024.

FOR DISCUSSION PURPOSES ONLY. Past performance is not indicative of future results.

04

Our recommended investment approaches

Each institution will prioritize capital appreciation, yield and diversification in a different way. For many, a diversified private investment portfolio provides the best fit. The sample asset allocation shown in the middle box, below, can be customized depending on an institution's current positions, priorities, preferences and liquidity needs. These factors may indicate an allocation placing more emphasis on either yield or absolute returns (Exhibit 6).

Alternatives allocations must be aligned to investors' priorities

EXHIBIT 6: TARGET ALTERNATIVES ALLOCATIONS FOR A RANGE OF INVESTMENT OBJECTIVES

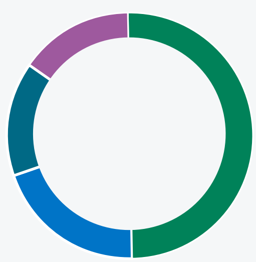
Income & Diversification

Portfolio with low to no corporate equity exposure designed to emphasize yield generation

	Target
Core Private Equity	-
Growth Equity/VC	-
Private Credit	50%
Real Assets	50%
LTCMA Return	8.7%
Volatility	10.0%

Diversified Private Investments

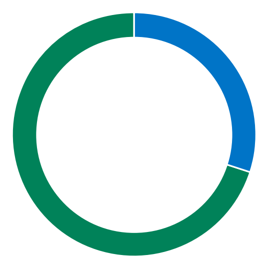
Portfolio with exposure across private equity, private credit, and real assets designed to benefit from capital appreciation and yield



	Target
Core Private Equity	50%
Growth Equity/VC	20%
Private Credit	15%
Real Assets	15%
LTCMA Return	10.6%
Volatility	15.9%

Private Equity & Growth

Portfolio with exposure almost entirely to corporate equity designed to compound at high absolute returns



	Target
Core Private Equity	70%
Growth Equity/VC	30%
Private Credit	-
Real Assets	-
LTCMA Return	11.4%
Volatility	19.7%

Source: J.P. Morgan Asset Management Long-Term Capital Market Assumptions. Data as of 2024. For illustrative purposes only.
Past performance is not indicative of future results.

LTCMA: Long-Term Capital Market Assumptions

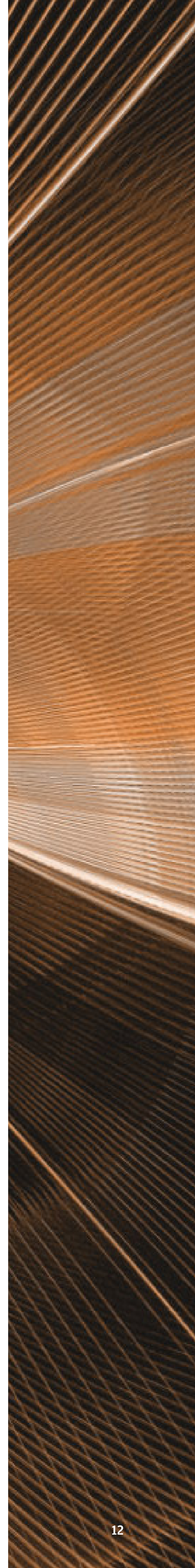
For clients who prioritize income and diversification, we may recommend an alternative portfolio with very low or zero corporate equity exposure. This portfolio is anchored in private credit and real assets.

Some clients—those with a higher risk tolerance or ambitious growth objectives—may choose more equity exposure in exchange for potential higher compounded returns. These alternative portfolios are generally weighted toward private equity growth equity and venture capital.

The example on the next page shows our asset allocation recommendations to one institution, made with the goals of improving long-term risk-adjusted returns, safeguarding the real value of their endowment, and diversifying their capital growth and income stream (Exhibit 7).

The client is a foundation, more than a century old, which had for its entire existence invested in a traditional mix of assets, largely stocks and bonds (shown in the "Current" column). Our proposed allocation improved the portfolio's long-term return assumption while also reducing risk as measured by the Sharpe ratio.

This proposal, supported by historic risk and return analysis and asset class projections, demonstrated that the real value of the foundation could be safeguarded while allowing it to meet its grantmaking goals, empowering the trustees to adopt this strategy.



