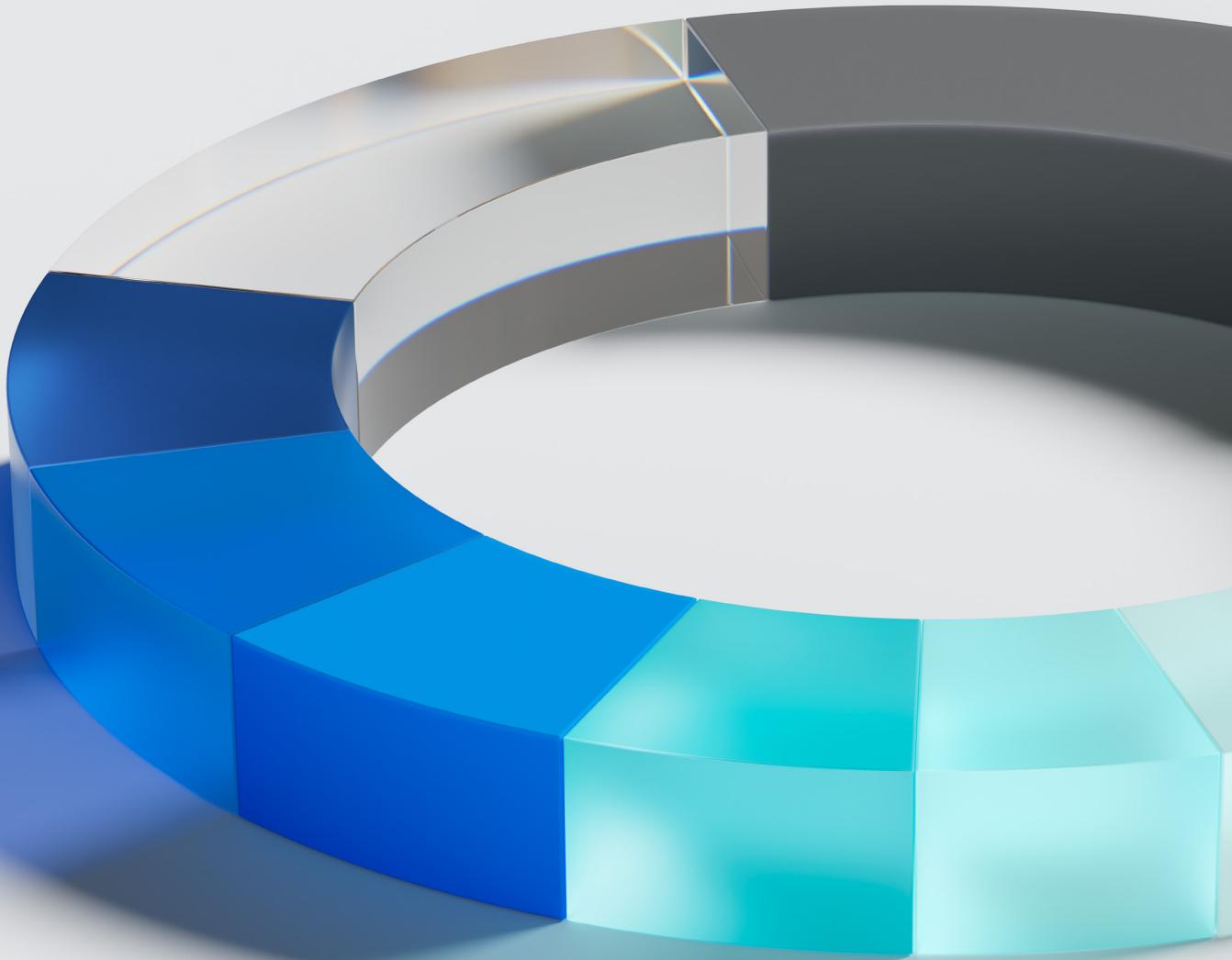


29<sup>th</sup> annual edition

# 2025 Long-Term Capital Market Assumptions

Time-tested projections to build stronger portfolios





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## Foreword



A new economic era is emerging. As we move past a period of low capital investment and low growth rates, we see many reasons for optimism. First, we anticipate stronger economic growth that will support corporate earnings and equity returns. We expect solid investment by governments and businesses, and generally higher interest rates that should strengthen fixed income's role in portfolios. Despite the often alarming headlines, we forecast that the global economy will be one of the strongest in years, providing a healthy foundation for asset markets.

With these factors in mind, we are pleased to launch the 2025 edition of J.P. Morgan Asset Management's Long-Term Capital Market Assumptions (LTCMAs), now in its 29th year. We've assembled the expertise of more than 100 industry-leading portfolio managers, research analysts and strategists worldwide to provide return and risk expectations for more than 200 assets and strategies in 19 base currencies. They also offer strategic perspectives on risks, from geopolitical conflict to rising deficits and economic nationalism. Many investors and advisors have come to rely on these assumptions to set their strategic asset allocation and to establish reasonable risk and return expectations for the coming 10 to 15 years.

It is important to note that while our LTCMAs are driven by return expectations for indices or median managers, we believe there are a number of opportunities to outperform, particularly through active management and security selection. At J.P. Morgan Asset Management, we leverage our deep research capabilities to gain an information advantage, identify market inefficiencies and exploit opportunities so that we have the potential to outperform these capital market assumptions and deliver more value for our clients.

We hope the LTCMAs serve you well as you set, and achieve, long-term investment goals and build smarter, more resilient portfolios.

On behalf of everyone at J.P. Morgan Asset Management, I look forward to continuing to have the opportunity to work with you. Thank you for the trust you put in us.

As always, we welcome your feedback.

A handwritten signature in black ink, appearing to read "G. Gatch".

**George Gatch**  
Chief Executive Officer  
Asset Management



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## Contents

3 Foreword

---

6 Executive summary

Higher starting points, healthier foundations

---

### I Assumption articles

20 Macroeconomic assumptions

Improved prospects for stronger growth and lower inflation

---

29 Public market assumptions

Higher growth, higher rates - and solid returns

---

40 Private market and alternative asset assumptions

Strong foundations for an era of rising alpha

---

52 Volatility, correlation and portfolio implications

No time for autopilot: Charting a path to resilient portfolios

---

### II Assumption matrices

64 U.S. dollar

2025 estimates and correlations

---

66 Euro

2025 estimates and correlations

---

68 Sterling

2025 estimates and correlations

---

### III Appendix

72 Acknowledgments

---

74 Glossary

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## Executive summary

# Higher starting points, healthier foundations

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### In brief

- We publish the 29th edition of our Long-Term Capital Market Assumptions (LTCMAs) as a new economic era comes into focus. Gone is the low investment, low growth and low interest rate world of the 2010s. In its place is a healthier economy set to deliver higher growth, strong capital investment trends and higher interest rates.
- Higher policy rates reinforce strong projected bond returns, while higher growth underpins equity returns. Our return projection of 6.4% for a USD global 60/40 stock-bond portfolio dips 60 basis points (bps) from last year – a forecast that is in line with the long-run average. Alternatives are emerging from a period of asset markdowns and offer compelling returns and diversification options.
- Governments have shifted from austerity toward fiscal activism. For this shift to boost real growth without merely fueling inflation will require investments that stimulate supply rather than simply stoke demand. Avoiding risks from higher inflation may also require labor market reform and thoughtful migration policies. In any case, elevated bond market and currency volatility seem inevitable.
- An increase in tendencies toward economic nationalism – despite stopping short of deglobalization – means our estimate of inflation volatility remains elevated and underscores the utility of assets with positive gearing to inflation, such as commodities and real assets.
- In the coming decade, the benefits of artificial intelligence (AI) and automation will accrue increasingly to the wider economy and likely support corporate earnings. We now project a 20bps annual boost to developed market growth from AI – a potentially conservative estimate. Ultimately, we expect AI to improve total factor productivity, putting downside pressure on inflation.
- Investors will need to manage a range of risks, not least from the geopolitical tensions that currently dominate headlines. But overall, our 2025 LTCMAs offer an optimistic outlook. As investment levels pick up and rates normalize, a healthy – even buoyant – economy will emerge, providing a strong foundation for asset markets.

The publication of the 29th edition of our Long-Term Capital Market Assumptions (LTCMAs) comes at a time when some of the forces that drove volatility in recent years are abating. Both the lasting influence of those forces and their impact on the topography of the economy and asset markets are becoming clearer.

We anticipate that the next 10 to 15 years will be characterized by higher fiscal spending, high capital investment and higher neutral cash rates, but also by higher growth. Expected returns remain elevated by historical standards, and we believe that the global economy today is healthier than it was for much of the last decade. Our trend nominal growth projections for the G7 economies underscore that view: They rise for the fifth consecutive year, from a multi-year low point of 3.1% in 2020 to 3.9% in our 2025 forecasts (**Exhibit 1A**).

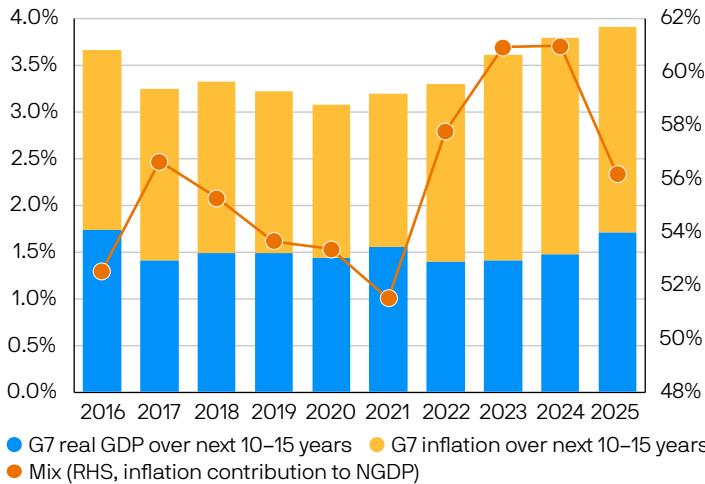
True, risks exist. Stubbornly elevated deficits, increasing geopolitical tensions, income inequality and a rising tendency to economic nationalism all pose threats to our outlook. Still, we believe that the structural investment in productive assets over our forecast horizon marks a decisive and positive shift from the low investment, low growth and low interest rate world of the 2010s.

The 17% rally in world equities in the first three quarters of 2024<sup>1</sup> inevitably creates a higher (and thus more challenging) starting point for the valuation of stocks and many financial alternatives. But the promise of improved productivity driven by automation and artificial intelligence (AI), as well as the tailwind from capital deepening,<sup>2</sup> offset that valuation pressure with a positive boost to growth.

Higher growth means higher cycle-neutral<sup>3</sup> cash rates, which in turn support fixed income returns. Combined with equities, this translates to a return forecast of 6.4% for a USD 60/40 global stock-bond portfolio – a dip of 60bps from last year. Given that a naive mark-to-market of last year's 60/40 return forecast would have slashed our forecast by well over 100bps,<sup>4</sup> investors in balanced portfolios look to be well placed to capture the rewards of the improving economic landscape (**Exhibit 1B**).

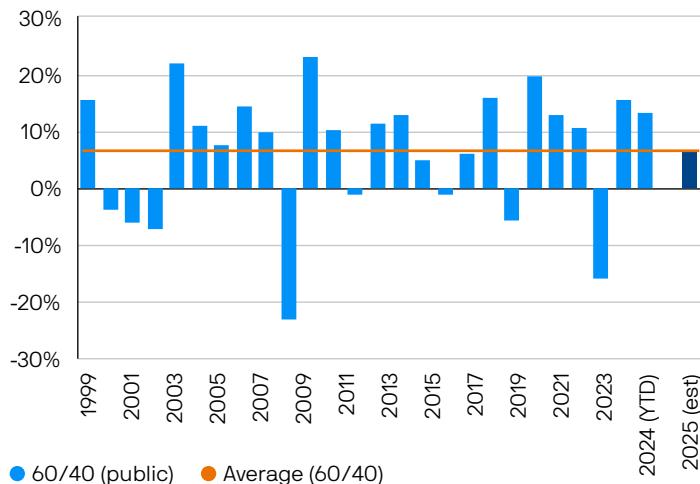
## Developed market growth prospects continue to improve; returns remain reasonable even after strong gains in 2024

**Exhibit 1A: LTCMA growth projections over last decade**



Source: IMF World Economic Outlook, J.P. Morgan Asset Management; data as of September 2024.

**Exhibit 1B: 60/40 vs. long-term history**



Source: Bloomberg, J.P. Morgan Asset Management; data as of September 30, 2024.

<sup>1</sup> This reflects the MSCI ACWI index return from December 31, 2023 to September 30, 2024.

<sup>2</sup> Increasing the amount of capital per worker in the economy.

<sup>3</sup> Cycle-neutral: The average level of a key parameter (yield or spread) that we assume prevails after an initial period of normalization.

<sup>4</sup> ACWI forecasts are 70bps lower this year, comprising a 150bps hit from cyclical factors (given the equity rally), offset by an 80bps boost to cycle neutral returns from improved margin and terminal valuation estimates; U.S. aggregate bond forecasts are 50bps lower.

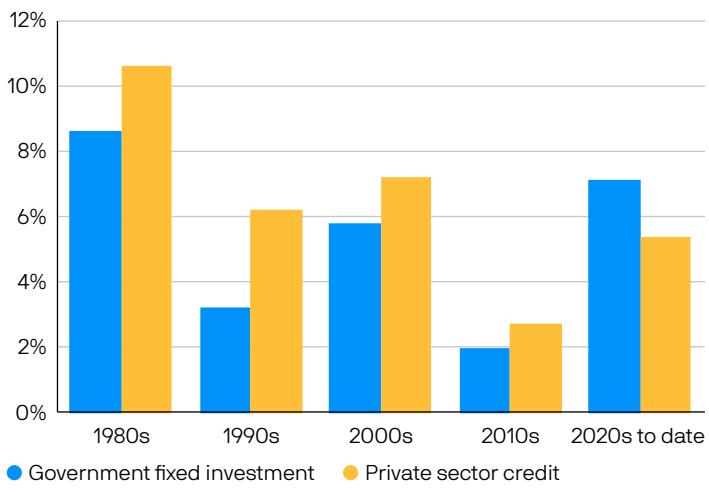
## Strong capital investment supports nominal growth

The pandemic, the energy crisis and opportunities surrounding new technologies such as AI have revitalized both businesses' and governments' desire to invest.

This marks a stark turnaround from the defining feature of the pre-pandemic decade – a chronic lack of spending, particularly on public sector investment. It was a classic case of the paradox of thrift<sup>5</sup> (Exhibit 2).

### The post-global financial crisis deleveraging is behind us

**Exhibit 2: Average annual growth in private sector credit and government fixed investment**



Source: Federal Reserve, LSEG Datastream, J.P. Morgan Asset Management; data as of September 26, 2024.

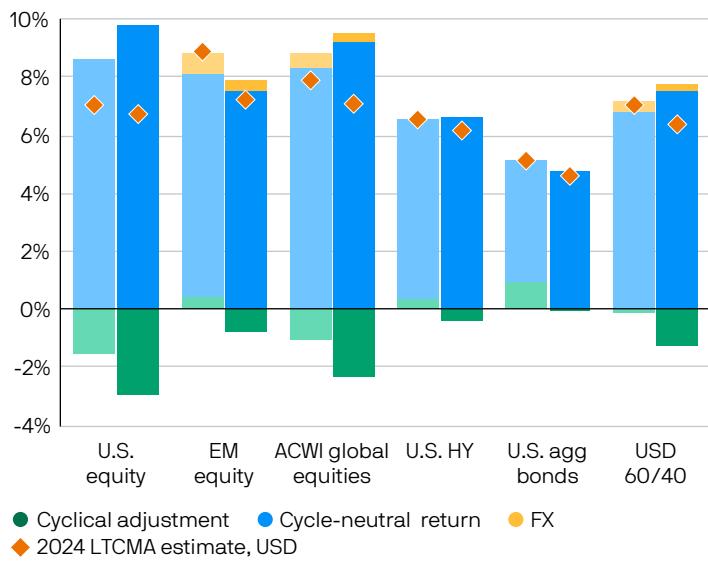
During the 2010s, central banks' monetary activism (aggressive monetary policy) tried to stimulate spending, but policymakers struggled to overcome the powerful forces driving a desire to save. Ever-expanding unconventional monetary policies and a large rise in the monetary base failed to deliver the inflation many market participants had feared, appearing instead to fuel certain asset prices. This widened inequality, contributing to a more febrile political environment.

The pandemic forced governments to take a new route. The Covid crisis demanded massive levels of spending, initially to support short-term household and business incomes, then, increasingly, to address national vulnerabilities that were exposed by the dependence on global supply chains and exacerbated by Russia's invasion of Ukraine and the global energy crisis.

We believe that the outlook for more normal, positive levels of fiscal spending, together with strong private capital investment, set the tone for a more optimistic asset return environment (Exhibit 3).

### Return drivers for key assets reveal some cyclical headwinds

**Exhibit 3: Cyclical and cycle-neutral return drivers for USD asset forecasts from 2024 to 2025**



Source: J.P. Morgan Asset Management Multi-Asset Solutions; data as of September 2024.

\* Faded columns = 2024 estimates; bold columns = 2025 estimates.  
USD 60/40 refers to a portfolio of MSCI ACWI Equity and Bloomberg US Aggregate.

During the pandemic, self-interest made governments increasingly willing to invest. Even prior to the pandemic, populations across developed nations had clearly grown weary of fiscal austerity and the low real wage growth associated with a lack of investment.

The implications of this shift could be significant. Investment in supply chains, resulting from national self-interest, risks some form of dead-weight loss. In theory, at least, moving away from Ricardian<sup>6</sup> efficiency is suboptimal for economic growth over the longer term, as trade tends to increase competition and productivity. In practice, however, frictions in the supply chain in response to shocks and geopolitics may make decisions over "near-sourcing" or latency in the supply chain more rational. Still, the line between supply chain safeguards and economic protectionism remains narrow.

<sup>5</sup> The paradox of thrift describes a situation in which individuals acting individually to repair their own balance sheets fail to see improvements because other individuals act similarly, and the result is weaker growth and lower aggregate demand.

<sup>6</sup> Ricardian efficiency: From 18th-century economist David Ricardo, who proposed that countries focus their productive capacity on goods where they have a competitive advantage.

Investments in domestic infrastructure, security, energy and the supply chain are responses to past weaknesses. Investments in new technology – notably AI, automation, robotics and therapeutics for chronic health conditions – are responses to current opportunities. Whether these investments increase labor productivity, lower manufacturing unit costs or enhance human capital, they offer the potential to strengthen the economy.

Of these investments, AI is both the most far-reaching and the most accessible over our 10- to 15-year forecast horizon. We add a further 10bps boost to our growth forecasts this year to account for the impact of AI, bringing our estimate of the annual GDP impact of AI<sup>7</sup> over our forecast horizon to +20bps for developed markets and +10bps for emerging markets. To be clear, this number may significantly underestimate the true impact of this technology as it becomes fully embedded in the wider economy.

Simply put, investment is happening across the economy and is driving up nominal growth. Investors will see this manifest first in monetary policy: Rates that initially went up due to inflation are likely to stay higher due to growth.

## Fiscal activism – increased government investment as austerity is off the agenda

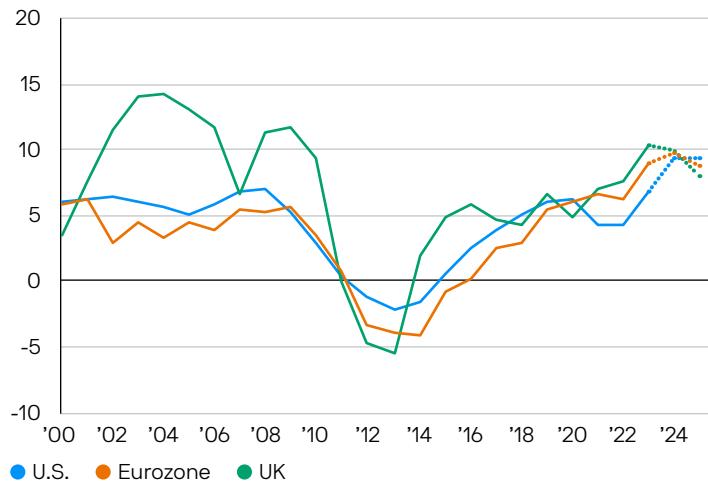
Our expectation of ongoing fiscal activism may seem at odds with government debt levels that are even higher than they were post financial crisis. However, in our view, a return to austerity seems politically unfeasible.

Governments are seeing greater demands for both capital spending (**Exhibit 4**) and the day-to-day spending needs that are associated with an aging population. How governments prioritize spending requests will be critical; focusing resources on building productive capital will be key. Higher investment, particularly higher fiscal spending, carries the risk of capital misallocation. That is, demand increases without creating productive assets, thus generating topside risk to inflation in the short run and boosting inflation volatility over the medium term.

Spending on supply chain resilience, local sourcing and national defense requires a fine line between judicious investment and excesses that embed inflation. By contrast, investments in electrification, sustainable energy grids and incorporating AI into the economy can potentially boost productive capacity in the long run.

**Government investment is expected to stay at elevated levels, a stark contrast to the pre-global financial crisis period**

Exhibit 4: % change year-on-year, 3-year moving average



Source: Deutsche Bundesbank, INE, INSEE, ISTAT, LSEG Datastream, OECD, J.P. Morgan Asset Management; data as of June 27, 2024. Chart shows a smoothed measure of government gross fixed capital formation. Forecast is OECD. Eurozone is GDP-weighted average of France, Germany, Italy and Spain.

Improving real growth – not merely fueling higher inflation – will require investments that stimulate supply rather than purely boost demand. Investments targeted to also improve labor productivity over the long run, especially in combination with necessary labor market reform and pragmatic migration policy, can mean that spending drives up real growth instead of merely raising long-run inflation risks.

In any case, fiscal investment must be understood and palatable to international investors to ensure they are willing to buy government bonds and ultimately fund the investment at sensible interest rates. Only time will tell whether governments will be able to withstand political pressure and focus spending on long-term growth enhancements rather than short-term handouts that curry more favor with the electorate.

It is sometimes argued that public investment crowds out private investment. However, we find little evidence of this in the data and would argue that greater willingness of governments to invest is a necessary precondition for a positive momentum in private sector investment.

<sup>7</sup> In last year's LTCMAs, we added a +10bps boost to our developed market (DM) growth forecast attributable to AI. This year, we add a further +10bps boost to DM growth (bringing the total to +20bps) and also add +10bps to the emerging market (EM) growth forecast attributable to AI.

All else equal, the effect of capital deepening adds around 10bps to annual GDP estimates for developed markets. Further out on our 10- to 15-year horizon, some of these investment dollars may boost total factor productivity (TFP), particularly those directed toward AI. We include a modest boost to TFP in developed nations, although this will likely accrue in later years.

Higher nominal growth calls for higher neutral cash rates<sup>8</sup> over our forecast horizon. As fiscal authorities have taken their feet off the economic brakes, monetary authorities do not have to pump the accelerator.

A more balanced monetary and fiscal policy mix will be reflective of, and contribute to, higher nominal growth. Against that backdrop, higher interest rates, which investors have feared for much of the last few years, will be accepted as a positive symptom of stronger, healthier economic momentum.

Our estimate of USD cash returns is 20bps higher this year, pushing the whole asset stack, especially bonds, higher (**Exhibit 5**). Fixed income will once again bolster portfolio returns with more sizable and steady income (**Exhibit 6**).

We note the risk of greater volatility in government bond prices. Higher fiscal spending and a lower need, or willingness, for central banks to engage in quantitative easing (QE) mean the bond market has more capacity to punish fiscal profligacy. In other words, bonds may reclaim their roles as the global economic police force. As Liz Truss, the briefly tenured UK prime minister (September 6 to October 25, 2022) discovered to her cost and UK mortgage holders found to their dismay, the judgment of the bond market can be swift and brutal. If bond markets once again serve as a barometer for fiscal fortitude, this may come at the price of higher volatility.

Although higher interest rates raise the cost of capital, we believe that higher capex firms with a competitive advantage could be rewarded on a secular basis. As we emerge from a period of restrained investment toward, potentially, a capex boom, investing from a position of strength is a net positive – both at a single firm and at an economy-wide level.

## Elevated cash assumptions support return forecasts throughout fixed income

Exhibit 5: Key fixed income returns table (G4 and EMD)

	USD	GBP		EUR		JPY		
	Cycle-neutral rate	2025 Expected return						
Inflation	2.4%		2.2%		2.0%		1.5%	
Cash	2.8%	3.1%	2.5%	2.9%	2.2%	2.4%	1.4%	1.1%
10-year bond	3.9%	4.2%	3.4%	4.2%	3.1%	3.3%	2.1%	1.4%
Long Bond Index*	4.2%	4.3%	3.5%	5.0%	3.3%	3.3%	2.1%	1.4%
Investment grade credit	5.3%	5.0%	5.0%	5.2%	4.3%	3.8%	2.6%	1.9%
High yield	8.2%	6.1%			6.7%	5.3%		
Emerging market debt**	7.3%	5.8%						

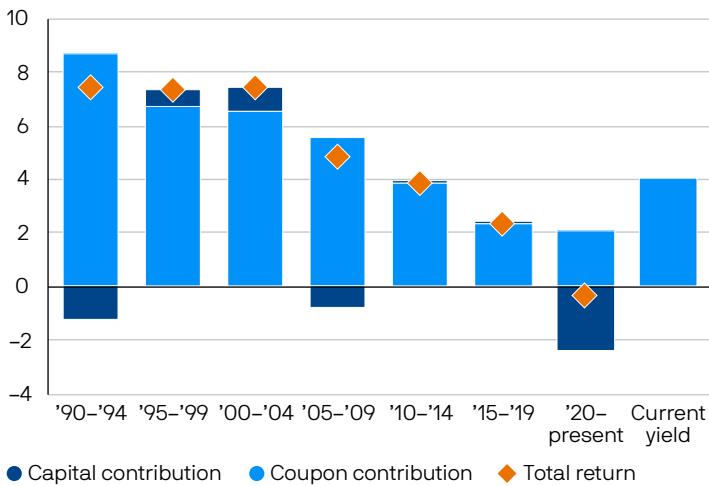
Source: J.P. Morgan Asset Management; estimates as of September 30, 2024.

\* EUR: 15y+ index; JPY: JGB Bond Index; GBP: 15y+ index; USD: 20y+ index. \*\* EMD hard currency debt.

<sup>8</sup> R\* is the neutral rate of interest that equilibrates the economy in the long run. It is the real interest rate that is neither expansionary nor contractionary when the economy is at full employment. The terminal rate is the final benchmark interest rate at the conclusion of a cycle of rate hikes or cuts by a central bank. During hiking and cutting cycles, market participants often try to gauge the terminal rate and pay close attention to that rate as projected by policymakers. The cycle neutral rate is the average level of a key parameter (yields or spreads) that we assume prevails after an initial period of normalization.

**Periods with higher cash rates coincide with higher bond coupons, which are, on average, superior to price return**

Exhibit 6: Average contribution to U.S. Treasury returns



Source: Bloomberg, J.P.Morgan Asset Management; data as of September 2024.

## A tendency toward economic nationalism

While acknowledging the human toll of the pandemic and the invasion of Ukraine, we take a relatively positive view of the economic contours that have emerged in their wake. Our tempered optimism may seem incongruous against some of the negative commentary surrounding the idea of deglobalization.

We acknowledge that the trend toward greater economic nationalism has resulted in the emergence of a multi-polar world<sup>9</sup> with more fragmented trading blocs, but we reject the notion of deglobalization often cited in financial media. Even with a desire to shore up supply chain frailties post pandemic, certain economic realities overwhelm the deglobalization political narrative. Countries cannot simply reverse much of the trade they do. The U.S. still buys lots of semiconductor chips from Asia, Nordic countries still get most of their bananas from sunnier climes, and the Democratic Republic of the Congo remains the world's principal supplier of cobalt.

Fierce proponents of economic nationalism often fail to grasp the paradox that achieving it fully would require a huge and immediate jump in demand for skills and materials to build local capacity, necessitating a sharp near-term rise in migration and trade.

Much of the recent trend toward economic nationalism is of a less sinister variety, focusing on strategic planning and national resilience. However, there is a risk that economic nationalism morphs into overt protectionism, which is more acutely inflationary and can disrupt asset markets through trade wars and tariffs.

We capture the impact of economic nationalism on inflation by maintaining an expectation for elevated inflation volatility over our forecast horizon. High inflation volatility highlights the importance of holding assets with positive gearing to inflation as part of a balanced portfolio. Increased demand for commodities from rising capex already supports returns, and we expect the broad commodities index to outperform inflation by 140bps, on average, over our forecast horizon. Real asset returns reflect impairments with an attractive entry yield, and their resilience to inflation further enhances their appeal, in our view (**Exhibit 7**).

<sup>9</sup> David Kelly, Stephanie Aliaga, Kerry Craig, et al., "Globalization will evolve - but not unravel," 2023 Long-Term Capital Market Assumptions, J.P. Morgan Asset Management, November 30, 2022.

## Real assets are a useful tool to manage inflation risks

Exhibit 7: 2025 LTCMA real asset assumptions  
(Levered\*, net of fees,%)

Real assets	2025	2024
<b>Private real estate equity</b>		
U.S. core	8.1	7.5
U.S. value-added	10.1	9.7
European core	7.6	7.3
European value-added	9.7	9.2
Asia-Pacific core	8.1	8.7
<b>REITs (local currency)</b>		
U.S. REITs	8.0	8.2
European REITs	8.7	9.7
Asis-Pacific REITs	7.8	8.7
Global REITs**	8.0	8.5
<b>Commercial mortgage loans (local currency)</b>		
U.S.	6.4	6.3
<b>Global core infrastructure (USD)</b>		
Core	6.3	6.8
<b>Global transport (USD)</b>		
Core	7.8	7.7
<b>Global timber (USD)</b>		
Global timber	5.3	6.2
<b>Commodities (USD)</b>		
Commodities	3.8	3.8
Gold	4.0	4.1

Source: J.P. Morgan Asset Management; estimates as of September 30, 2023 and September 30, 2024.

\* All return assumptions incorporate leverage, except for commodities, where it does not apply.

\*\* The global composite is built assuming the following weights: roughly 70% U.S., 10% Europe and 20% Asia-Pacific.

As with higher fiscal spending, the impact of economic nationalism depends on both the nature and the speed of change. Where economic nationalism addresses strategic gaps and bolsters resilience, it may boost productive capacity over the cycle. However, if it builds duplication or stymies trade, any near-term “sugar rush” to the economy risks eventually crowding out more productive capital and sparking more frequent bouts of inflation volatility.

## The promise of AI and automation

A tangible consequence of economic nationalism is a focus on national security interests. Given the growing dominance of the information economy and persistent threats of cyberattacks, businesses and governments increasingly view data and technology as strategic assets. This has allowed some “big tech”<sup>10</sup> firms to operate almost as tolerated monopolies – a situation that, despite growing scrutiny from legislators, may persist for some time yet. It may partially explain the high weight of technology in some country equity indices and in turn the concentration of U.S. equities in global indices (Exhibit 8). Still, we believe that the widespread potential of AI reinforces the tech sector’s dominance.

The tech boom is still in its early stages, in our view. Over our forecast horizon, we will see the benefits of AI and automation accrue increasingly to the wider economy, not just the tech sector.<sup>11</sup> As we have noted, we see an average 20bps annual boost<sup>12</sup> to developed market growth, and that may be a conservative estimate. Today, the growth impact of AI comes from capital deepening, but we expect it eventually to improve total factor productivity, putting downside pressure on inflation.

Maintaining a technological advantage is a national strategic imperative. We see a risk of an accelerating technology arms race that could further polarize trading blocs. The U.S. and China are rivals, but Europe’s position remains unclear; politically, Europe is more aligned with the U.S., but it maintains important trading relationships with China. India, too, is set to become an important player over our forecast horizon, as its high projected growth rate causes the country to rise in the rankings from the fifth- to the third-biggest economy globally.

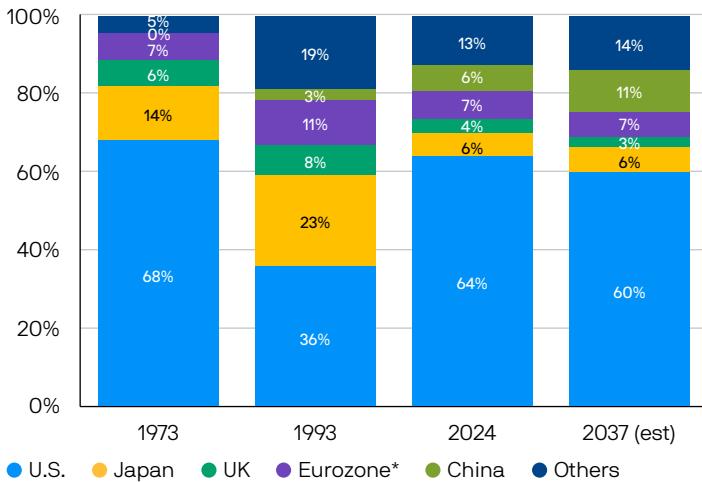
<sup>10</sup> Big tech refers to the largest seven publicly traded technology firms in the U.S.

<sup>11</sup> Stephanie Aliaga and Michael Albrecht, “The transformative power of generative AI,” J.P. Morgan Asset Management, September 20, 2023.

<sup>12</sup> See footnote 7.

## U.S. dominance of global equity market capitalization is high but not unprecedented

**Exhibit 8: Global listed equity country weights at specific historical and forecast points**



Source: SEC, Credit Suisse, McKinsey, MSCI, Bloomberg, Haver Analytics, J.P. Morgan Asset Management Multi-Asset Solutions; data as of February 2024. Past performance is not a reliable indicator of current and future results.

\* Eurozone historical data estimated from summing member states or applying prevailing ratio of reported states to estimate eurozone total where data are incomplete.

The strategic importance of technology, as much as its economic importance, suggests that national champions in the sector will have a moat around them for some time. As a result, we believe tech margins are defendable for years to come, particularly given the sector's relentless focus on innovation, research and development.<sup>13</sup>

As the benefits of technology accrue to the wider economy, we believe the concentration of large tech names in indices will naturally moderate. This is similar to the dilution of index concentration that happened in the 1950s and late '70s when important technologies ultimately boosted earnings across many industries, allowing other sectors to catch up to the trailblazers. Given the diverse activities of big tech firms and their profitability, we do not believe their dominance needs to moderate by them catching down to the wider index, as happened to dot-com firms in 2001 and to the banks in 2008.

The growing benefits of AI and other technologies, including process automation, robotics and miniaturization, will likely support earnings over our forecast horizon. While current broad index-level margins may be moderately higher than sustainable in the long run, we do not see a simple reversion to long-term average margins. The business mix and capital efficiency of firms have changed markedly in the past 25 years. For technology-heavy indices, such as those in the U.S., this offsets elevated valuations and leaves our estimate of U.S. large cap equity returns at 6.7%, only 30bps lower than last year, despite the ongoing equity bull market.

We see equity returns generally lower due to higher starting index levels (**Exhibits 9A and 9B**). Returns in developed markets beyond the U.S. are supported by lower relative valuations and, for USD-based investors, by currency (**Exhibit 10**). However, given that the boost from AI appears set to disproportionately benefit developed economies, the return premium for emerging markets over developed markets all but vanishes this year, falling 100bps to just 10bps in USD terms. This in turn implies that emerging market investors are incentivized to focus on capturing alpha opportunities instead of merely relying on beta.

<sup>13</sup> Our Equities Research team expects hyperscalers to spend cumulatively in excess of USD 1 trillion of capex over the next five years.

## Equity forecasts dip as valuations present a headwind despite a solid earnings outlook

Exhibit 9A: LTCMA forecasts, 2025 vs. 2024, local terms

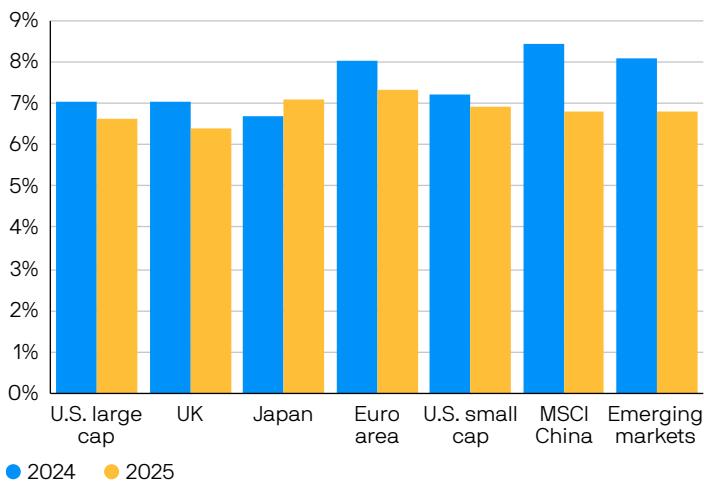
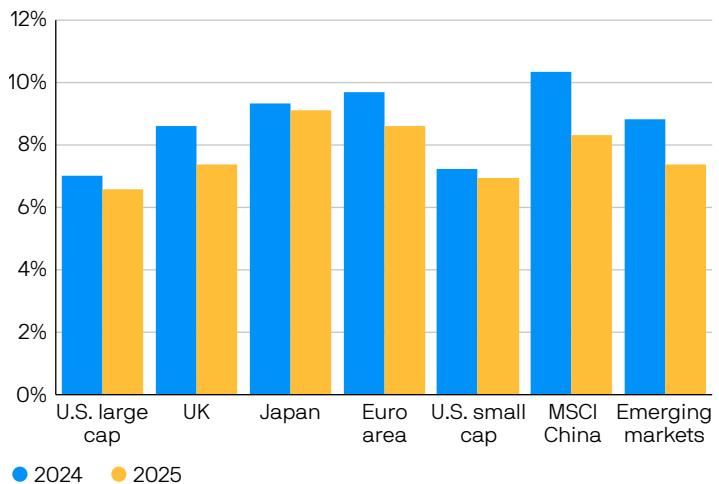


Exhibit 9B: LTCMA forecasts, 2025 vs. 2024, USD terms



Source: Bloomberg, FactSet, J.P. Morgan Asset Management; data as of September 2024.

## USD remains overvalued against most other currencies

Exhibit 10: Key 2025 LTCMA currency assumptions

	Terminal spot forecast (10–15 years out)				
	Current spot	2025	2024	Change	Change %
AUD	0.69	0.71	0.75	0.0	-5.3%
BRL	5.42	6.66	6.88	-0.2	-3.2%
CAD	1.35	1.18	1.15	0.0	2.6%
CHF	0.84	0.76	0.78	0.0	-2.6%
CNY	7.02	6.05	5.77	0.3	4.9%
EUR	1.11	1.29	1.31	0.0	-1.5%
GBP	1.34	1.48	1.49	0.0	-0.7%
JPY	145.64	113.52	108.37	5.1	4.8%
MXN	19.63	28.00	27.49	0.5	1.9%
SEK	10.27	8.41	8.21	0.2	2.4%

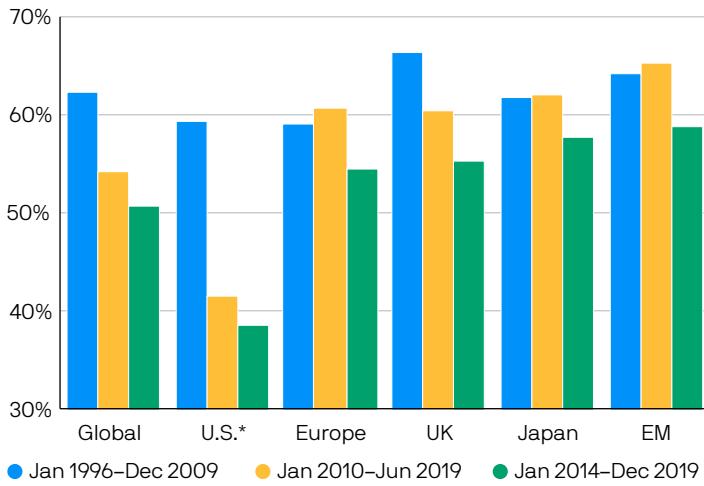
Source: J.P. Morgan Asset Management; estimates as of September 30, 2023 and August 2024.

The combination of strong investment, higher interest rates and major technological advancement is a boon for the economy in aggregate. But winners and losers will emerge among companies and sectors. This creates an environment with greater potential for investors to capture active alpha. Of course, not every manager will capture additional returns, but for skilled managers we believe there is more to play for.