Case Study: Improving return potential and decreasing volatility for a historic endowment

EXHIBIT 7: CURRENT AND PROPOSED ASSET ALLOCATIONS FOR A CLIENT ENDOWMENT

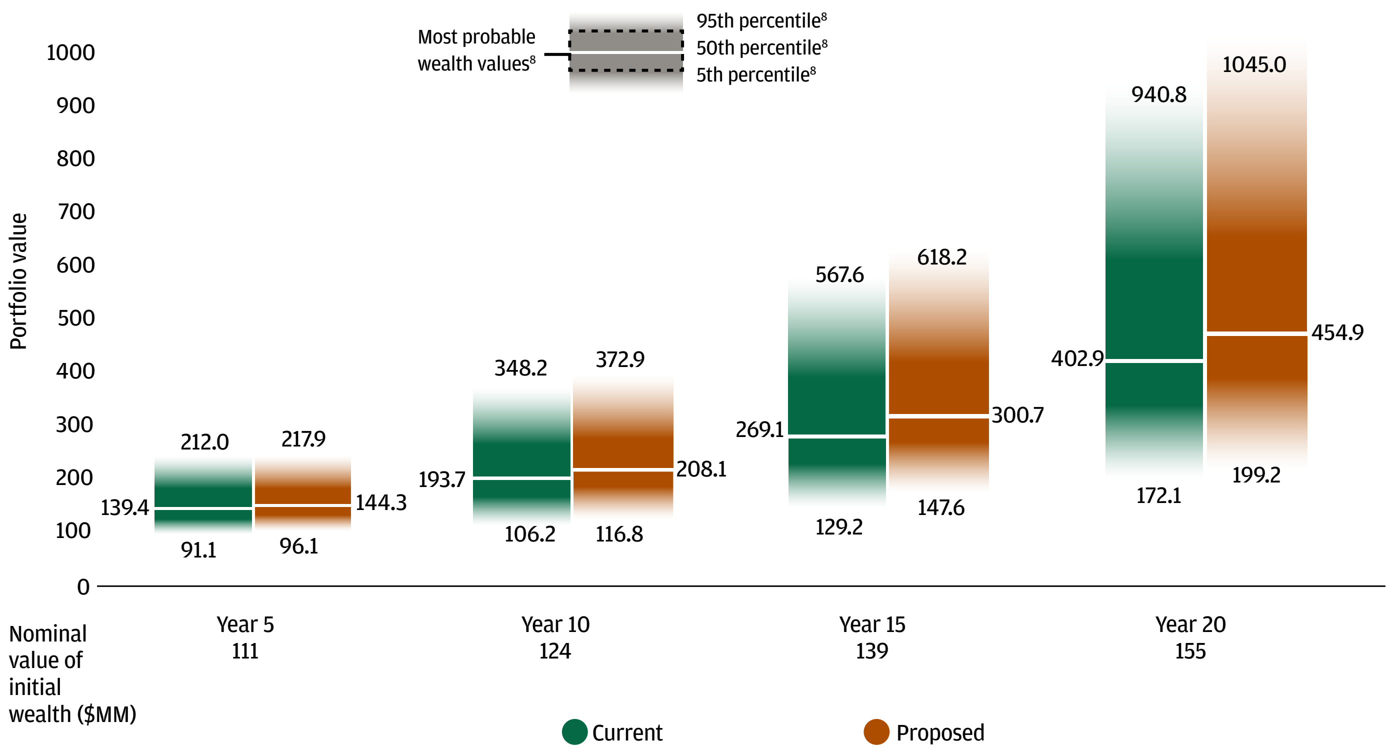
Summary Assumptions (based on 2024 USD LTCMAs)	**Current**	**Proposed**
Long-Term Compound Return	7.2%	8.0%
Long-Term Volatility	12.4%	12.2%
Long-Term Yield	2.3%	2.5%
Long-Term Sharpe Ratio	41.0%	47.0%
Equities	70.0%	37.5%
Developed World Equity	70.0%	37.5%
Alternatives	17.5%	50.0%
Hedge Funds	7.0%	5.0%
Private Equity	0.0%	20.0%
Private Credit	0.0%	7.0%
Global Real Estate	0.0%	6.0%
U.K. Real Estate	9.0%	0.0%
Global Infrastructure	0.0%	7.0%
Global Transport	0.0%	3.0%
Global Timberland	0.0%	2.0%
Gold	1.5%	0.0%
Fixed Income/Cash	12.5%	12.5%
Global Aggregate Bonds	3.5%	12.5%
U.S. Government Bonds	3.0%	0.0%
U.K. Gilts	2.0%	0.0%
U.K. Investment Grade Bonds	1.0%	0.0%
U.K. Cash	3.0%	0.0%

Source: J.P. Morgan Private Bank. Data as of 2024.

Each scenario will produce different potential wealth values over time:

Assumptions: Initial value = $100MM = 2.2%; no spending; tax exempt

Range of projected wealth values[7]



Source: J.P. Morgan Private Bank. Data as of 2024.[9]

IMPORTANT: The projections or other information generated by the Morgan Asset Projection System ("MAPS") regarding the likelihood of various investment of 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 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.