The ability of active managers to take advantage of these opportunities is enhanced by the retreat of unconventional monetary policy. Central bank interventions such as QE had to adhere to the principle of market neutrality. Without the expertise or mandate to pick winners and losers, central banks had to buy indiscriminately. In our view, this weighed upon the relative performance of active managers. Following a “don’t fight the Fed” mantra made it more difficult for them to discriminate among assets. In short, unconventional monetary policy burdened the effective allocation of global capital (**Exhibit 11**).

## The involvement of central banks coincided with a difficult period for active managers

Exhibit 11: % of managers outperforming respective ETF, 1-year basis using monthly data



Source: eVestment, J.P. Morgan Asset Management; data as of 2019.

\* All cap core strategies.

Our private equity (PE) forecasts improve modestly this year, despite lower public equity forecasts, given a positive adjustment to our methodology to better incorporate the impact of leverage on returns. We also make a small (20bps) upgrade to our cap-weighted PE alpha assumptions. This supports median manager returns and reflects the increased focus from sponsors on the operating improvement, and a likely moderate rise in exit multiples. The drag from PE asset markdowns that we had imposed in recent years has faded, but the offsetting pickup in financing costs continues to moderate returns (**Exhibit 12**). In sum, private equity returns increase slightly, and we believe a thawing of the IPO market after two very subdued years will be an important catalyst for future returns.

We also believe that the environment for manager differentiation and alpha continues to improve, giving further upside potential for skilled manager selectors. Hedge fund median manager forecasts this year are generally slightly higher; furthermore, higher cash rates have a meaningful and positive correlation with hedge fund excess returns, which implies a good environment for manager alpha (**Exhibit 13**).

## Median manager forecasts for many financial alternatives improve modestly

Exhibit 12: 2025 LTCMA financial alternative assumptions (Levered\*, net of fees, %)

Financial alternatives	2025	2024
<b>Private equity (USD)**</b>		
Cap-weighted composite	9.9	9.7
Private equity - small cap	10.1	9.7
Private equity - mid cap	9.8	9.5
Private equity - large/mega cap	9.8	9.7
<b>Private debt (USD)</b>		
Direct lending	8.2	8.5
<b>Venture capital (USD)</b>		
Venture capital	8.8	9.2
<b>Hedge funds (USD)</b>		
Equity long bias	5.0	4.7
Event-driven	4.9	5.0
Relative value	5.0	4.9
Macro	3.8	3.6
Diversified†	4.9	5.0
Conservative††	3.4	3.7

Source: J.P. Morgan Asset Management; estimates as of September 30, 2023 and September 30, 2024.

\* All return assumptions incorporate leverage, except for commodities, where it does not apply.

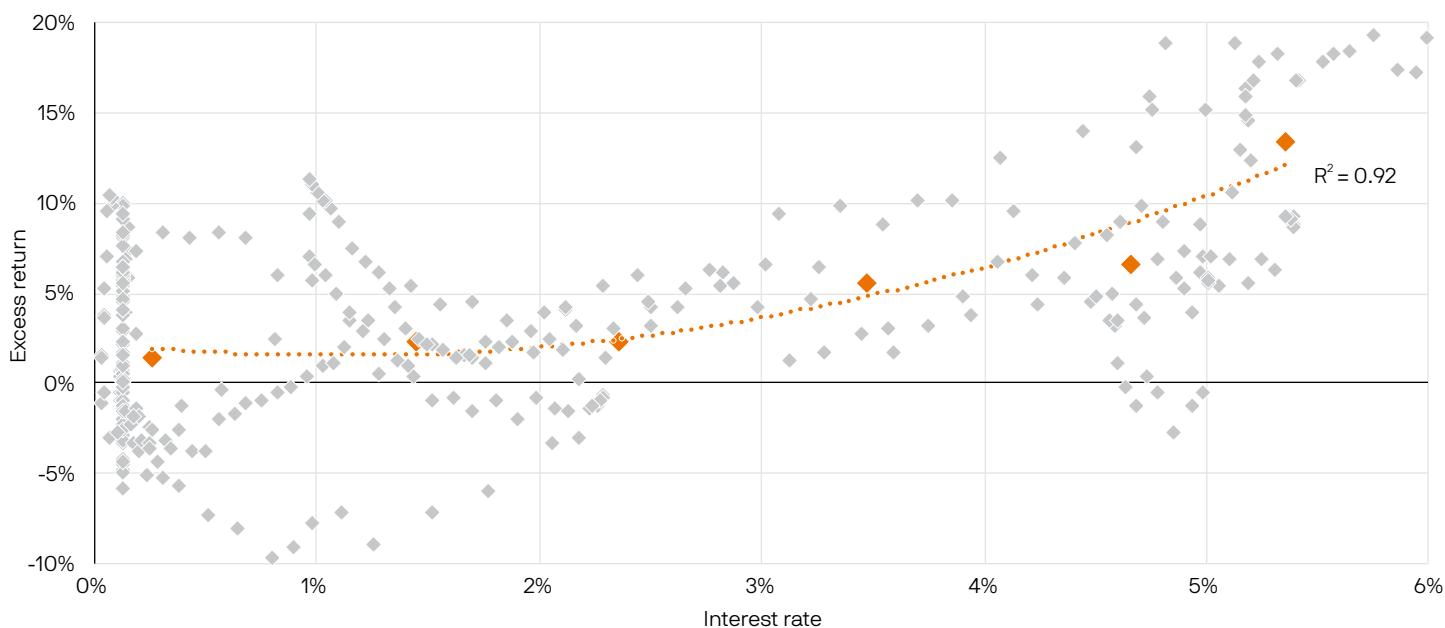
\*\* The private equity composite is AUM-weighted: 65% large cap and mega cap, 25% mid cap and 10% small cap. Capitalization size categories refer to the size of the asset pool, which has a direct correlation to the size of companies acquired, except in the case of mega cap.

† The Diversified assumption represents the projected return for multi-strategy hedge funds.

†† The Conservative assumption represents the projected return for multi-strategy hedge funds that seek to achieve consistent returns and low overall portfolio volatility by primarily investing in lower volatility strategies such as equity market neutral and fixed income arbitrage. The 2024 Conservative assumption uses a 0.70 beta to Diversified.

## Higher rates are correlated to higher hedge fund excess returns

Exhibit 13: Hedge fund excess return (over equity beta) in different rate regimes



Source: J.P. Morgan Asset Management (Oscar Montes & Rachel Eisman), Bloomberg, Data as of August 2024.

Note: excess return of hedge funds in the JPMAAM complex after removing the return attributed to equity beta. We grouped the 12-month rolling returns into interest rate intervals (0-6% in 1% increments) and calculated the average hedge fund excess return for each interval.

## Portfolios for a new economic era

As we look across economies and asset markets, we are optimistic about the decade ahead. We are projecting higher growth in the G7 economies for the fifth year running, led by capex and investment, with higher cycle-neutral policy rates pushing up returns across the asset stack. Higher policy rates are reinforcing strong bond market returns, and higher growth is supporting corporate earnings and equity returns.

The LTCMA forecasts are, by design, for an index return in public asset markets and a median manager return in alternatives. While we do not forecast active alpha, we believe today's economic environment supports it. As winners and losers emerge in technology adoption and capex creates more competition for capital, we expect more idiosyncratic returns – and greater scope to extract active alpha.

There are risks to our constructive view. As spending rises, the possibility of capital misallocation inevitably increases and with it the risks of unsustainable deficits. No doubt, deficits will be higher. But we believe that the potential for technology and investment to fuel an increase in productivity over our forecast horizon could make deficits more manageable as higher economic growth swells tax income.

If today's mostly pragmatic economic nationalism morphs into overt protectionism, that would present another significant risk – particularly if climate change further accelerates migration patterns. A technological arms race would be a sinister end to the AI boom, but we note, equally, that tackling cybercrime could foster greater global cooperation.

Asset returns in both raw return and risk-adjusted forms remain healthy (**Exhibits 14 and 15**), with bonds supported by higher neutral cash rates and equities modestly lower and reflecting a maturing mid-cycle global economy. Alternative assets are now emerging from a period of meaningful asset markdowns.

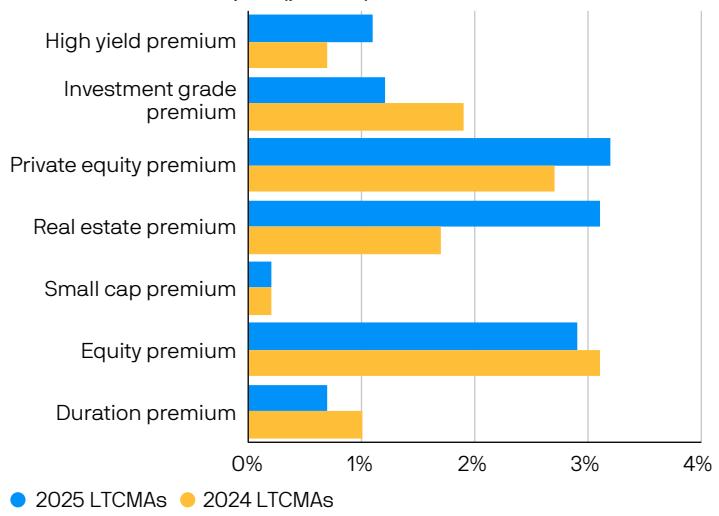
Investors will want to ensure they are protected from some of the more adverse scenarios and the emergence of new risks associated with inflation and fiscal profligacy (**Exhibit 16**). Some alternative assets, like timber, core infrastructure, macro hedge fund strategies and transport, have shown themselves to provide meaningful portfolio protection from the sort of risks that tend to see both stock and bond prices falling, as we experienced in 2022.

## Return uplifts for alternative assets improve meaningfully this year, while Sharpe ratio changes vary across public and private markets

Exhibit 14A: Sharpe ratios



Exhibit 14B: Return uplift (premia)



Source: J.P. Morgan Asset Management; data as of September 30, 2024.

In short, both financial alternatives and real assets are set to benefit not only from higher median return estimates, but also from an improving environment for alpha generation.

We characterize the economic and asset market outlook as having a higher starting point and healthier foundations – true, valuations are higher, but so, too,

is growth, and the increasing propensity to invest, we believe, is long overdue. We are clearly now in a new economic era even as we feel a few lingering effects of the sometimes rocky transition behind us. Nevertheless, we believe that as investment levels pick up and rates normalize to an appropriate level, a healthy – even buoyant – economy will emerge, vibrant and self-sustaining.

## Even with stock-bond frontiers edging lower, return potential looks attractive and differentiation across assets provides a richer hunting ground for active investors

Exhibit 15A: USD stock-bond frontiers and 60/40 portfolios based on 2025 vs. 2024 LTCMAs for risk and return (%)

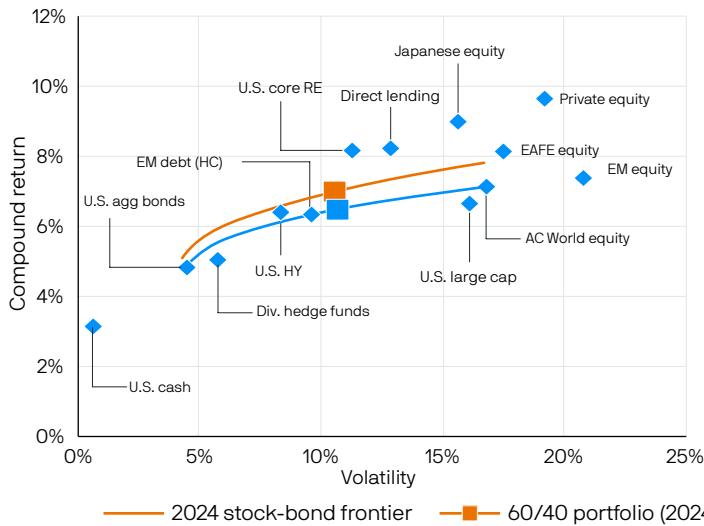
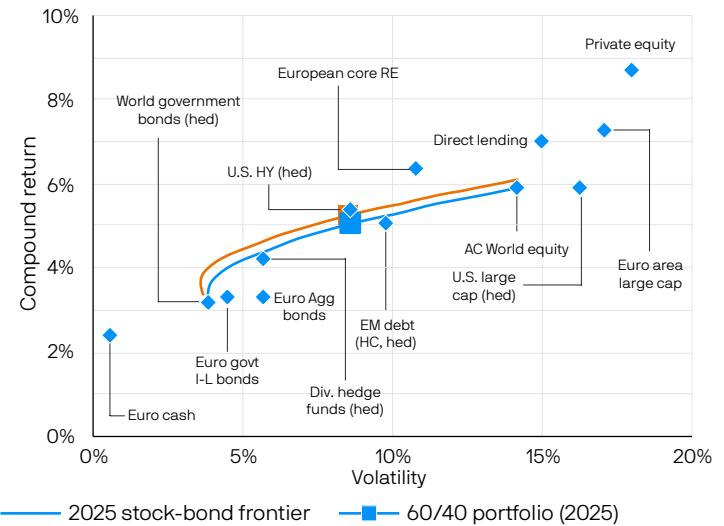


Exhibit 15B: EUR stock-bond frontiers and 60/40 portfolios based on 2025 vs. 2024 LTCMAs for risk and return (%)



Source: J.P. Morgan Asset Management; data as of September 30, 2024.

**Over our 10- to 15-year horizon, we look through some of the cyclical risks and instead home in on risks that might alter trend growth or inflation, or leave a lasting imprint on long-term asset returns**

**Exhibit 16: Key structural risks affecting our long-term forecasts and asset return assumptions**

Risk	Upside or downside?	Description	Macro or asset class implications
Concern about rising debt causes a return to post GFC-style austerity	Downside	Governments reduce spending plans and cull investment spending to focus on day-to-day current spending	Growth falls and tax rates increase to meet government liabilities. Positive for bonds, negative for equity
Regional conflicts extend or spill over, sucking in NATO or China	Downside	Russia-Ukraine invasion, Middle East war or other conflicts deepen or broaden and suck in superpowers	Potential for supply chain and energy shocks, with risk of retaliatory sanctions further disrupting trade. Positive for bonds and USD, supports commodities, negative for stocks, hits Europe hardest
Trade tensions between U.S. and China reignited	Downside	Washington and Beijing find themselves in a renewed trade dispute with tit-for-tat tariffs and sanctions on a wide range of goods	Further retrenchment to regional blocs damages growth and is inflationary at the margin. Commodity prices remain elevated, industrial sectors under pressure as supply chains compromised
Rapid abandonment of USD as key reserve currency	Downside	Challenger to USD (from either crypto or an alternative fiat currency) emerges and pulls reserve assets away from USD, diminishes demand for U.S. assets and refocuses attention on U.S. deficit	Negative for growth, USD, bonds, credit and stocks; positive for real assets and commodities
Debt default by U.S.	Downside	Debt ceiling and other budget issues in U.S. reach stalemate, leading to default; debt repayments consume too much from budget to be politically palatable	Deeply negative for risk assets, and risks causing liquidity crunch as uncertainty around definitions for riskless assets are challenged. Initially positive for bonds, but may rapidly see non-U.S. bonds outperform; gold, CHF and JPY positive
European energy independence through renewables investment	Upside	European countries double down on investments after reducing reliance on Russian gas to speed up adoption of renewable energy sources and sustainable infrastructure	Uncertainty removed from European energy grid; skills deepening from investment a positive boost to productivity while infrastructure improvements add a further positive support; EUR and EU equities net winners
Worsening climate or environmental situation	Downside	More frequent or more extreme weather events, leading to destruction of productive assets and disruptions to food and basic materials supply	Supply disruption in short run, then pressure on scarce resources during rebuild leads to higher inflation. Positive for commodities, real assets; negative for bonds, stocks, credit
Stronger than expected investment and capex cycle	Upside	Surge in fiscal spending and upswing in capex that followed pandemic lead to building of productive capacity and upskilling in labor	Positive for real GDP while limits inflation; supportive for stocks, credit and other risk assets; mitigates some right tail inflation risks from bond markets; may favor DM over EM assets
Accelerated adoption of artificial intelligence	Upside	Labor scarcity that is limiting growth in some regions mitigated; scope for productivity to rebound strongly, improving trend growth	Positive for real GDP while limits inflation; supportive for developed market stocks, credit and other risk assets; mitigates some right tail inflation risks
Successful cyberattack on financial system or national infrastructure	Downside	Economically essential infrastructure knocked out in cyberattack, leading to tangible losses and damaging confidence in the system	Negative for growth, as it potentially slows technology adoption or reduces confidence in the system. Positive for bonds at the margin, short-run negative for equity, but sectors and firms seen as having resilience or a solution could rally
Secondary pandemics or emergence of vaccine-resistant strains	Downside	Vaccine-resistant strain of current pandemic or entirely new pathogen emerges, necessitating rolling lockdowns and creating disruption to supply chains globally	Negative for growth, but likely leads to further stimulus, leading to cyclical volatility and risking further expansion of deficits; positive for bonds in short run, but risks longer period of financial repression in longer term; increases volatility in equities
Next-generation lifestyle and chronic illness therapies become widely available	Upside	GLP-1 style drugs to combat chronic sickness in working-age populations improve efficacy and are more widely adopted, increasing working lifetime	Equivalent to increasing labor pool by extending productive working life, but without the negative impact of simply raising retirement age. Better growth supports risk assets such as equity and credit
Political polarization worsens in developed nations	Downside	Drift toward populist political parties quickens or polarization of previously centrist parties becomes more extreme, leading to fiscal commitments or economic policies that are unattainable	Risk premia demanded for government borrowing increases; asset volatility higher at the margin; returns potentially lower if valuations adjust downward to reflect economic uncertainty

Source: J.P. Morgan Asset Management; data as of October 2024.

The background of the slide features a complex, abstract geometric pattern composed of various shades of blue. It consists of numerous overlapping and intersecting polygons, creating a sense of depth and perspective. The colors range from dark navy blue at the top left to light cyan at the bottom right, with intermediate shades of medium blue, light blue, and teal. The overall effect is a modern, digital, and professional look.

# I Assumption articles



## Macroeconomic assumptions

# Improved prospects for stronger growth and lower inflation

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### In brief

- Our developed market (DM) growth forecast increases modestly this year due to higher capital spending and the impacts of artificial intelligence (AI). Our emerging market (EM) growth forecast is broadly stable as further slowing in Chinese growth offsets gains elsewhere.
- Both our DM and EM inflation forecasts move slightly lower than last year, largely because of the starting-point effect of lower inflation levels today, although long-term structural forces still leave inflation slightly higher than before the pandemic.
- Accelerating capital spending on AI across economies could not only boost GDP directly, but indirectly via productivity gains. AI spending could also act as a deflationary force in the later years of our forecast period.
- Our Long-Term Capital Market Assumptions forecast anticipates increased investment to combat climate change, as well as higher defense spending in Europe. These expenditures could boost economic growth but prove mildly inflationary – as could more active fiscal policy.

In late 2024, we see a relatively stable macroeconomic landscape of moderate global growth and cooling inflation. The pandemic's effects have mostly faded, and over the next 10 to 15 years we think a range of factors, including demographic shifts, accelerated technological advances and changing labor market dynamics, will transform the current landscape in significant ways. All of these factors impact our long-term growth and inflation assumptions, but only a few have shifted notably since our last edition.

This year, we modestly boost our growth expectations across the board, with the exception of China, while mostly lowering our inflation expectations.

Shifts in secular factors explain our higher GDP growth forecasts: Climbing spending on the energy transition, domestic infrastructure, manufacturing and, in the case of Europe and Japan, defense all suggest a more constructive outlook for capital spending. Cyclical

factors impart a modest drag on growth. We increase our forecasts for both investment and productivity related to the expected wider adoption of artificial intelligence. (AI – a topic to which we will return – cuts across our macro forecasts.)

Our lower inflation assumptions in this edition, by contrast, largely reflect a cyclical factor: Today's lower inflation levels mean a lower starting point. We do not see a fundamental shift in expected trend inflation rates. We do believe, however, that inflation will be higher over our forecast horizon, relative to the pre-pandemic period, largely due to long-term structural forces (**Exhibit 1**).

These include slowing globalization, more-active fiscal policy, increased spending on the energy transition and, in some economies, a rise in inflation expectations. We expect these forces to be somewhat offset in many economies by exchange rate effects and the potential for AI to lower costs for a range of goods and services.

## Our 2025 assumptions anticipate slightly stronger growth and modestly lower inflation

Exhibit 1: 2025 Long-Term Capital Market macroeconomic assumptions (%, annual average)

	Real GDP			Inflation		
	2025	2024	Change	2025	2024	Change
<b>Developed markets</b>	<b>1.7</b>	<b>1.6</b>	<b>0.1</b>	<b>2.2</b>	<b>2.3</b>	<b>-0.1</b>
United States	2.0	1.8	0.2	2.4	2.5	-0.1
Euro area	1.4	1.3	0.1	2.0	2.2	-0.2
Japan	0.9	0.8	0.1	1.5	1.4	0.1
United Kingdom	1.5	1.4	0.1	2.2	2.4	-0.2
Australia	2.3	2.2	0.1	2.6	2.4	0.2
Canada	1.8	1.7	0.1	2.2	2.2	0.0
Sweden	2.1	1.9	0.2	2.2	2.4	-0.2
Switzerland	1.5	1.5	0.0	1.3	1.4	-0.1
<b>Emerging markets</b>	<b>3.5</b>	<b>3.5</b>	<b>0.0</b>	<b>3.3</b>	<b>3.8</b>	<b>-0.5</b>
China	3.6	3.8	-0.2	2.1	2.2	-0.1
India	5.9	5.7	0.2	4.5	4.5	0.0
Russia	0.3	0.3	0.0	5.2	8.0	-2.8
Brazil	2.1	2.0	0.1	4.4	4.6	-0.2
Korea	2.1	2.0	0.1	2.0	2.0	0.0
Taiwan	1.8	1.6	0.2	1.5	1.3	0.2
Mexico	2.2	2.0	0.2	3.7	3.7	0.0
South Africa	2.1	1.8	0.3	5.4	5.5	-0.1
Turkey	3.1	3.0	0.1	13.6	20.0	-6.4
<b>Global</b>	<b>2.4</b>	<b>2.4</b>	<b>0.1</b>	<b>2.6</b>	<b>2.9</b>	<b>-0.3</b>

Source: J.P. Morgan Asset Management; estimates as of September 30, 2024. GDP forecasts shown for 2025 and 2024 reference trend rates only (as opposed to rate-plus-cyclical-bonus figures). Composite GDP and inflation numbers for developed markets, emerging markets and global aggregates are calculated by assigning weights to individual economies that are proportional to projected nominal GDP over the forecast horizon. Figures are rounded to the nearest 0.1 percentage point, which may result in apparent inconsistencies in year-to-year changes.

## GDP: A rising investment tide

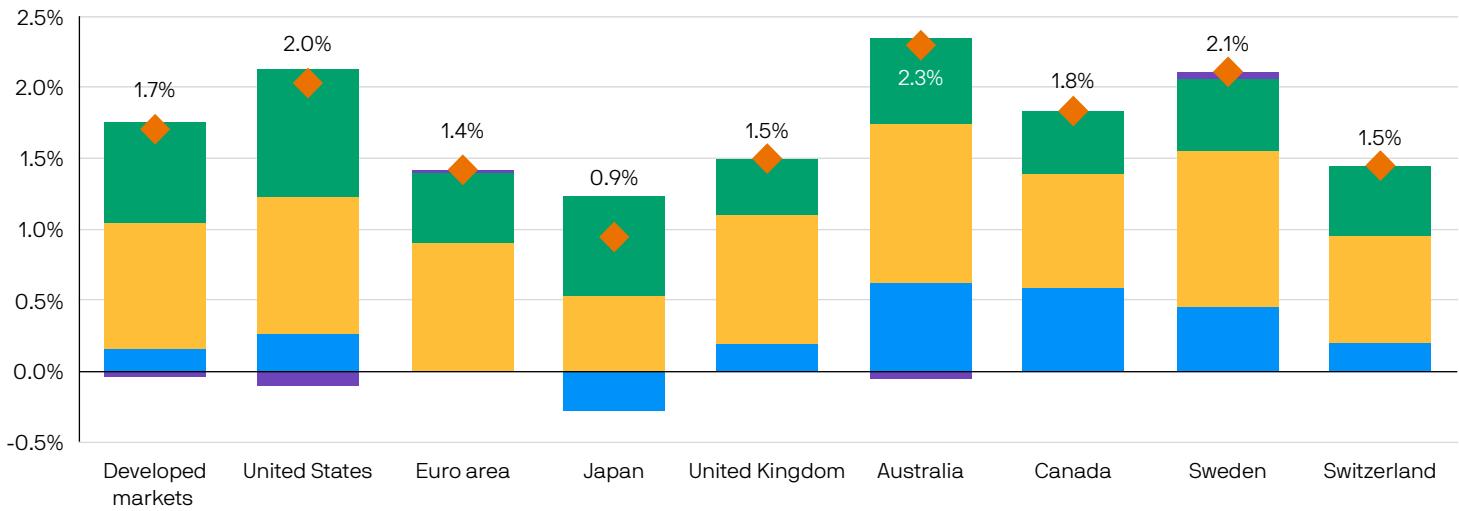
We are modestly boosting our developed market (DM) growth forecasts this year to reflect changes across all three inputs to our GDP projections: labor, capital and total factor productivity (TFP). Our GDP projection methodology is explained in greater detail in a

companion volume, our *Long-Term Capital Market Assumptions Methodology Handbook*. Among these three components, our capital investment projections have the largest impact (**Exhibit 2**).

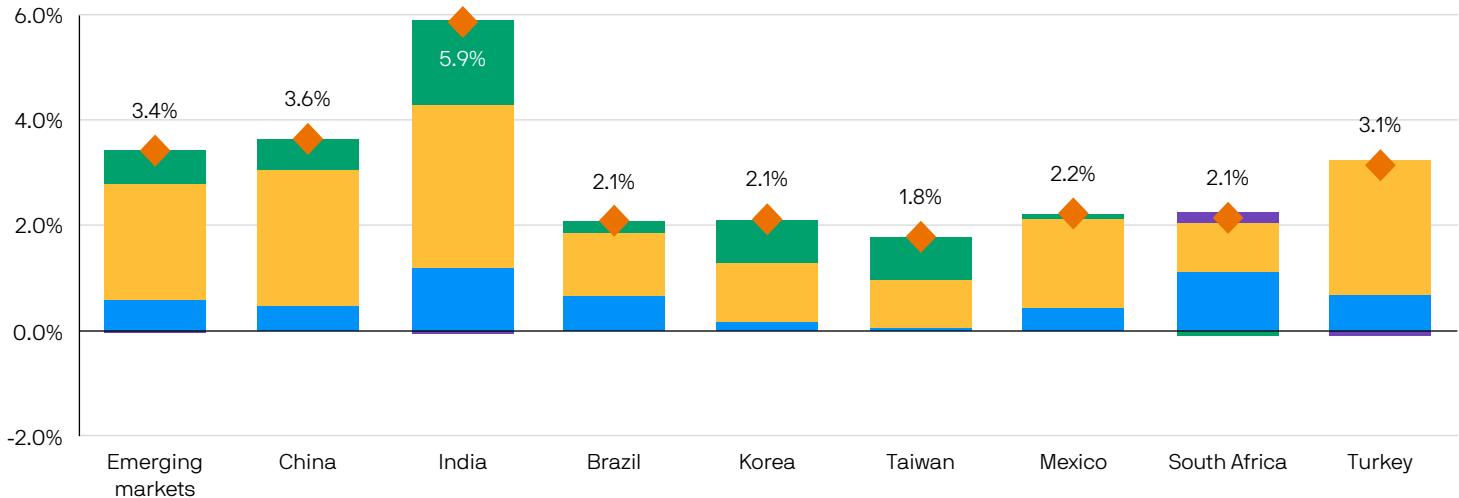
### Capital investment has the largest impact on our 2025 long-term growth forecasts

Exhibit 2: Contributors to 2025 LTCMA GDP growth forecasts

#### Developed markets



#### Emerging markets



● Labor input   ● Capital input   ● TFP   ● Cyclical adjustment\*   ● GDP projection

Source: J.P. Morgan Asset Management; data and forecasts as of September 30, 2024. Labor and capital inputs are the growth rates of labor and capital multiplied by their respective shares. Cyclical adjustment is calculated as annualized convergence of current output gap to probability-weighted expected average output gap at the end of the LTCMA forecast horizon. All numbers shown to 1 decimal point.

Our DM aggregate real GDP long-term growth forecast rises to 1.7% in 2025, from 1.6% in the last edition. In the eurozone, our 10- to 15-year growth assumption moves slightly higher as faster capital growth outweighs modestly weaker labor dynamics. The Anglosphere economies<sup>1</sup> and Sweden also get modest growth upgrades. In the U.S., our GDP assumption rises as strong migration that boosts the labor supply, and AI's impacts on investment and productivity, offset a modestly negative effect from a higher starting point.

Among emerging market economies (EM), we see countervailing trends. A 0.2 percentage point (ppt) downgrade to China's real GDP growth assumption in this edition keeps EM growth flat, despite positive revisions elsewhere, including India, South Africa, Taiwan and Mexico. China's downgrade primarily reflects slower capital growth: The economy's impressive GDP numbers over recent decades were driven by investment-heavy export growth and infrastructure spending. Now, an already large capital stock and high debt levels suggest investment will slow, especially given prevailing geopolitical tensions.

Of the EM economies whose growth assumptions rise vs. our last edition, Mexico benefits from higher capital growth amid forecasts for the nearshoring of manufacturing, although the trend is subject to political uncertainty. We modestly upgrade our GDP outlooks for Taiwan and Korea, the likely beneficiaries of an AI investment boom. Some progress in South Africa on pension, energy and infrastructure reforms makes us more positive on the economy's growth outlook. India gets an upgrade thanks to supportive demographics and ongoing infrastructure investment, making it for more than a decade the fastest growing of the EM economies the LTCMAs cover.

### The impact of artificial intelligence on GDP

AI's impact cuts across our growth and inflation projections. To recall, in our 2024 LTCMAs, we modestly boosted GDP by 0.1% per year in DM economies to account for AI's likely impact on investment and productivity gains over our forecast period. While broader AI adoption was still in its nascent stage, we determined that incoming data on the acceleration of technological change warranted a modest upgrade in total factor productivity. Still, we felt it was premature to ascribe an impact on EM growth.

This year, we boost the impact of AI on DM growth, from 0.1% to 0.2% per year. This upgrade largely reflects the strength of capital investment in AI, as opposed to further enhancements in total factor productivity. We also still believe the impact of AI will be greater in developed markets than in emerging markets, due to advanced economies' greater investment in AI and AI's potential to substitute for relatively expensive labor.

In emerging markets, given a further acceleration in AI investment over the past year, we lift AI's impact on growth from zero to 0.1%. The change reflects a mix of higher capital investment, which is already occurring, and productivity effects that should build over the next 10 to 15 years.

We recognize that we may still be underestimating AI's economic impacts, as many academics and industry experts have suggested that the ultimate gains from AI could be much larger than our projections. However, given the great uncertainty around the ultimate scope and speed of AI adoption, we expect to refine our growth estimates over time as further evidence becomes available.

### Labor supply: Working-age populations constrain growth; immigration could aid DM economies

We construct the labor input of our GDP growth model from estimates of the number of workers, average hours worked and the "quality" of labor, defined by years of education. In general in both developed and emerging market economies, average hours worked are expected to fall while education levels should rise, particularly from the lower levels in EM economies.

The biggest constraint on the labor supply and, indeed, on economic growth in general, is the slow growth of working-age populations. This is particularly acute in Europe, Japan and China. However, in the UK and the U.S., for instance, we see indications that more-flexible work arrangements post pandemic are supporting higher female labor force participation. At the same time, rising dependency ratios<sup>2</sup> are triggering pension reforms that could delay retirement.

<sup>1</sup> Australia, Canada, New Zealand, the UK and the U.S.

<sup>2</sup> The dependency ratio is the number of adults 65-plus and children (birth to 14) divided by the working-age population. A high ratio is a likely indicator of the need for social support.

Some economies do not face a demographic challenge. Several emerging markets, including Mexico, Brazil and, notably, India, should continue to see solid gains in their working-age populations. Australia remains the fastest-growing DM economy, thanks once again to its more favorable labor demographics.

However, the biggest change this year in the labor supply is surging immigration into the U.S., Canada and Australia. While this wave will likely diminish, a period of normalization and the integration of new migrants could continue, adding to the labor force in coming years. This view represents our base case. Alternatively, immigration could be sharply curtailed or even reversed (via deportations). All told, we project the labor supply growing at 0.3% annually across DM economies and 1.1% across EM economies over our forecast period.

### **Capital: A more optimistic outlook for investment**

Across DM economies, we have broadly upgraded our capital services projections to account for significant investment already underway, as well as expected growth. Our forecasts recognize that DM private sector investment historically has tended to strengthen during periods of technological change.<sup>3</sup> We think companies will invest more over our forecast period to embed AI and other new technologies, to improve working practices and to compensate for weaker growth in the labor supply. Other technologies, including biotechnologies and innovations in medical therapies, could also prompt greater investment over the LTCMA horizon.

In the U.S., AI investment dominates spending. Forecasters project that major hyperscalers will spend over USD 200 billion in capex in 2024 – equal to about 5% of total U.S. nonresidential capital spending. We also upgrade capital spending in Canada and Australia, where weak investment has recently been dragging on growth but investment from either government or the private sector is expected to improve.

In Europe and the UK, capital investment is recovering after a long period of stagnation. Europe's improved outlook for capital spending owes to factors including extra defense spending, investment in the energy transition and yet-to-be-spent EU Recovery Fund money. Meanwhile, we see scope for private nonresidential capex, which has lagged for the last decade, to recover toward the healthier levels of 1990–2005.

### **Total factor productivity: The AI effect**

We have steadily raised our expectations of U.S. TFP growth in recent years, given the prospects for a new period of technological advancement. This year, we kept our TFP projection unchanged at 0.9%, after a 0.1% boost last year.

Despite keeping TFP unchanged, AI could have a profound impact on society, the global economy and long-term market returns.<sup>4</sup> We are also optimistic that TFP upgrades could accelerate as AI is integrated into the economy. However, much is uncertain about the pace of adoption, the timing and magnitude of future productivity gains, and the potential drags on productivity from shorter working hours or increased labor slack. These uncertainties warrant some caution in lifting our TFP projection this year. Last edition's 0.1% TFP increase followed two similarly sized boosts in the previous six years. We also note that although the 2025 forecast is unchanged, our 0.9% TFP growth projection is only slightly below the internet-era peak of 1.1%. Our latest TFP projection provides scope for further upgrades as evidence of adoption materializes in the coming years.

### **Inflation lands on uneven terrain**

Global inflation has declined steadily as the pandemic's aftershocks of supply bottlenecks and pent-up demand have faded. This process has continued over the past year, and consequently our long-term forecasts for both DM and EM inflation are generally slightly lower than in last year's LTCMAs, although long-term secular forces still leave inflation a little higher than before the pandemic.

### **Central bank policies and institutional independence**

In the long run, the most critical force restraining inflation is the public's trust in central banks' ability to achieve price stability. Such trust is earned through strong governance and credible policymaking based on achieving mandated long-term goals, not short-term political wins.

The current "gold standard" of independent central banks with clear legislative mandates, data-driven approaches and transparency with the public dates only to the 1990s, and such progress can always be reversed.

<sup>3</sup> For example, the adaptation of new computing and internet technologies in DM economies in the 1990s led to an investment boom that continued into the 2000s.

<sup>4</sup> And, as noted, our forecasts rise for investment and productivity related to wider AI adoption.

Most DM central banks maintain an official inflation target centered around 2%, with some slight nuances, while EM central banks generally aim for somewhat higher inflation rates. Despite the inflation roller coaster of the past few years, central bankers have been largely unwilling to move their targets. We review the current stated policies of the major central banks in the LTCMA companion *Methodology Handbook*.

### Influences on inflation beyond monetary policy

Next, we examine the long-term forces impacting our 2025 inflation assumptions (**Exhibit 3**). As noted in our *LTCMA Methodology Handbook*, applying weights to each long-term force is not an exact science. However, an assessment of their cumulative impacts suggests that certain economies will persistently undershoot inflation targets while many others persistently exceed them.

On balance, we believe these forces will generally cause inflation to slightly overshoot central bank targets.

We define the most prominent inflation forces as:

**Fiscal policy:** While massive fiscal spending during the pandemic was temporary, some notable shifts have taken place in fiscal outlooks in its aftermath. In Europe, the pandemic generally reduced any remaining appetite for austerity and promoted the idea of a unified European fiscal approach. Further stimulus will likely be aimed at funding the green transition and bolstering defense capabilities.

The U.S. is on track to run elevated deficits into the 2030s. However, these higher deficits will be dominated by higher interest payments that are less likely to promote excess demand (and thus inflation) than higher primary deficits. Overly expansionary fiscal policy could boost inflation in some EM economies, although higher borrowing costs should act as a fiscal restraint for most of them.

**Inflation expectations:** An important consequence of any bout of high inflation is its impact on inflation expectations. If inflation is expected to be elevated, workers are more likely to demand higher wages and companies are more likely to increase prices. In many EM economies, high inflation expectations will likely continue

### Global forces impacting our 2025 inflation assumptions

Exhibit 3: Global inflation forces

	Fiscal policy	Inflation expectations	The green energy transition	Globalization/deglobalization	Information technology and AI	Commodity prices	Worker bargaining power	Central bank independence	Exchange rate effects
United States		+	+		-				+
Euro area	+	-	+	+	-				-
Japan		--	+		-				-
United Kingdom	+	+	+	+	-				-
Australia	+		+		-				-
Canada	+	+	+		-				-
Sweden	+	+	+	+	-				-
Switzerland		--			-				--
China	+			--		---	++		+
India		+	+			++			+
Brazil	++	++			-	++	+	+	++
Korea			+		-				
Mexico	++	++			-	+	+		++
Taiwan	-	+	++		-				+
South Africa	++	++		++			++		
Turkey	++	+++				++		+++	

Source: J.P. Morgan Asset Management; projections as of September 30, 2024.

to support actual inflation. In DM economies, long-term inflation expectations have been mostly anchored around central bank targets. However, the severe bout of inflation in recent years does appear to have mildly increased inflation expectations, and this could modestly raise inflation outcomes.

**The green energy transition:** The global transition toward sustainability and renewable energy could add modest upward pressure on inflation for DM economies, at least in the short run, by shifting away from cheaper methods of production and consumption that are less environmentally friendly. These impacts should fade as efficiencies and economies of scale are achieved in green technology.

In EM economies, the energy transition is occurring inconsistently. Some, such as Taiwan, are adopting aggressive plans that could boost production costs. Others, such as Turkey and Brazil, have yet to make meaningful commitments.

**Changing patterns of global trade:** Greater global trade reduced inflation in the late 20th century and the first decade of this one, as declining tariffs, global competition and improved efficiencies helped depress prices. However, globalization appears to have slowed since the 2008–09 financial crisis, and there is greater risk of further polarization in the next 10 to 15 years as trade wars, actual wars and heightened geopolitical tensions contribute to the emergence of new geopolitical and economic alliances.<sup>5</sup> A transition to less economically optimal trade relationships before markets can properly adjust could lead to higher inflation in the short term.

**Information technology and AI:** The rise of online shopping in the past two decades was significantly disinflationary, as buyers were enabled to seamlessly compare prices and switch among sellers. Online marketplaces are unlikely to lose popularity any time soon, but apart from Brazil and Mexico, where online retail is still ramping up, that disinflation shock has likely already passed. However, as businesses globally ramp up their adoption of AI in the coming years, production efficiencies could lead to a new wave of downward pressure on goods and services prices. This year, we account for this force across all DM economies, but we do not anticipate much impact on many EM economies.

**Commodity prices:** Global commodity prices have returned to relatively normal levels since the surge triggered by Russia's invasion of Ukraine in 2022. However, the next 10 to 15 years may see new demand drivers and supply constrictions. For instance, gold and copper could experience elevated demand from central banks and "new economy" uses, agriculture will face pressure from climate change variations, and fossil fuel production will be constrained by governmental and regulatory hurdles. These dynamics may push prices higher; however, they should coincide with lower DM energy intensity and renewable power consumption over time. On net, we don't see commodity prices having a significant impact on inflation in many DM economies.

**Worker bargaining power:** Labor's power generally weakened in recent decades alongside a decline in union membership. However, a tight labor supply should continue to boost worker bargaining power in the U.S. and other developed economies. Elsewhere, such as in South Africa, Brazil and Mexico, unions still command significant power, and organized labor could push inflation upward.