[7] Calculations based upon assumptions listed. For allocation details, see asset allocation page.

[8] "Most probable wealth values," denoted by the darkly shaded area, indicates the range in and around the 50th percentile. The "50th percentile" indicates the middle wealth versus 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 percentile* wealth value indicates that 5% of the probable wealth values will be equal to or below that number.

[9] Summary Assumptions are for informational purposes only and calculated based on the firm's annual Capital Market Assumptions to reflect blended summary allocation statistics weighted by asset class. The Summary Assumptions for return represent the pre-tax average of the Monte Carlo return simulations for the relevant asset classes. These Summary Assumptions are not a guarantee, prediction or projection of future results; rather, they explain the assumptions used to create the Wealth Projection ranges in the pages that follow. All statistics are pre-tax. See "J.P. Morgan's forward-looking long-term assumptions" and "Understanding Long-Term Estimates" for additional assumptions.

These are J.P. Morgan Strategic Model Allocations and are presented for illustrative purposes only. Your actual portfolio will be constructed based upon investments for which you are eligible and based upon your personal investment requirements and circumstances. Consult your advisor regarding the minimum asset size necessary to fully implement these allocations.

EAFE: Europe, Australasia, Far East.

Estimates of a concentrated stock's volatility and yield are based upon a multi-factor model and the volatility is scaled to J.P. Morgan's Capital Market Assumptions. Estimates of a stock's return incorporate our estimated beta coefficients for the stock and J.P. Morgan's Capital Market Assumptions. Information herein is believed to be reliable but J.P. Morgan does not warrant its completeness or accuracy. The analysis herein is based on our estimates and is for illustrative purposes only. Furthermore, the material is incomplete without reference to, and should be viewed in conjunction with, the verbal briefing provided by J.P. Morgan.

J.P. Morgan offers specialized financial services through legal entities licensed for specific activities. The type of account you open, your investment objectives, and other factors will ultimately determine the range of products and services of which you can avail yourself. Not all accounts or services can provide a strategic investment plan.

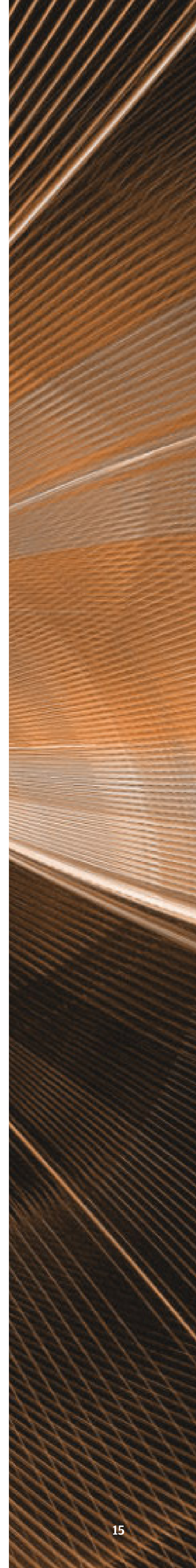
05

Vintage year and manager count: Optimizing the portfolio profile

While diversification by strategy provides broad diversification, we urge investors to consider other forms of diversification as well.

Diversification across vintage years—the year in which a fund makes its first investment—is one of the most important forms of diversification. Each vintage year presents managers with unique market conditions, including interest rates, regulatory environments and competitive landscapes. Diversifying across vintage years reduces the risk associated with any single year. It also increases investors' abilities to access the highest quality deals and managers, which may be abundant in one year and scarce in another.

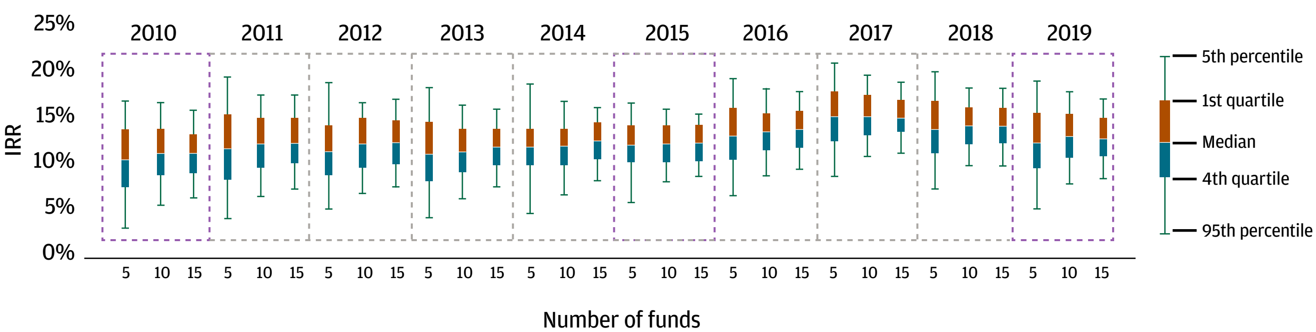
We also recommend investors consider diversification within vintage years, rather than relying on a small number of flagship investments in each year. Our models show that the number of funds within a portfolio is a crucial risk mitigator. By running Monte Carlo simulations, we can test the impact of the number of funds in a portfolio without altering the weight of any particular investment strategy.