**Central bank independence:** Notably, politicians in many DM and EM economies have placed increasing pressure on policymakers, criticizing central bank decisions or calling for interference and stronger oversight. We continue to closely monitor these rising risks, as reduced central bank independence would generally result in higher inflation. In Turkey, where central bank independence was never extended, the economy has struggled under consistently high inflation. This could also be an issue for China, although offsets from more powerful disinflationary forces in the domestic economy have kept overall pressures muted.

**Exchange rate effects:** Lastly, we account for the long-term inflationary impact of changing exchange rates. We believe the long era of U.S. dollar strength should reverse over the next 10 to 15 years, adding mildly to U.S. inflation while subtracting from inflation in most other economies.

<sup>5</sup> David Kelly, Stephanie Aliaga, Kerry Craig, et al., "The future of globalization: Globalization will evolve – but not unravel," 2023 Long-Term Capital Market Assumptions, J.P. Morgan Asset Management, November 2022.

## Transitional effects

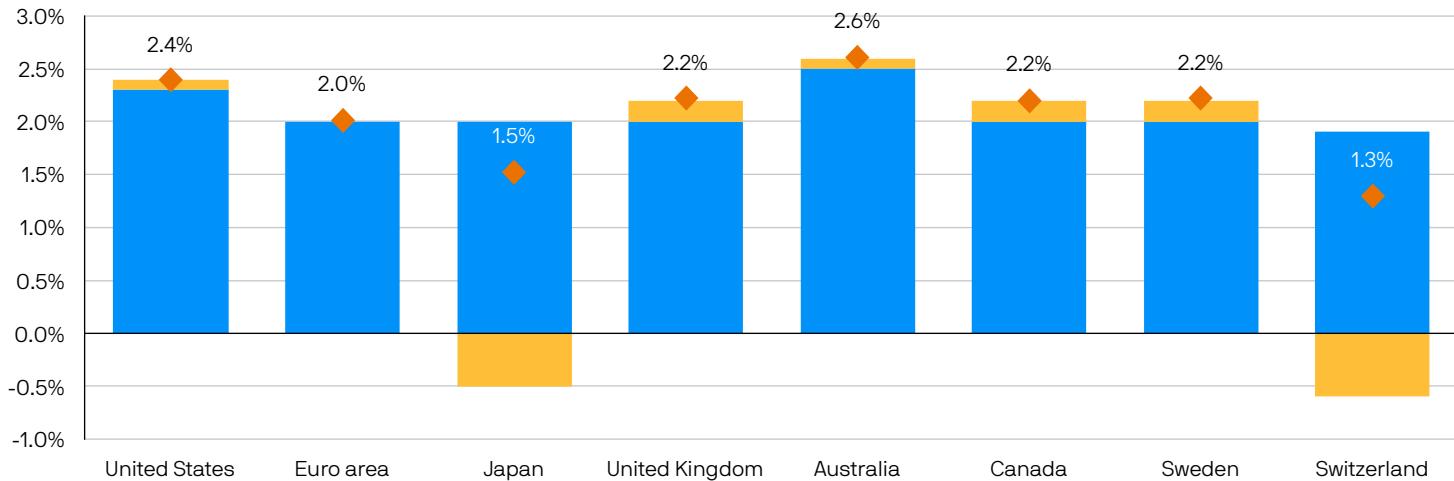
In recent years, our expectations for average inflation over the LTCMA forecast period were boosted by elevated starting levels and a recognition that it would take time for inflation to fall to trend levels. This year, starting

points are closer to trend levels, resulting in only minor transitional effects across all economies (outside of South Africa and Turkey) and, consequently, slightly lower average inflation rates over the forecast period (**Exhibit 4**).

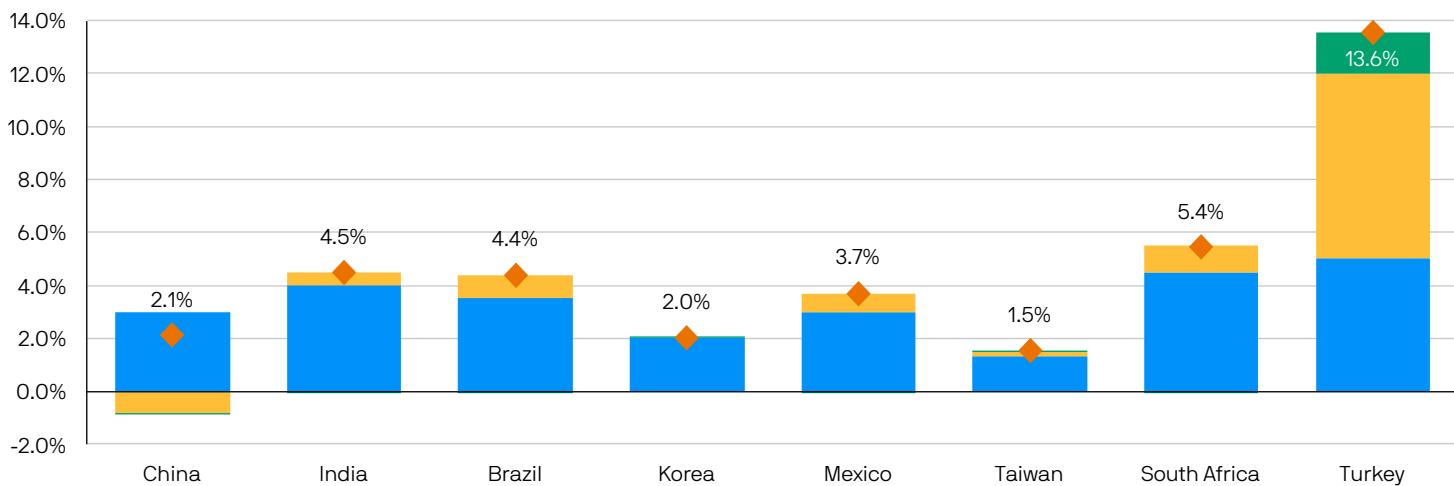
### With starting points closer to trend, there is less need to incorporate structural and transitional effects

Exhibit 4: Global inflation projections and contributors

#### Developed markets



#### Emerging markets



- Central bank CPI target
- + Long-term inflation forces
- + Transitional effect
- 2025 LTCMAs

Source: J.P. Morgan Asset Management; data as of September 30, 2024.

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Ultimately, our updated macroeconomic assumptions for 2025 indicate a positive outlook and expectations of slightly stronger growth and modestly lower inflation in most regions. With the return of both private and public sector investment, the growth that we forecast has stronger foundations than the anemic growth that persisted for more than a decade after the financial crisis.

A renewed government focus on updating aging infrastructure and investing in new technologies will have to be balanced alongside the demands of an austerity-fatigued electorate. With fiscal policy playing a more active role, we see it as unlikely that monetary policy will have to resort to the unconventional tools that became commonplace in the era of chronically weak nominal growth. This has additional implications for asset returns, as the following chapters discuss.



## Public market assumptions

# Higher growth, higher rates - and solid returns

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### In brief

- Against the macro backdrop of a healthier economy, our outlook for public markets sees returns supported by investment spending and technological advancements. It sees challenges as well, from economic nationalism and elevated valuations.
- Our higher growth and cash rate forecasts impact projected returns in myriad ways, supporting returns from core fixed income, narrower cycle-neutral credit spreads and increased revenue growth expectations for equity markets.
- We anticipate stronger capital growth related to artificial intelligence (AI) investment spending and improved productivity related to efficiency gains with AI technology. The trend is expected to support higher revenue growth and margins, especially for U.S. large caps.
- The transition from monetary activism (aggressive monetary policy) to fiscal activism (increased government investment) suggests steeper curves and higher inflation volatility.
- Corporate assets face cyclical challenges, but we expect them to be manageable. Elevated starting valuations for U.S. large caps and tight spreads in corporate credit markets may act as a drag on forward returns.
- An increased tendency toward economic nationalism, particularly in the U.S. and China, is a key consideration in making our FX forecasts. We continue to expect the U.S. dollar to depreciate over our investment horizon, but USD depreciation will be more muted than we forecast in last year's Long-Term Capital Market Assumptions.

## Building on a strong foundation

Our macroeconomic outlook sets a strong foundation for long-term returns across public markets.

Compared with last year's assumptions, we forecast higher real GDP growth across developed markets, higher policy rates and higher levels of fiscal spending, capital investment and productivity. Those will be generally positive forces for equity and fixed income returns. At the same time, we envision higher deficits, higher levels of inflation volatility and more geopolitical tension across the global economy – all meaningful risks to be considered.

Our Long-Term Capital Market Assumptions (LTCMAs) take shape in an era very different from the prior cycle of the 2010s. The post-global financial crisis (GFC) period was defined by “monetary activism” (unconventional monetary policy, such as negative rates and quantitative easing), which boosted asset prices, and featured low investment and low inflation. During this period, fiscal austerity or restraint was popular as governments focused on belt-tightening, acting in opposition to easier monetary conditions.

In the era that began in the 2020s and should extend over the next 10 to 15 years, we anticipate higher policy rates and higher investment. We also expect a shift to “fiscal activism” (increased government investment), with spending focused on areas such as technology, infrastructure, sustainability and defense.

Here, we examine the key themes that we anticipate will impact public market returns over the LTCMA investment horizon. These include: the changing outlook for growth and inflation, the transition from monetary activism to fiscal activism, cyclical challenges for corporate assets, the broader effects of artificial intelligence (AI), and economic nationalism. We also consider the idiosyncratic opportunities offered by Japanese and Chinese markets.

A quick note about the methodology we use to build our public and private market assumptions: For each asset that we forecast, we use a “building block” methodology that decomposes returns into more easily forecasted drivers. Each of these building blocks has a different relationship to our macroeconomic outlook and investment themes, which we focus on here. For further detail on our returns framework, please see our *LTCMA Methodology Handbook*.

## Public market assumptions modestly lower since last edition

This year, we make modest changes to our public market return assumptions. **Exhibit 1** outlines the changes in our forecasts for key assets.

**Exhibit 2** outlines the key themes impacting our return forecasts this year.

## This year, we make only modest changes to our public market assumptions

Exhibit 1: Key public asset returns in U.S. dollars

Asset	LTCMA 2025	LTCMA 2024	Change
U.S. cash	3.1%	2.9%	0.2%
U.S. intermediate Treasuries	3.8%	3.9%	-0.1%
U.S. investment grade credit	5.0%	5.8%	-0.8%
U.S. high yield credit	6.1%	6.5%	-0.4%
U.S. large cap equities	6.7%	7.0%	-0.3%
Global equities	7.1%	7.8%	-0.7%

Source: J.P. Morgan Asset Management; data as of September 30, 2024. All forecasts are in USD.

## We explore several key themes and their impacts on our asset class returns

Exhibit 2: Key themes and asset class impacts

Key theme	Bonds	Credit	Stocks	FX
The changing outlook for growth and inflation	Higher yields support returns	Growth supports earnings	Growth supports earnings	Less USD weakness
The transition from monetary activism to fiscal activism	Higher neutral rates but more volatility	Dispersion within credit	Dispersion within stocks	
The broader effects of artificial intelligence	Increased chances of noninflationary growth		AI supports earnings	
Economic nationalism	Tariff risks may hurt bonds		Support for national champions	Less USD weakness
Cyclical challenges for corporate assets		Spreads are tight	Valuations are high	
Idiosyncratic opportunity in Japan			More shareholder-friendly policies	Less JPY appreciation
Caution on China			Lower RoE assumptions in China	No widespread adoption of CNY

Source: J.P. Morgan Asset Management; data as of September 30, 2024.

## A robust outlook for growth

At the heart of all our Long-Term Capital Market Assumptions is the outlook for growth and inflation. In our modeling, these measures help determine where interest rates will settle, how currency pairs will adjust and where companies will earn revenues.

For the fifth consecutive year, we project higher growth in developed markets, led by capex and investment. We expect increased spending on the energy transition, manufacturing capabilities and, in the case of Europe, defense.

Importantly, we also anticipate increased spending on artificial intelligence. This is one of the drivers of our real GDP upgrades, reflecting both stronger capital growth related to AI investment spending and improved productivity related to efficiency gains from AI technology.

Our higher growth assumptions impact our cash rate forecasts, which rise modestly across key economies. In our fixed income assumptions, we forecast a cycle-neutral rate to build our returns. The cycle-neutral rate is the average level of a short-term interest rate that we assume prevails after an initial period of normalization. This rate may be above or below nominal  $R^*$ ,<sup>1</sup> depending on a central bank's bias toward accommodative or restrictive policy.

This year, our forecast for the U.S. cycle-neutral cash rate increases from 2.5% to 2.8%. This raises our U.S. cash return expectation, from 2.9% to 3.1%. Similar upgrades occur in other key economies (**Exhibit 3**).

Our higher growth and cash rate forecasts have implications for every asset in our opportunity set and impact returns in myriad ways. Take, for example, our credit assumptions. First, higher growth expectations should support revenues, and thus creditworthiness, for companies that have issued debt. The last few years are illustrative: High nominal growth has translated into high revenue growth and earnings, helping firms service debt despite the rise in overall yields.

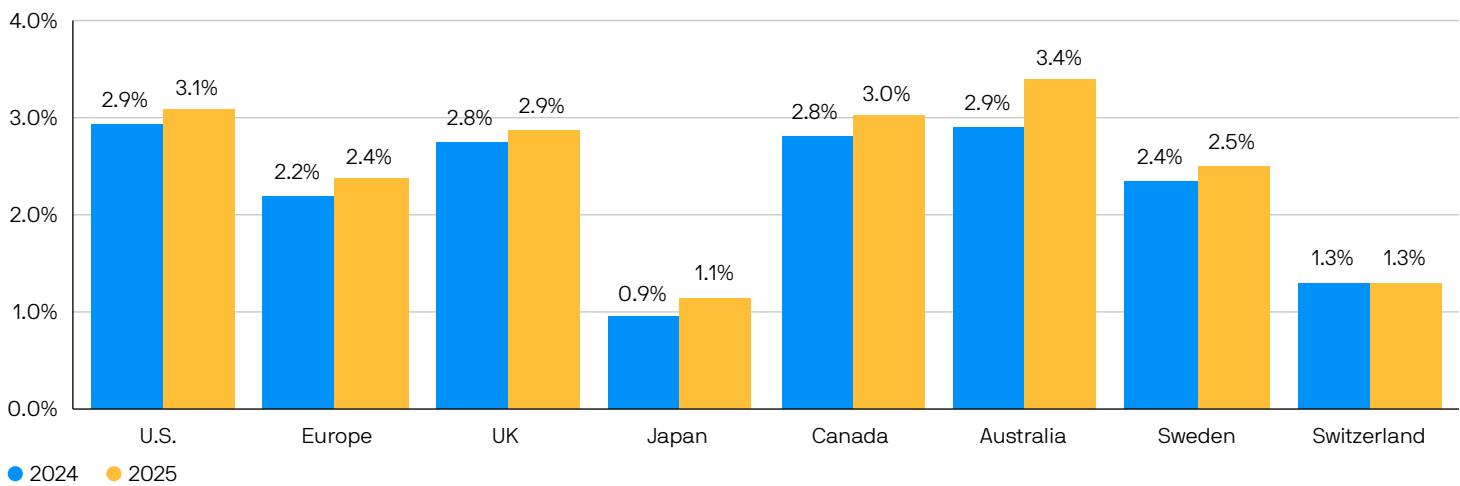
Second, higher cash rates will likely encourage corporations to revert to a more normal maturity profile of debt issuance. Amid historically low yields over the past decade, corporates increasingly raised their debt maturity profile. Over the previous cycle, the average duration of credit indices increased: In 2019, more 30-year maturity debt was issued than three-year debt.

But with higher cash rates and steeper curves going forward, we expect corporates will revert to issuing more evenly across the curve. In the immediate future, we expect companies will issue shorter-maturity debt while waiting for long-term yields to fall before increasing issuance in that part of the curve.

<sup>1</sup>  $R^*$  is the neutral rate of interest that equilibrates the economy in the long run. It is the real interest rate that is neither expansionary nor contractionary when the economy is at full employment.

## Our average cash returns rise moderately across key economies

Exhibit 3: Cash return forecasts



Source: J.P. Morgan Asset Management; data as of September 30, 2024.

Taken together, these factors lead us to tighten our U.S. investment grade spread assumptions, from 160 basis points (bps) to 145bps, resulting in a return assumption of 5.0%. The leveraged loan market, consisting largely of floating rate debt, is more exposed to higher cash rates and thus will find deleveraging more difficult at the margin. We therefore widen our leveraged loan spread assumptions by 20bps, to 560bps, while our return forecast moves from 6.5% to 6.6%.

In equity markets, higher GDP expectations feed directly into our revenue assumptions. We analyze the different regions in which companies earn revenues and aggregate that data into index-level forecasts. Our forecast for higher nominal growth in the U.S. provides support for all companies that sell goods and services to U.S. markets.

## The transition from monetary activism to fiscal activism

Our higher GDP forecasts reflect an expectation for significant fiscal stimulus over the next 10 to 15 years as governments spend more on technology investment, sustainability and defense. We have discussed fiscal activism in previous editions of our Long-Term Capital Market Assumptions,<sup>2</sup> and it continues to inform our forecasts:

### Inflation

This year, our forecast for developed market (DM) economies' long-term inflation rate drops due to a lower starting point for price increases. However, fiscal activism raises the risk of an upside surprise to this base case. We expect increased government spending on issues such as the energy transition, supply chain resilience and defense. This kind of spending raises the likelihood that policy overstimulates demand in environments of full employment, pushing inflation higher. "Onshored" manufacturing may also drive inflation higher, given higher costs of production.

<sup>2</sup> David Kelly, John Bilton, Michael Albrecht, et al., "The fiscal decade: The promises, problems and potential of fiscal stimulus," 2021 Long-Term Capital Market Assumptions, J.P. Morgan Asset Management, November 2020.

## Government debt curves

Aggressive fiscal policy coupled with already high government debt-to-GDP ratios makes bonds look less like a risk-free asset. We think that fiscal activism and a bias for higher deficits will keep curves steep, even with rates already elevated. We raise our forecast for the fair value cash to 10-year yield curve slope by 20bps, to 110bps, with commensurate changes in other major developed markets (**Exhibit 4**). In previous LTCMAs published after the financial crisis, our positive curve slope assumption incorporated expectations for a slow normalization of policy rates, as well as a small term premium component. These forecasts reflected monetary policy choices biased towards an accommodative stance due to subdued inflation. The COVID recession ushered in a regime change as inflation normalized, interest rates rose and bond markets became more volatile. The changes prompted us to take a more neutral view of monetary policy, with short-end policy rates expected to rise equally above and below the neutral rate over the next 10 to 15 years. Over the last two years, our curve slope assumption has been fully driven by our term premia assumption.

## Government debt volatility

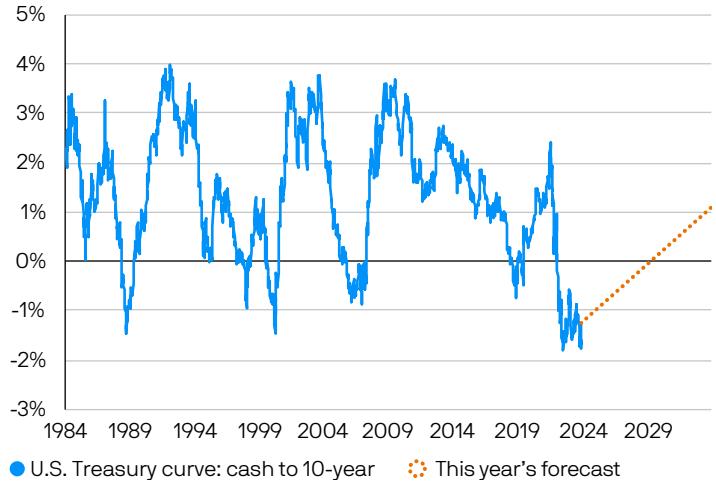
While bonds are expected to deliver healthy returns, with a 4.2% return from the 10-year U.S. Treasury, we think that expansive fiscal policy will keep government bond volatility high. In this way, the bond market may reclaim its role as an “economic policeman,” punishing poorly directed fiscal policy decisions. It’s worth emphasizing that, unlike some more bearish commentators, we don’t anticipate a fully fledged government debt crisis in the U.S. We think demand for U.S. debt will be strong, and our healthy nominal GDP outlook makes the debt burden more manageable.

## Corporates

Fiscal activism will create winners and losers in the private sector, and support the environment for active management. Governments will be incentivized to invest in highly productive industries, as well as those that may advance their climate goals. As a result, fiscal activism will likely support companies set to benefit from government-supported demand. The criteria used to decide eligibility for the European Central Bank’s (ECB’s) corporate asset purchase program illustrates the direct impact such policies could have in the market. The converse is true when it comes to the absence of fiscal support. For example, our valuation target for UK equities is lower than history might suggest, driven mainly by the market’s exposure to energy and materials companies that are not well positioned to receive public largess.

## Our outlook for fiscal activism over the forecast horizon leads us to expect steeper curves

**Exhibit 4: Cash to 10-year yield curve history and forecast**



Source: J.P. Morgan Asset Management; data as of September 30, 2024.

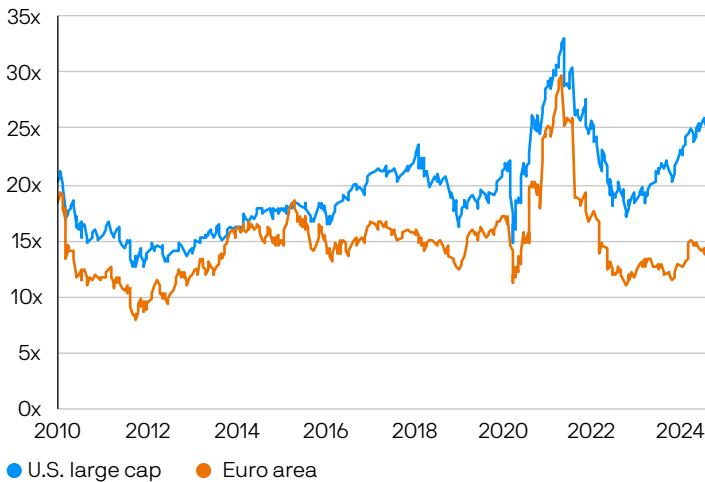
## Corporate assets are expensive, but to a large part, valuations seem justified

While our macroeconomic environment supports cash and bond returns, the higher starting point today for investing in corporate assets presents a challenge for long-term investors. Over the past year, the S&P 500 has returned 35%, driven largely by valuation expansion. The index’s 12-month trailing P/E ratio has increased from 19.1x to 23.6x. Similarly, in corporate credit, spreads are close to historical tights, with prevailing high yield credit spreads falling from over 400bps in September 2023 to nearer 300bps in September 2024. While we think that long-term investors will be well compensated for taking equity risk, elevated starting valuations act as a drag on forward returns. The degree of the cyclical challenge varies across asset classes:

- **U.S. equities:** In the U.S. large cap market, we think the fair value P/E ratio is below today’s levels. This amounts to a 1.8% drag on returns over this forecast horizon.
- **Ex-U.S. equities:** The cyclical starting point is less of a concern in ex-U.S. developed markets, such as the UK and the euro area, where prevailing P/E ratios remain low (**Exhibit 5**).

## U.S. large cap equities' strong year makes the starting point for long-term investors more challenging

Exhibit 5: U.S. large cap and euro area 12-month trailing P/E ratios



Source: J.P. Morgan Asset Management; data as of September 30, 2024.

- U.S. high yield:** We think a fair value for U.S. high yield spreads is 475bps, which is close to historical averages but still leads to a normalization drag on returns of -0.50% over the forecast period.
- U.S. investment grade credit:** As mentioned, corporates have extended their maturity profile of debt over the past decade. Although that trend has tapered during the past couple of years, investment grade's maturity profile still leads to a normalization drag of 40bps.

## AI and earnings, valuations and productivity growth

In equities, many of the cyclical challenges we've identified are the result of the past year's optimism about AI technology. We note recent technological breakthroughs in this area, such as the development of consumer-friendly large language models (LLMs), as well as a pickup in AI-associated investment spending.

While we cannot estimate the long-term economic impact of AI with certainty, we do think it is appropriate to incorporate potential AI impacts into our assumptions for returns (**Exhibit 6**).

AI skeptics see those high valuations as one of several signs of a tech bubble. But we believe today's tech narrative is very different from the dot-com bubble of the late 1990s. Consider:

- Earnings delivery:** In contrast to the dot-com era, the recent moves higher in AI-associated stocks have been coupled with significant gains in delivered earnings.
- The focus on quality:** While the late 1990s bubble featured low quality speculative names, today's tech winners are high quality businesses. In many cases, these companies have more diversified revenue streams than the dot-com highfliers.

## AI's trajectory is uncertain, but we incorporate some potential impacts in our equity return assumptions

Exhibit 6: Impact of AI on equity return building blocks

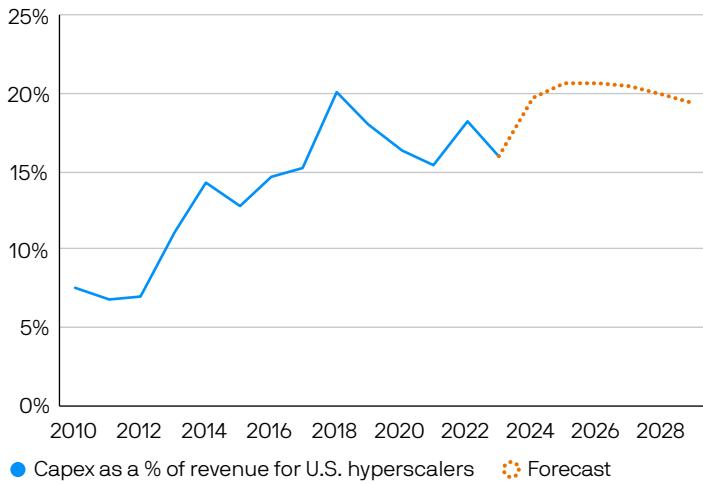
Channel	Impact	Comment
Sales	+	Companies in the AI ecosystem, including providers of AI services such as LLMs and makers of AI infrastructure such as semiconductor companies, will benefit disproportionately from demand in this area. We capture this dynamic in our GDP assumptions and our estimate of how fast revenues can grow relative to GDP.
Margins	+	Following a series of upgrades in recent years, we again upgrade our target margins for the AI-intensive U.S. large cap equity market. We've gained more confidence that high quality U.S. corporates will be able to protect their margins and that high barriers to entry in subsectors such as AI will make historically elevated margins defensible.
Valuations	+	Companies geared to strong secular themes such as AI tend to trade at high P/E ratios. Interestingly, this has remained true even in an environment of high interest rates, as investors have focused on the theme's long-term potential and, in the case of the mega cap tech companies, their quality. The U.S. large cap market is a disproportionate beneficiary of these dynamics. Although today's valuations are elevated, our target P/E ratio is high relative to history.

Source: J.P. Morgan Asset Management; data as of September 30, 2024.

- **Free cash flow generation:** The free cash flow generation of many of today's largest stocks is hard to ignore. The so-called Magnificent Seven generate over USD 350 billion of free cash flow, which more than offsets their capex spend. U.S. mega cap stocks spend around 20% of their revenue on capex (**Exhibit 7**).

### Today's large companies are spending massively on AI – but they can afford it

Exhibit 7: Hyperscaler capital expenditures



Source: J.P. Morgan Asset Management; data as of September 30, 2024.

- **Barriers to entry:** To fully benefit from the AI theme, companies will need powerful datasets and technology; thus, we see high barriers to entry in the AI arena.
- **Valuations:** Tech stocks were considerably more expensive during the dot-com bubble than they are today.

### AI, concentration and alpha

In the last year, the artificial intelligence theme has accelerated already dramatic stock market concentration, with significant gains isolated to a handful of tech companies at the top of global indices. What does such concentration mean for equity investors over the long term? We don't see strong reasons to change our equity forecasts in light of this theme, for several reasons:

- Stock market concentration is not unprecedented. Many other periods have had comparable degrees of concentration.

- All else equal, levels of concentration do not provide strong forward-looking guides on returns. When the dot-com bubble burst, levels of concentration declined and stocks sold off, but in general, betting against markets simply because of concentration has not been a successful investment strategy.
- We think today's stock market concentration is well deserved, with relative earnings growth and return on equity metrics for the largest companies justifying their higher valuations. Should that change, our forecasts would be impacted more significantly.
- Fourth, market concentration unwinds in different ways. In one scenario, the largest stocks lose market value through a multiple readjustment that lowers index returns. In another scenario, the same thing happens, but that market value is redistributed, with a more muted effect on index levels. We see the second scenario as more likely, as a broader range of companies benefit from AI capex and other structural themes.

Stock market concentration, less quantitative easing, higher interest rates, price-sensitive buyers – these factors suggest a positive environment for stock pickers and alpha generation. That view is echoed by our factor spreads, measures of the relative cheapness of different equity market factors, which we use to help forecast long-only factor returns. Value spreads remain very wide relative to history, indicating significant opportunity. We believe that skilled managers should be able to benefit from these dynamics and that there is a long runway for concentration to normalize.

Should investors want to balance concentration risk, regional diversification may be an option. While stock market concentration is not a U.S.-only phenomenon, in general ex-U.S. stocks geared to strong secular themes trade at discounts to their U.S. peers.

## Economic nationalism

The outlook for AI stocks, and with it stock market concentration, will be influenced by politics and policy. In recent years, developments in key economies, most notably the U.S. and China, have ushered in a new era of economic nationalism. This era is characterized by support for strategically important commercial enterprises and “national champions.”

The power of national champions is a key consideration in our equity return forecasts, as we attempt to estimate returns for indices in which these firms are listed. Generally, national champions are large companies that have performed well over the past year. As a result, equity markets dominated by such powerhouses come with challenging starting points for forward returns. Thus, for example, our return assumption for Taiwan declines this year after a year of very strong performance, falling by 1% to 6.2%.

## Economic nationalism and FX markets

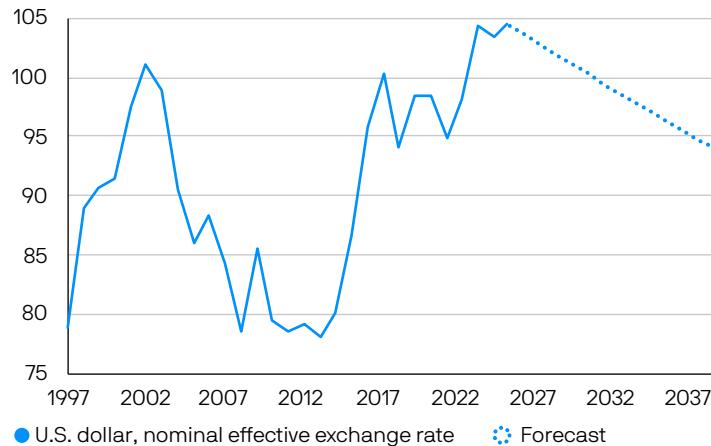
Economic nationalism also informs our FX forecasts, given the key role the U.S. dollar plays in global trade. We continue to expect the U.S. dollar to depreciate over our investment horizon (**Exhibit 8**). But we believe that USD depreciation will be more muted than we forecast in last year’s LTCMAs.

Our FX forecasts are based on a purchasing power parity (PPP) framework that assumes price discrepancies between goods and services across regions should drive changes in FX rates. In general, we forecast higher inflation in the U.S. than in most other developed economies, and that differential leads us to expect USD depreciation over the forecast horizon. However, this year, partly in response to our work on economic nationalism, inflation forecasts for ex-U.S. regions have increased, converging toward the U.S. level, reducing the forecasted inflation differential and thus the depreciation that we expect from the U.S. dollar.

We think the U.S. dollar is expensive and will depreciate over our forecast horizon – but perhaps at a more muted pace

### Exhibit 8: U.S. dollar forecasts

Yearly readings, 2020 = 100



Source: J.P. Morgan Asset Management; data as of September 30, 2024.

An uncomfortable tension persists between our forecast for the U.S. dollar, driven by the currency’s valuation when viewed through our purchasing price parity framework, and the recent history of the U.S. dollar, in which the currency has proved resistant to any significant depreciation.

The dollar plays a special part in the macroeconomy as the unit of account for payments and the world’s reserve currency. We do not forecast a major step change in the U.S. dollar’s role in international finance. This keeps the U.S. dollar from gravitating to its PPP-implied fair value over the forecast period.

Other factors support the dollar. In the global race to develop successful AI technology, the U.S. now enjoys a commanding lead, and the dollar is the denomination required to buy into this theme. High yielding and safe U.S. Treasuries remain popular. Demand for dollars and dollar-based assets also makes it easier for the U.S. government to fund deficits, easing our concerns about the sustainability of the path of U.S. government debt. However, over a longer-term horizon, it’s hard to think of the U.S. dollar as anything other than expensive. We expect the U.S. dollar to depreciate against all major DM currencies.

As market participants wonder if an alternative to the U.S. dollar might emerge, some note the growing importance of the Chinese yuan in recent years. CNY is increasingly used in bilateral trade settlements, especially for commodities, and we expect that trend to continue. But we do not forecast CNY's use as a currency of international finance and funding, or as a reserve account currency. In short, the globalization of CNY is not part of our outlook.

We expect Chinese policymakers to prefer a "cheap" – below fair value – currency to ensure that exports remain competitive. We forecast the CNY to appreciate by 1.2% vs. the U.S. dollar over the forecast horizon.

A broad group of Asian currencies are priced relative to the Chinese yuan. Even in a multi-polar world, supply chains can deepen within economic blocs. As companies have reconstituted their trade supply chains in the face of new tariffs, intraregional trade in Asia has strengthened, particularly between China and North Asia/Southeast Asia. We think that trend will continue and with it the importance of the prices of Asian FX relative to CNY.

## U.S. vs. non-U.S. market potential

Much as U.S. dollar strength has dominated currency markets, so, too, has U.S. equity outperformance dominated global equity markets in the past decade. Our forecasts consider to what extent this trend – which has made investing in ex-U.S. markets a losing bet, especially for USD-based investors – will persist.

The U.S. equity market is the highest quality market in the world, in our view. It offers the best earnings and return on equity (RoE) potential in our opportunity set and is most closely linked to the most attractive long-term themes. However, for long-term investors, we think the degree of outperformance by U.S. markets over the past 15 years is unlikely to repeat itself, for several reasons:

- **Currency:** Our forecast for a weaker U.S. dollar boosts international equity returns for U.S.-based investors.

- **Earnings:** U.S. earnings outperformed strongly in previous cycles as U.S. stocks benefited from the growth in social media and online advertising revenue, cloud computing and tech hardware. Outside the U.S., markets faced political crises (Europe), deflation risks (Japan) and a troubled energy sector (the UK). We think the next cycle will look more balanced with respect to corporate earnings, with various structural trends, including growing demand for semiconductors and weight-loss drugs, and the proliferation of AI benefits, supporting profits in markets outside the U.S.

- **Valuations:** There's no getting around it – U.S. stocks trade at much higher starting valuations than other markets. This year, we upgrade our end-of-period forecasts for the U.S., acknowledging the market's high quality characteristics and sectors. We thus think the U.S. market can stay more expensive than its peers across our forecast horizon. Still, the cyclical starting point is clearly more attractive in ex-U.S. markets, a positive driver for forward-looking returns.

- **Dividends:** Ex-U.S. stocks continue to offer more attractive dividend yields than their U.S. peers. For example, we estimate a 3.9% dividend yield from UK stocks over the forecast period; our expectation for the U.S. large cap market is just 1.6%.

Consider, for example, the positive forces that could impact European markets. From an attractive cyclical starting point, European markets over the next 15 years are likely to offer more compelling investment opportunities than in the previous 15. On the positive side of the ledger, market participants no longer fear the breakup of the eurozone and the demise of the euro (as they did during the European sovereign debt crisis). The European Commission's Recovery and Resilience Facility and the ECB's Transmission Protection Instrument reduce the probability of financial contagion in European markets.

European companies have an attractive gearing to consumer and technology sectors, and the region's early-stage technology markets are growing quickly. We expect the euro to appreciate by 1.2% over the forecast horizon vs. the U.S. dollar and for euro area equities to offer up 7.3% long-term returns, in local currency terms.

## China: Cyclical opportunities or structural challenges?

We see a broader range of outcomes around our forecasts for Chinese equities, and expect a supportive environment for active management and alpha generation. Unlike most other markets, Chinese equities offer cyclical opportunities. Even after the sharp rally in Chinese equities in September 2024, valuations look low relative to history, and margins look set to increase, too. Markets have already priced in a lot of the “bad news” related to China’s economy in recent years.

However, over the long term we continue to be concerned about Chinese companies’ ability to deliver sustained earnings growth and return profits to investors. We expect Chinese authorities to maintain control over key industries such as technology and finance, in turn limiting how far margins can recover. Our equity forecasting framework allows us to consider quality metrics such as RoE, and we believe that Chinese markets will remain toward the lower end of the quality spectrum (**Exhibit 9**).

While nominal GDP growth is expected to be healthy in China, we have become less optimistic about the ability of Chinese corporates to turn economic growth into sales and earnings. The deleveraging of the housing market remains a drag on the growth outlook, too, despite recent policy action to tackle the deep-seated issues in the housing sector.

## Japan: Moving toward the developed market mainstream

The narrative is very different in Japan, where markets continue to offer idiosyncratic opportunities to investors.

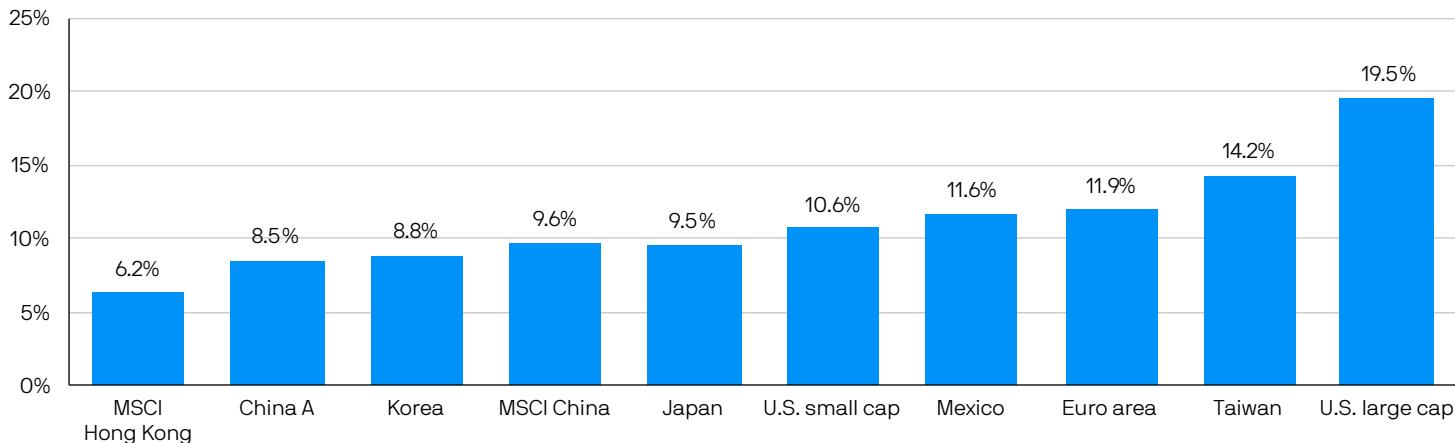
In 2019, we upgraded our Japanese equity assumptions, arguing that governance-led reforms would drive a sustainable increase in RoE in addition to capital returns to shareholders. In recent years, that prediction has tracked well. Japanese stocks, in local currency terms, have been one of the best performers, with margins and RoE close to all-time highs.

Since the Tokyo Stock Exchange (TSE) asked constituent companies to outline plans for better capital efficiency, specifically targeting Japanese companies’ cross-shareholding arrangements and stocks trading below book value, investors have become more optimistic about corporate governance reform. In Japan, 7% of companies still trade below a book value of 0.5x, but this measure has halved over the past two years. Another sign of market change: The TSE’s 2023 Shareownership Survey found that the shareholding ratio for foreigners was 31.8%, the highest since the survey began in 1970.

As publicly traded Japanese companies begin to return more to shareholders and as Japan moves into a new economic regime, we expect Japanese equities to perform well (**Exhibit 10**).