Below, we see that as the number of funds increases, the range of potential returns narrows, through the effect of diversification. While the upside potential may decrease, the downside potential decreases more (Exhibit 8).

Diversification within vintage years limits downside potential

EXHIBIT 8: EFFECTS OF DIVERSIFICATION ON DISPERSION OF IRR WITHIN VINTAGE YEARS



Source: Burgiss. Data as of June 30, 2024.

FOR DISCUSSION PURPOSES ONLY. Past performance is not indicative of future results.

Increasing the number of funds from five to 10 or to 15 for each vintage year reduces the dispersion of performance. While the number of funds in any portfolio depends upon the client's appetite for risk, we recommend at least 10 to 15 fund investments per vintage year across strategies.

Estimating the pace of investment necessary to fund a private equity portfolio is challenging due to the unpredictability of capital calls, which depend on variable factors such as market conditions, investment cycle variability and fund strategy. Additionally, fund managers' discretion and the need for portfolio diversification add complexity, making it difficult for clients to accurately predict cash flows. J.P. Morgan has developed a proprietary tool that projects ranges of client commitments required to achieve private investment allocation targets as a share of total portfolio allocations, while supporting and proposing vintage year diversification.

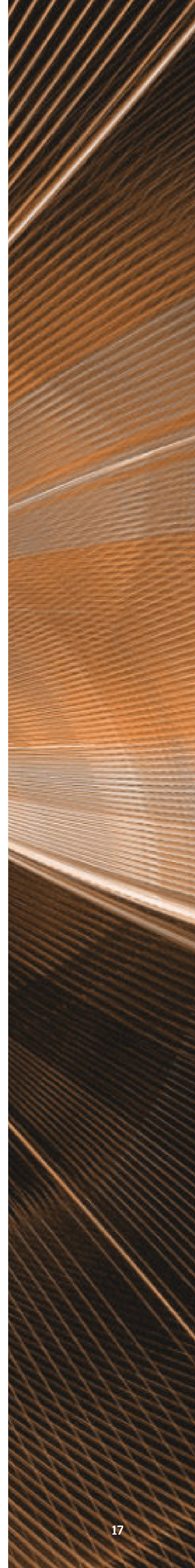
06

Funding an alternatives portfolio

Funding an alternatives portfolio must be a careful and strategic process. Our in-depth analytic capabilities and decades of experience can help guide the proper funding of an alternatives portfolio by drawing on the appropriate assets in the liquid portfolio at the appropriate time.

Private equity, often the core of an alternatives portfolio, can often be funded with public equity. Many investors choose to fund first from their small cap allocations, as these assets have investment characteristics most similar to private equity.

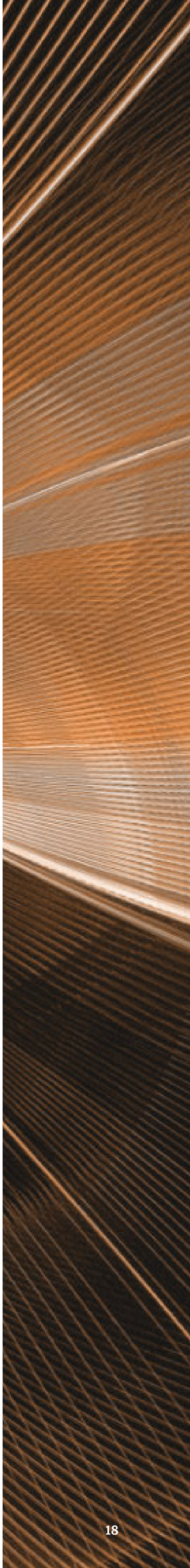
Private credit can first be funded from high yield or extended credit, if those investments are available. A portfolio of real assets can often be funded from the diversified liquid portfolio, since the growth and income characteristics of the two portfolios will be similar.