**While China offers a more attractive cyclical starting point, we forecast a lower return on equity, indicating a lower quality market**

Exhibit 9: Key market RoE forecasts

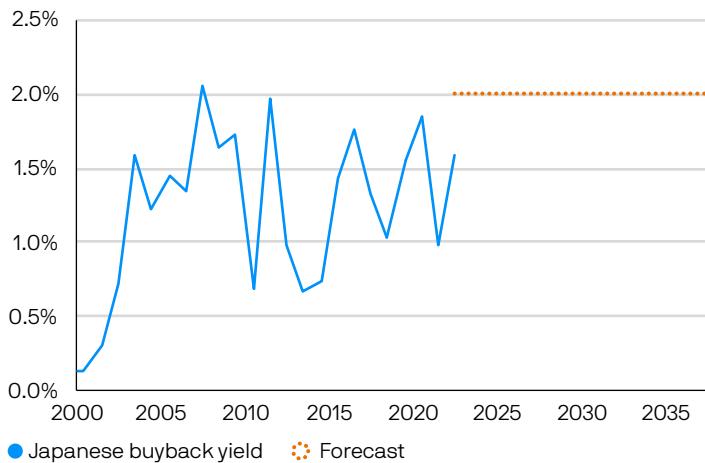


● Average RoE over forecast horizon, select markets

Source: J.P. Morgan Asset Management; data as of September 30, 2024.

We think that Japanese stocks will look more like average DM stocks and that the average buyback yield will increase

Exhibit 10: Japanese buyback yields and forecast



Source: J.P. Morgan Asset Management; data as of September 30, 2024.

Our Japanese equity assumptions reflect our Japanese inflation expectation, which we raise this year from 1.4% to 1.5%. This is higher inflation than in the previous cycle but below the central bank's 2% target. While many other DM economies have adopted policy settings designed to lower inflation, we continue to expect both the Bank of Japan and the Japanese government to set policy in a manner that supports Japanese prices.

This price support is reflected in our cash rate assumptions, which see Japanese rates staying lower for longer, and in our assumptions for JPY. We think that the Bank of Japan benefits from a weak JPY regime that imports healthy inflation. With Japan's neighbors also running cheap currency regimes, a weak JPY will require policy support. We note the importance of policy measures such as the Nippon individual savings account (NISA), a government tax-free stock investment program, which should enhance outflows from Japan by encouraging retail investors to move money into foreign equities.

Given current valuations, we still see JPY appreciating vs. the U.S. dollar, by an average 1.9% per year. But we note that this rate of appreciation is lower than what we forecast last year. It also still leaves JPY some distance from its PPP-implied fair value.

## Conclusion

As we've discussed, our outlook for public market returns finds significant opportunities activated by increased investment spending and technological advancements. It sees challenges as well, from economic nationalism and elevated valuations. Despite a strong rally and higher starting valuations for many public assets, the healthier foundations for growth give us confidence.

To forecast returns, we must not only evaluate these varied forces and try to quantify their potential impact, but also build a sense of what the world might look like over the next 10 to 15 years. We must assess as well the balance of risks around our forecasts. Inflation risks continue to be key to our outlook. While we have gained more confidence over the past year that inflation is gravitating toward central bank targets, our return assumptions would look quite different should we see a meaningful reacceleration in prices over the forecast period.

Our expectation for "healthier foundations" to the macro outlook has replaced the last decade's "new normal" of low rates and low investment. That's a good thing. This cycle's asset class returns will look different from the last cycle's in ways we can – and can't – comfortably project. We see significant opportunity for regional diversification and, as the winners and losers from the changing macroeconomic environment become apparent, also for active management.



## Private market and alternative asset assumptions

# Strong foundations for an era of rising alpha

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### In brief

A new economic era is coming into view. Higher base rates, rising capital investment, geopolitical tensions and inflation volatility are reshaping our 2025 return assumptions for private markets. We still expect real assets and financial alternatives to offer alpha, income and diversification, but we anticipate a wider dispersion of returns over the coming 10 to 15 years. These changes impact:

- **Real estate:** Elevated rates and challenging debt markets have driven down commercial real estate values, creating attractive entry points. This shift improves return expectations for core assets in the U.S., Europe and the UK due to higher entry yields. REITs, benefiting from diversified funding sources, are well positioned to weather the current rate cycle. Recently, higher rates and uncertainty about property values have rocked the commercial mortgage loan market, but we expect tighter spreads, stable base rates and increased transaction activity.
- **Infrastructure:** With access to long-term debt financing, infrastructure may offer inflation protection in a volatile rate environment and benefit from increased government spending.
- **Timberland:** Valuations remain resilient, bolstered by constrained supply and rising global demand.
- **Transport:** Geopolitical tensions, disrupted trade routes and supply chain pressures are reshaping the sector. The maritime industry benefits from higher volumes and longer cargo routes.
- **Commodities:** Returns are likely to outpace inflation, though they may become more muted. Central banks' gold reserves continue to grow, and the global energy transition supports copper demand.
- **Private equity:** Higher capital costs, elevated purchase price multiples and a difficult exit environment create headwinds, but high growth investment options are emerging with artificial intelligence (AI).
- **Venture capital:** We maintain a guardedly optimistic outlook as technology adoption accelerates, but manager selection is key.
- **Direct lending:** Return assumptions decline slightly due to increased credit costs and higher default rate projections.
- **Hedge funds:** Prevailing market conditions and base rates nudge alpha higher and increase return dispersion. Technological developments, especially AI, enhance alpha generation.

## A new economic era begins

The overarching themes that shape this year's Long-Term Capital Market Assumptions (LTCMAs) – higher fiscal spending, capital investment and neutral cash rates, but also higher economic growth and productivity – have significant implications for private markets over our 10- to 15-year investment horizon. At the same time, we expect the coming decade to be characterized by larger government deficits, more inflation volatility and a continued rise of populism.

For investors, understanding the interplay of these dynamics will be crucial for navigating – and capitalizing on – current financial trends, which are likely to have a mixed impact on private assets. Robust nominal growth rates, for example, will provide support for private equity and other assets with return streams that are closely tied to economic expansion. Simultaneously, higher interest rates will affect asset pricing, returns and market dynamics in the most rate-sensitive sectors, such as real estate.

Even now, higher rates are accentuating regional variations and sector-level differences within asset classes. All real estate assets, for example, are currently experiencing higher financing costs, but office assets are facing variable demand while multifamily and single-family rentals have benefited from solid demand and limited supply in the U.S. and Japan. This has led to more downward pressure on office sector valuations in the near term, but it may present greater investment opportunities over time.

Looking ahead, we still see alternatives offering investors alpha, income and diversification; however, we think the dispersion of these outcomes will be wider than what investors experienced in the 2010s. Higher interest rates, increasing capital investment and rising geopolitical risks will all play a crucial part in shaping those outcomes (**Exhibit 1**).

## Real estate

As we look across private markets, global real estate stands out. We see a generational opportunity emerging for long-term real estate investors as a direct result of valuations significantly re-rating. This shift boosts our baseline return estimates and creates an expectation of higher alpha generation, too, as increasing occupier market complexity allows for greater asset differentiation. Changing tenant requirements, which reflect concerns about sustainability, technology and office layout, in addition to complex capital spending and construction demands, have pushed idiosyncratic risks higher. In other words, details, which always matter, will matter even more.

In aggregate, office assets have faced weak demand and elevated vacancy rates, with lower quality assets hit the hardest. However, newly built and trophy assets are benefiting. On the supply side, construction has slowed, and increasing asset complexity, coupled with conversions and demolitions, may reward existing landlords by reducing future building stock.

Multifamily performance has slowed from its breakneck pandemic pace, but aggregate rent growth remains near the rate of inflation due to limited supply. However, regional dispersion is rising. Single-family rental properties are performing better as elevated demand and limited supply lead to robust rent growth in certain markets, such as the UK and southeastern U.S.

Industrial performance remains strong, though slightly moderated from its previous pace, and retail property performance dispersion remains elevated globally. The reality is that consumer preferences have shifted in the wake of the pandemic, and this has had an impact, particularly across private real estate markets.

## Our 2025 return expectations for private markets and financial alternatives generally edge higher relative to 2024

Exhibit 1: LTCMA expected returns (leveraged,\* net of fees, %), 2025 vs. 2024

Real assets	2025	2024	Financial alternatives	2025	2024
<b>Private real estate equity (USD)</b>					
U.S. core	8.1	7.5	<b>Private equity (USD)<sup>†</sup></b>		
U.S. value-added	10.1	9.7	Cap-weighted composite	9.9	9.7
European core	7.6	7.3	Private equity - small cap	10.1	9.7
European value-added	9.7	9.2	Private equity - mid cap	9.8	9.5
Asia-Pacific core	8.1	8.7	Private equity - large/mega cap	9.8	9.7
<b>REITs (USD)</b>					
U.S. REITs	8.0	8.2	Direct lending	8.2	8.5
European REITs	8.7	9.7	<b>Venture capital (USD)</b>		
Asia-Pacific REITs	7.8	8.7	Venture capital	8.8	9.2
Global REITs**	8.0	8.5	<b>Hedge funds (USD)</b>		
<b>Commercial mortgage loans (USD)</b>					
U.S.	6.4	6.3	Equity long bias	5.0	4.7
<b>Global infrastructure (USD)</b>					
Core	6.3	6.8	Event-driven	4.9	5.0
<b>Global transport (USD)</b>					
Core	7.8	7.7	Relative value	5.0	4.9
<b>Global timberland (USD)</b>					
Global timberland	5.3	6.2	Macro	3.8	3.6
<b>Commodities (USD)</b>					
Commodities	3.8	3.8	Diversified <sup>††</sup>	4.9	5.0
Gold	4.0	4.1	Conservative <sup>‡</sup>	3.4	3.7

Source: J.P. Morgan Asset Management; estimates as of September 30, 2023 and September 30, 2024.

\* All return assumptions incorporate leverage, except for commodities, where it does not apply.

\*\* The global composite is built assuming the following weights: roughly 70% U.S., 10% Europe and 20% Asia-Pacific.

† The private equity composite is AUM-weighted: 65% large cap and mega cap, 25% mid cap and 10% small cap. Capitalization size categories refer to the size of the asset pool, which has a direct correlation to the size of companies acquired, except in the case of mega cap.

†† The Diversified assumption represents the projected return for multi-strategy hedge funds.

‡ The Conservative assumption represents the projected return for multi-strategy hedge funds that seek to achieve consistent returns and low overall portfolio volatility by primarily investing in lower volatility strategies such as equity market neutral and fixed income arbitrage. The 2024 Conservative assumption uses a 0.70 beta to Diversified.

Here, we take a closer look at regional differences and our corresponding return assumptions for the U.S., Europe and Asia-Pacific.

## U.S. real estate

In an environment of high nominal growth and more inflation volatility, central banks are unlikely to drop policy rates to zero again any time soon, and real interest rates are likely to remain positive. The combination of elevated interest rates and challenging debt markets has weighed on commercial real estate (CRE) pricing over the past year, driving down asset values and creating attractive entry points for investors (**Exhibit 2**).

Just how attractive? Our 2025 long-term return assumption for U.S. core real estate surges to 8.1% from 7.5% last year, and our value-add return assumption climbs to 10.1% from 9.7%.

It's important to note, however, that CRE performance varies widely by sector. Office assets still face weak demand and elevated vacancy rates, particularly for lower quality properties. Newly built properties and trophy assets, however, are benefiting as more people return to the office and tenants upgrade to higher quality spaces. In the near term, slowing construction and increasing conversions and demolitions may reduce future building stock, rewarding existing landlords.

**As internal rates of return (IRRs) have risen, forward returns have improved**

Exhibit 2: IRRs for core U.S. real estate (2004–24)



Source: J.P. Morgan Real Estate Americas, J.P. Morgan Asset Management; data as of July 2024. Underwritten IRRs shown are unleveraged.

Other real estate sectors are proving resilient. Although multifamily real estate performance has slowed from its pandemic peaks, rent growth remains near the rate of inflation, and limited supply may support future rent increases. Single-family rental properties are performing even better than multifamily, driven by high demand and even more limited supply. Industrial real estate performance remains strong as well, although demand has moderated slightly since the pandemic. The retail property sector has surpassed performance expectations with low vacancy rates and increasing rents.

Overall, the current environment has created timely opportunities for investors across the risk spectrum. In our view, value-add projects are likely to offer a healthy premium over core real estate as long as debt markets face ongoing challenges and capital remains scarce. Furthermore, investors who can differentiate between temporary and structural impairment stand to generate significant alpha.

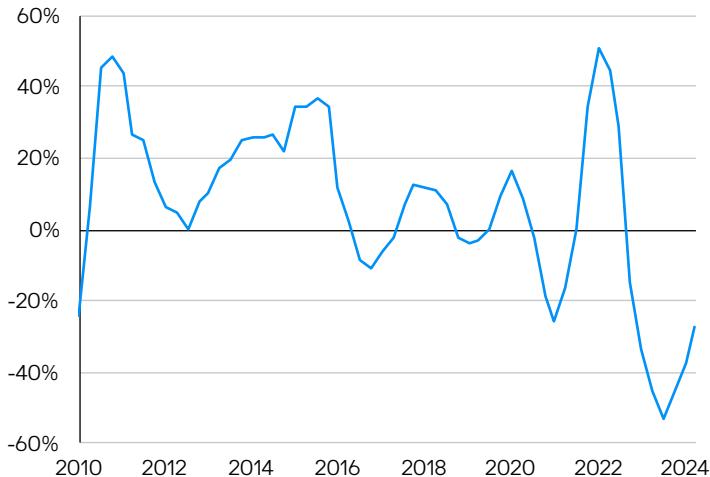
## European real estate

Our European core total return assumption increases to 7.6% from 7.3% last year (in U.S. dollar terms), while the UK return rises to 7.6%. Higher entry yields largely explain these changes, with pan-European yields rising by 45 basis points (bps) and UK yields rising 40bps vs. our 2024 forecast. Pricing for both markets reflects the impact of reduced liquidity over the past year, elevated bond yields and ongoing investor concerns.

Our net cash flow growth assumption rises modestly for UK core real estate and remains unchanged for European real estate. We see occupier caution mitigating rental pricing pressure, but tight supply is supporting upward pressure on rental values, especially for higher quality assets. The most sought-after properties are those capable of meeting unique occupier requirements, which include but are not limited to technology integration, open-space planning and other amenities, or addressing specific business complexities. As landlords upgrade their buildings and real estate markets thaw further in the wake of lower interest rates, it seems reasonable to expect transaction volumes will begin to increase (**Exhibit 3**).

## European real estate transaction volumes are improving after two years of decline

Exhibit 3: European real estate transaction volume



Source: J.P. Morgan Real Estate Europe, J.P. Morgan Asset Management; data as of April 2024.

Office sector performance, however, has been more varied. We expect Seoul's office market to significantly outperform over our 10- to 15-year investment horizon, while office markets in Hong Kong and China are likely to lag regional performance metrics due to weak demand and excessive supply.

## Real estate investment trusts (REITs)

REITs currently appear well positioned to weather the current interest rate cycle, and access to diversified funding sources should help mitigate the impact of higher yields.

Although REIT prices have seen a notable decline in response to higher rates, investors ought to remember that, based on historical market data, gaps between public and private markets do eventually close.

Despite sectoral and regional variations across the REIT market, overall cash flow generation and resilience remain robust, balance sheets are healthy, and leverage ratios are tracking below their long-term trend lines.

The current economic environment should continue to support these REIT market dynamics.

## U.S. commercial mortgage loans

Our long-term return assumption for U.S. commercial mortgage loans (CMLs) increases slightly this year, to 6.4% from 6.3% last year, as better returns from higher interest rates are partially offset by tighter credit spreads.

Investors won't soon forget that 2023 was a challenging year for the CML market. Borrowing and lending activity fell by nearly half from 2022's pace as higher rates, uncertainty about property values and concerns about office fundamentals rocked the industry. However, as these challenges gradually abate, we expect to see tighter CML spreads, lower and stable base rates, and increased transaction activity.

Importantly, lending activity has come back as – despite high overall coupon rates – CML spreads have tightened across various lender types and deal profiles. Furthermore, liquidity is plentiful for high quality assets in growth markets. Although activity has decreased year-over-year, it remains competitive, and lenders continue to show a preference for liability management exercises to avoid negative outcomes.

## Asia-Pacific real estate

In Asia-Pacific, our core real estate return assumption declines (in U.S. dollar terms) to 8.1% from 8.7% last year. Entry capitalization rates and net cash flow growth have edged higher, although in our view this may be offset by higher future financing costs and elevated maintenance expenses, leaving currency as the primary driver of this change in our return forecast.

Near- to medium-term variations in market-cycle dynamics across the region may result in a wider range of long-term return expectations. Driven by stronger revenue growth, Japan's core real estate market is likely to experience the most significant improvement in returns, followed by markets in Australia and New Zealand. Strong growth in Japan's multifamily sector leads residential sector performance across the region; favorable fundamentals also support the multifamily sector across other Asia-Pacific markets.

That said, we expect Asia-Pacific core real estate performance to vary widely across markets and sectors. In the near to medium term, tight market occupancy rates and limited supply will likely continue to support Japanese multifamily residential development. Furthermore, high demand and tight supply will also provide support for Japan's industrial real estate and logistics sectors; stable demand and moderate rent growth underpin the country's retail properties.

Going forward, we expect that CML activity will broaden to include assets beyond high quality growth markets, but many of the risks and opportunities that are present in the wider real estate market will also define the CML space over our 10- to 15-year investment forecast horizon.

## Global core infrastructure

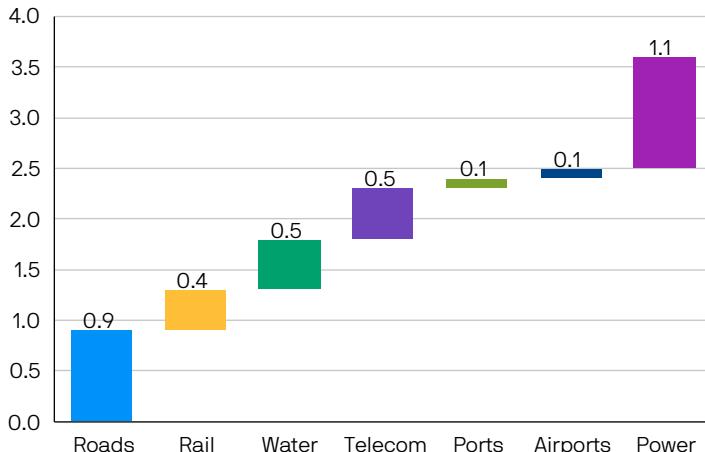
Despite upward revisions to our estimate for many other real assets, our 2025 global core infrastructure return projection declines (in U.S. dollar terms), to 6.3% from 6.8% last year. In a sense, this estimate did not re-rate for good reason, as the stability of the asset class and essential nature of the services it provides allowed it to remain far more stable during recent bouts of market volatility. In fact, reported private infrastructure yields have dropped modestly over the past year, but we generally anticipate stable, uncorrelated relative infrastructure returns over our forecast period.

As geopolitical and climate risks spur governments to focus more closely on their domestic energy supplies, we may see additional investment capital flow into infrastructure assets to support national security and the pending energy transition (**Exhibit 4**). Importantly, while infrastructure assets predominantly rely on long-term fixed rate debt for financing – a dynamic that has insulated the asset class from some of the impact of higher rates – debt funding will not exist in perpetuity at post-global financial crisis (GFC) and post-Covid rate levels. The future cost of capital has reset higher.

### Demand for infrastructure capital suggests a growing opportunity set for investors

**Exhibit 4: Average annual global infrastructure investment need by type**

USD trillions, as of 2017



Source: McKinsey Global Institute, J.P. Morgan Asset Management; data as of August 2024.

Looking ahead, we continue to see infrastructure as a crucial source of inflation protection in a diversified portfolio. This feature of the asset class may be especially important, given our expectation of higher future inflation volatility.

## Global timberland

Even in a higher rate environment, global timberland valuations have not experienced as much downward pressure as other private assets. This resilience is largely due to growing global demand for forest products and a constrained supply of softwood “sawtimber,” the predominant material used for home construction. As a result, our 2025 return assumption declines (in U.S. dollar terms), to 5.3% from 6.2% last year.

Trees provide natural sequestration of carbon by “locking up” atmospheric carbon, and the asset class’s key role in climate change mitigation continues to support valuations over our 10- to 15-year investment horizon. Expanding uses for residential, commercial and industrial forest products will also drive demand, particularly given our expectation for more fiscal spending and capital investment in the years ahead.

Transaction activity is also increasing as private equity and integrated forest product companies play a larger part in the asset class. Although higher mortgage rates and limited housing supply are creating affordability challenges, demand for timber continues to be strong, particularly in the U.S., which remains the largest market for timber products. Despite softening demand for forest products in China as the country’s economic growth slows, global supply constraints persist due to ongoing supply chain disruptions from Russia’s war against Ukraine.