We can help

Whether you're considering investments into alternatives for the first time or are looking for expertise and counsel on an existing private investment portfolio, J.P. Morgan has the experience, tools and professionals to set you up for success.

We can talk you through the optimal sizing and allocation of your alternatives portfolio, construct model portfolios, access exclusive investment opportunities and manage the pacing of your investments. To get started, contact your J.P. Morgan team.



JPMAM Long-Term Capital Market Assumptions

Given the complex risk-reward trade-offs involved, we advise clients to rely on judgment as well as quantitative optimization approaches in setting strategic allocations. Please note that all information shown is based on qualitative analysis. Exclusive reliance on the above is not advised. This information is not intended as a recommendation to invest in any particular asset class or strategy or as a promise of future performance. Note that these asset class and strategy assumptions are passive only —they do not consider the impact of active management. References to future returns are not promises or even estimates of actual returns a client portfolio may achieve. Assumptions, opinions and estimates are provided for illustrative purposes only. They should not be relied upon as recommendations 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. We believe the information provided here is reliable, but do not warrant its accuracy or completeness. This material has been prepared for information purposes only and is not intended to provide, and should not be relied on for, accounting, legal or tax advice. The outputs of the assumptions are provided for illustration/discussion purposes only and are subject to significant limitations.

"Expected" or "alpha" return estimates are subject to uncertainty and error. For example, changes in the historical data from which it is estimated will result in different implications for asset class returns. Expected returns for each asset class are conditional on an economic scenario; actual returns in the event the scenario comes to pass could be higher or lower, as they have been in the past, so an investor should not expect to achieve returns similar to the outputs shown herein. References to future returns for either asset allocation strategies or asset classes are not promises of actual returns a client portfolio may achieve. Because of the inherent limitations of all models, potential investors should not rely exclusively on the model when making a decision. 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 portfolio. Unlike actual portfolio outcomes, the model outcomes do not reflect actual trading, liquidity constraints, fees, expenses, taxes and other factors that could impact the future returns. The model assumptions are passive only—they do not consider the impact of active management. A manager's ability to achieve similar outcomes is subject to risk factors over which the manager may have no or limited control.

The views contained herein are not to be taken as advice or a recommendation to buy or sell any investment in any jurisdiction, nor is it a commitment from J.P. Morgan Asset Management or any of its subsidiaries to participate in any of the transactions mentioned herein. Any forecasts, figures, opinions or investment techniques and strategies set out are for information purposes only, based on certain assumptions and current market conditions and are subject to change without prior notice. All information presented herein is considered to be accurate at the time of production. This material does not contain sufficient information to support an investment decision and it should not be relied upon by you in evaluating the merits of investing in any securities or products. In addition, users should make an independent assessment of the legal, regulatory, tax, credit and accounting implications and determine, together with their own financial professional, if any investment mentioned herein is believed to be appropriate to their personal goals. Investors should ensure that they obtain all available relevant information before making any investment. It should be noted that investment involves risks, the value of investments and the income from them may fluctuate in accordance with market conditions and taxation agreements and investors may not get back the full amount invested. Both past performance and yield are not a reliable indicator of current and future results.

Real assets have a low correlation with traditional assets. Some, such as real estate, energy infrastructure and transportation, tend to generate steady cash flow and protect (insulate) against inflation. Because they provide essential services, they may be more resilient in downturns. Others, such as agricultural land and trees, may produce income via carbon credits.

Understanding Long-Term Estimates

Our investment management research incorporates our proprietary projections of the 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 cyclical levels and our estimated cycle neutral levels. The "cycle neutral" level shows the average around which a market or macroeconomic variable such as yield or credit spread will be over several cycles, 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 revenue and margin growth, dividend yield and buybacks, and change in valuations. The building blocks for fixed income consist of our projections for inflation, real interest rates, yield curve and credit spreads. Alternatives include both real assets and financial assets. While real assets estimates are driven by projections of income, expenditure, cashflow growth and exit yield, financial Assets estimates are driven by historical alpha trends and judgment about their relationship to public markets. It is possible—indeed, probable—that actual returns will vary considerably from this, even for a number of years. But we believe that market returns will at some point return to the cycle neutral trend. We further believe that these kinds of forward-looking assessments are more accurate than historical trends in estimating what asset class future performance will be, and how best to determine an optimal asset mix.

In reviewing this material, please understand that all references to 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.

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Further information on these and other investment products and asset classes can be found HERE.

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As a general matter, we prefer J.P. Morgan managed strategies. We expect the proportion of J.P. Morgan managed strategies will be high (in fact, up to 100 percent) in strategies such as, for example, cash and high-quality fixed income, subject to applicable law and any account-specific considerations.

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