In this environment, export-driven markets, such as Australia and New Zealand, may hold the greatest potential to deliver superior returns, thanks to their competitive access to China’s domestic market.

## Global transport

Turning to transportation assets, we expect a blend of themes, including geopolitical tensions, economic nationalism, disrupted trade routes, energy security, supply chain pressures, environmental factors and technological advancements, to shape the sector over the next decade. These trends will likely result in greater performance dispersion among transportation assets.

In 2024, two distinct drivers spurred earnings growth in the maritime industry: Shipping volumes increased, bolstered by China's efforts to stimulate its economy, and ton-mile distances – a unit of measurement that represents the movement of one ton of freight over a distance of one mile – rose dramatically as wars in Europe and the Middle East reshaped global shipping routes. Some of those changes are likely to become permanent.

To date, the dry bulk market<sup>1</sup> has benefited enormously from these pressures, experiencing a 47% year-over-year increase in earnings so far in 2024. Container shipping<sup>2</sup> markets also saw significant gains in 2024 as attacks on merchant ships in the Red Sea drove many shipping operators to divert vessels around South Africa's Cape of Good Hope. Events in the region surrounding the Red Sea will likely determine the outlook for this market.

In parallel with these changes, the product tanker market, which transports refined petroleum products and chemicals, should benefit from a low order book for new vessels and increased demand for longer cargo routes. This trend has already become evident in shipping costs, which are nearly twice as high now as they were on the eve of the pandemic.

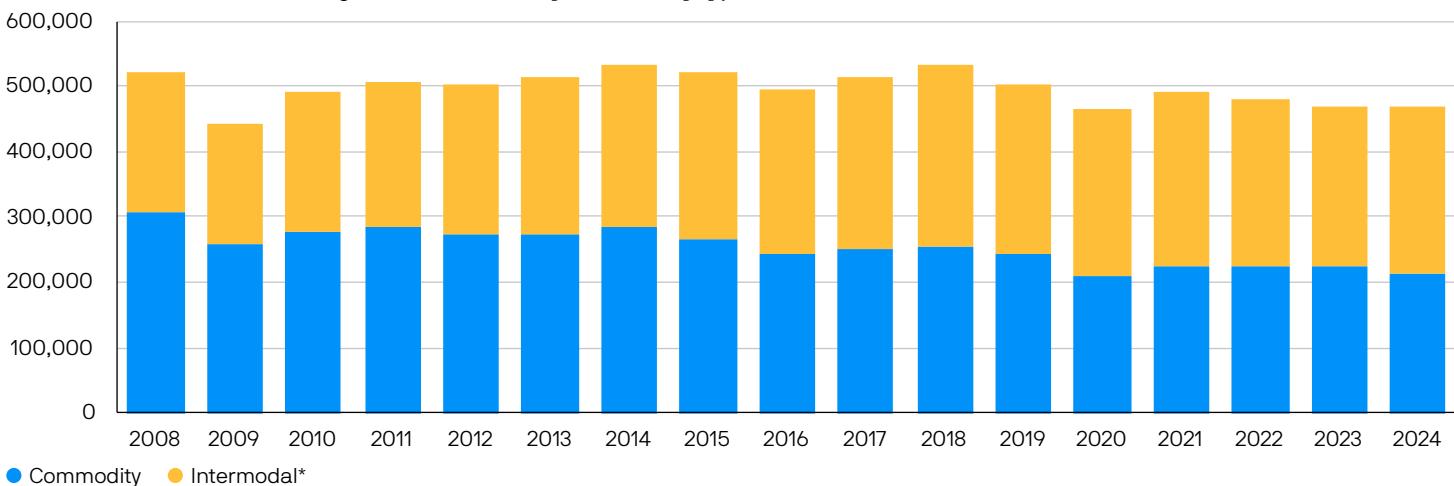
Over the medium to long term, we expect to see liquefied natural gas (LNG) play a crucial role in the global energy transition, particularly in an environment of elevated geopolitical tension and risk. LNG exports from the U.S. and Qatar are already replacing Russian supplies. With more emissions regulations on the horizon – posing a risk to older, less efficient LNG vessels – today's global order book for these types of vessels remains high.

Finally, demand for global air travel is rebounding and by early 2024 had already surpassed pre-pandemic levels by 6%. However, supply constraints and labor shortages may negatively affect aircraft deliveries, limiting growth during our forecast period.

This year, we add the North American freight rail market to our 2025 transport projections. For now, freight traffic remains stable against a declining supply of railcars, but looking forward, we anticipate stronger U.S. economic growth, low storage rates, tight availability and stable lease rates will drive long-term growth in freight rail transport (**Exhibit 5**).

## Market conditions are supportive of long-term growth in the North American freight rail market

Exhibit 5: U.S. rail traffic: Average number of weekly carloads by type



Source: AAR Rail Time Indicators; J.P. Morgan Asset Management; data as of May 2024. \*Intermodal transport refers to the practice of shipping containerized goods by multiple means, e.g. rail, ship, plane or truck.

<sup>1</sup> Dry bulk market: the segment of the maritime industry responsible for transporting bulk commodities that are neither liquid nor gaseous and typically shipped in large quantities, including coal, grains, iron ore and steel products, among others.

<sup>2</sup> Container shipping: the transportation of packaged goods and manufactured products in standardized containers that can be stacked on board, in a ship's hold and on deck.

## Commodities

Since the 1970s, commodity market cycles have averaged around 12 years. This pattern suggests that the current cycle, which began in 2020, is now past its high return phase. Accordingly, our 2025 return assumption for long-term, broad basket commodities remains unchanged at 3.8%, but we also recognize that an increase in economic nationalism and fiscal activism will have a direct impact on returns over the forecast horizon.

As we move forward, we anticipate that returns will become increasingly muted compared with the robust post-pandemic years. Using our Commodity Event Index model as a guide – because it captures seven supply-focused indicators as a proxy for producers' supply constraints – we expect a more tempered return environment for the remainder of the cycle.

Energy remains a paramount focus in developed markets. While nontraditional supply and demand dynamics are still powering our outlook for oil, our view is more conservative than it was in previous years. We expect energy transition efforts in developed markets, and regulatory constraints, to drive a peak in fossil fuel demand during the latter half of our 10- to 15-year forecast period.

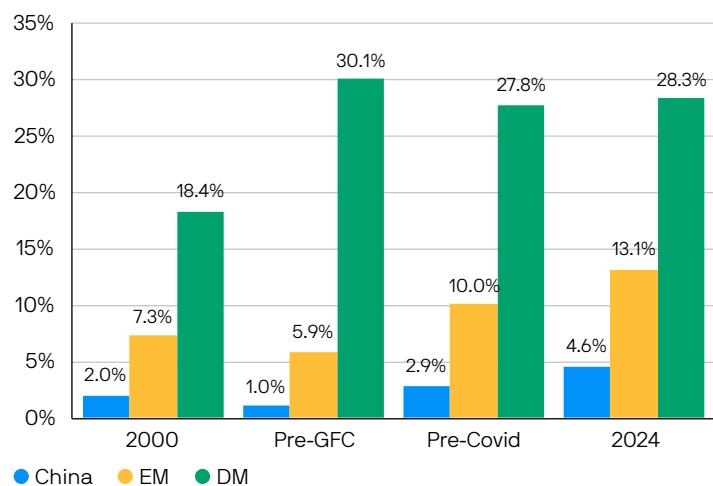
Offsetting this perspective, however, is the fact that elevated crude prices have incentivized increased global oil production, particularly among oil-producing nations outside the OPEC group. At the same time, greater fiscal activism should provide support to investment spending; this is likely to have a positive impact on supply and makes a supply deficit unlikely to emerge over our forecast period.

We do, however, expect the global energy transition to enhance future demand for copper, even before taking into account the incremental contribution likely to come from building artificial intelligence (AI)-related data centers. A structural shortfall seems increasingly likely as peaking mine capacity, historically low industry capex, long lead times for new production and insufficient scrap supply drive copper's upward price trajectory. Furthermore, governments' increasing focus on their domestic economies and a more nuanced global trade environment will only add to the pressure.

Gold remains a bright prospect. Over the past two decades, central banks have added to their gold reserves, and recently they have bought significantly more, driving prices higher. China, the largest central bank purchaser of gold over the past two years, now holds gold assets valued at 4.7% of its total monetary reserves. Sizable as that percentage may be, it is still meaningfully below the average for both emerging market (EM) and developed market (DM) central banks (**Exhibit 6**).

### EM central banks are likely to continue supporting gold demand growth

**Exhibit 6: Gold reserves as a % of total central bank reserves**



Source: VanEck, World Gold Council; data as of June 30, 2024.

In an environment of more government spending, rising economic nationalism and heightened geopolitical risk, we expect central banks to reduce their U.S. dollar exposure modestly, helping to support the demand for gold. Although investment demand has declined over the past three years, we believe this trend will reverse as inflation remains above 2% and gold continues to offer an attractive potential return outlook with low correlation to stocks and bonds.

## Financial alternatives

Turning to financial alternatives – private equity, venture capital, direct lending and hedge funds – we see many of the same forces influencing forward returns as with real assets. Specifically, interest rates are likely to continue impacting financing costs, valuations and returns. Additionally, we anticipate that a greater focus on economic nationalism and capital spending is likely to expand the opportunity set beyond just technology and AI-related companies.

## Private equity

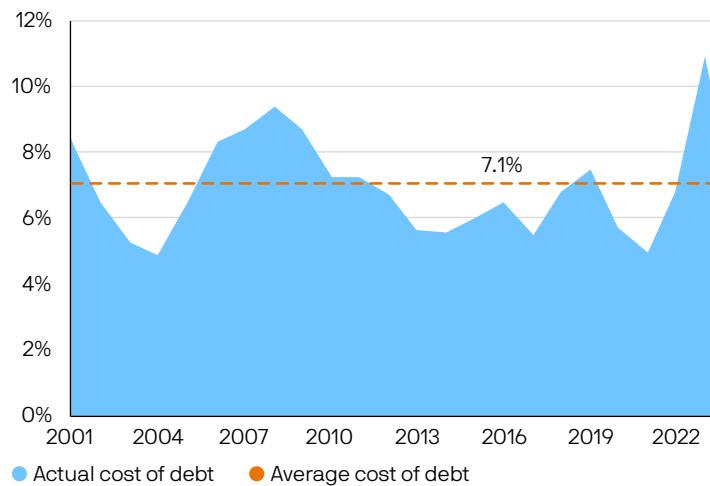
Private equity (PE) faces a number of headwinds, including the higher cost of capital; recent fund vintages' elevated purchase price multiples; historically high levels of uncalled-yet-committed investment capital, or dry powder; and a difficult exit environment. While some of these challenges present formidable obstacles to generating returns at a premium to what is available in the public markets, our expectation of a friendlier exit environment leads us to boost our return estimate from 9.7% to 9.9% for the cap-weighted composite.

Over the past 15 years, the Federal Reserve's zero interest rate policy gave the private equity industry access to low cost debt, and higher leverage became an important source of alpha generation.<sup>3</sup> Going forward, our approach changes to reflect the new reality: The average cost of credit now assumes a 50/50 split between private and public funding. This shift suggests that PE managers will experience a structurally higher cost of capital over our 10- to 15-year forecast period (**Exhibit 7**). At the same time, competition to deploy elevated levels of dry powder will likely continue to detract from alpha generation at the average manager level.

Our expectations for private equity returns edged higher this year, even though we anticipate lower returns in the public equity market. This may be particularly meaningful within U.S. small cap private equity markets, as we expect less of a valuation headwind compared with large caps and exit multiples have room to grow over the long term, which should produce a marginal return premium relative to large cap strategies.

## The elevated cost of debt presents a challenge to private equity's future performance

**Exhibit 7: Average yield to maturity for U.S. institutional leveraged buyout loans (all fund sizes)**



Source: LCD, PitchBook, J.P. Morgan Asset Management; data as of March 31, 2024. Actual cost of debt represents U.S. institutional leveraged buyout loans' average yield to maturity for all fund sizes.

We also expect to see slightly stronger alpha generation as private equity sponsors focus on technology and growth-oriented sectors (with an eye toward the probability of achieving an easier exit). Importantly, investors will need to focus on business model flexibility and resourcefulness at the underlying asset level – both are key drivers of private equity alpha.

Positive real and nominal yields, along with increased private sector capital spending, are also influencing our private equity return assumptions. We have already noticed that private equity investors are starting to concentrate more on the U.S., given its attractive relative innovation and growth opportunities. However, the Japanese market is an exception: It continues to attract interest from global investors because of the sizable exposure the market provides to the technology sector and regulatory efforts to improve corporate governance and shareholder accountability, both of which are catalyzing capital inflows.

<sup>3</sup> This year, we have updated our methodology for forecasting private equity return assumptions to better capture the impact of leverage, with the modest improvement in returns largely stemming from this change. If methodology changes had been implemented for the 2024 LTCMAs, returns would have been as follows: small PE: 10.0%, mid PE: 10.0%, large/mega PE: 10.4%, cap-weighted PE: 10.2%, and therefore the 2025 return assumptions would represent a 10bps–80bps decrease relative to adjusted 2024 LTCMAs.

As private equity investors continue to seek new opportunities, the accelerating adoption of technology – and, more specifically, AI – will offer high growth investment options. Success will increasingly depend on a company's ability to create or leverage tools to drive revenue and profit growth. The technology sector has dominated private equity deal activity in recent years, and this trend looks set to continue, especially as private market funding evolves to support young, high growth businesses.

## Venture capital

Our estimate of venture capital (VC) returns declines this year, from 9.2% to 8.8%, in line with the historical discount to private equity, and the asset class looks set to be impacted by many of the same forces that we see shaping private equity returns over the forecast horizon. In the early years of the pandemic, valuations of VC-backed initial public offerings (IPOs) hit their highest levels since the tech bubble of the 1990s, but they declined in 2022 due to pressure from higher rates. In 2023, however, valuations rebounded to nearly double their long-term average.

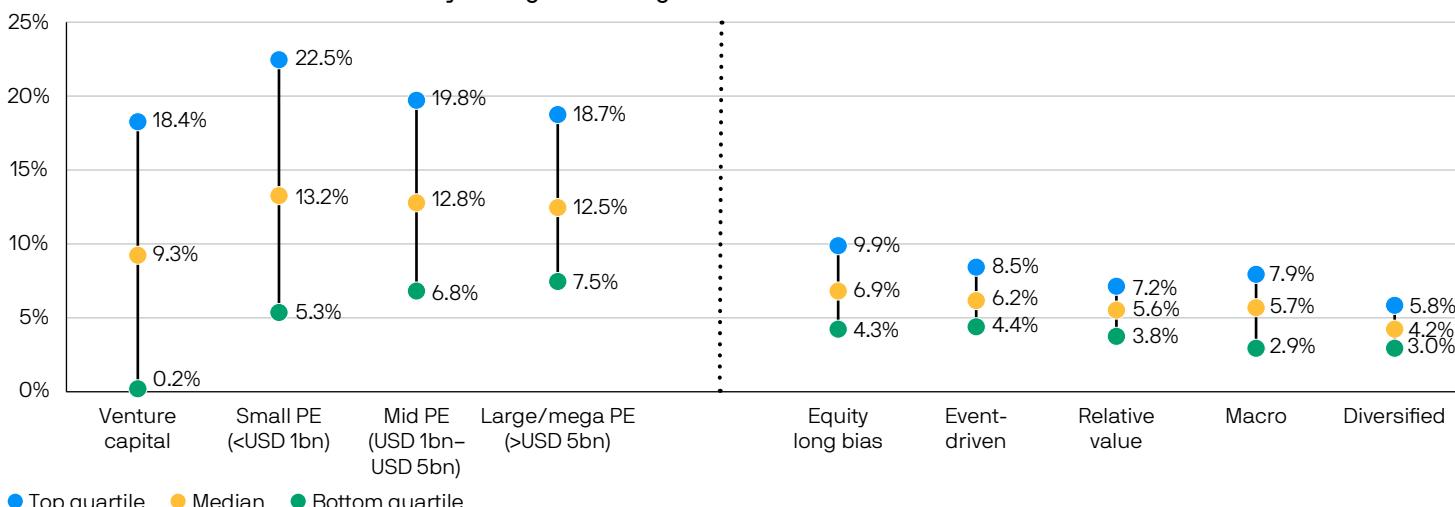
These elevated valuations, coupled with a challenging exit environment, are likely to be a headwind to returns. Furthermore, the amount of VC funds' dry powder has nearly doubled since 2020, to USD 329 billion. This overhang could potentially weigh on returns as managers are forced to compete in their efforts to put this money to work.

However, there are bright spots on the horizon. Unlike many of the other private market asset classes, VC funds do not rely on leverage as a key driver of returns, meaning elevated interest rates will be less of a disadvantage to performance. Furthermore, a more robust nominal growth backdrop should provide support for returns over our 10- to 15-year horizon. We are also watching the interplay between greater capital spending and accelerating technological adoption, which caters directly to the VC ecosystem where many of these capital deals are done.

We are cautiously optimistic about the impact of the energy transition on returns, given the exposure that many VC funds have to renewables and sustainability. That said, manager selection will be key across all areas of private markets – and particularly in venture capital, given its long history of fund-level return dispersion (**Exhibit 8**).

**Manager dispersion in alternatives has been wide historically – and this will likely continue, underscoring the importance of manager selection**

Exhibit 8: Historical annualized returns by manager's ranking



Source: Burgiss Private iQ, HFR, Inc., Morningstar, J.P. Morgan Asset Management; data as of March 31, 2024. Charts internal rate of return for private equity and venture capital; time-weighted returns for other asset classes. Private equity data include buyout and expansion capital funds, and represent vintages from 2006–24. Hedge fund data represent trailing 10-year annualized returns (by strategy type) as of March 31, 2024.

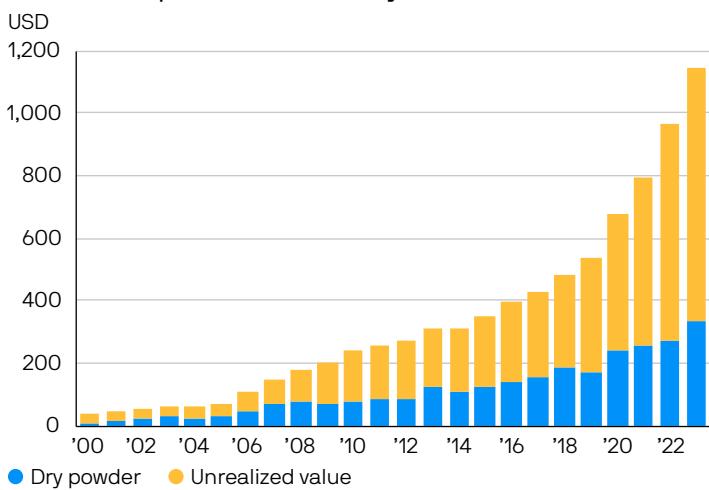
## Direct lending

Our 2025 direct lending return assumption declines slightly, to 8.2% from 8.5%, as we embed renewed caution in our outlook. Although market fundamentals appear supportive of an elevated return forecast, borrowers have likely found an equilibrium between less available, lower cost public market options vs. increasingly available, higher cost and more complex (and bespoke) private credit loan structures.

This year, our private vs. public syndicated debt spread falls by 20bps, to 180bps, largely due to robust growth in private debt assets under management (AUM) and, specifically, rising levels of dry powder that still need to be deployed (**Exhibit 9**). Increased credit costs dampen our return estimates by lifting average default rate projections, from 190bps to 250bps. Using a historical standard recovery rate of 50%, we anticipate an impact of 125bps, arriving at a loss-adjusted unlevered yield of 9.25%.

### Industry asset growth may challenge the return outlook for median managers

Exhibit 9: U.S. private credit industry AUM



Source: Preqin, J.P. Morgan Asset Management; data as of December 31, 2023.

Over our 10- to 15-year forecast period, we estimate that private credit and syndicated debt will equally split meeting leveraged buyout and M&A financing needs as borrowers work to balance the lower costs and reduced availability of public market options with the higher costs associated with using private credit. The percentage split between public vs. private usage will likely be cyclical, reflecting changing market conditions and credit availability.

Furthermore, the increasing use of unitranche financing (which combines senior debt and subordinated debt into one loan) and banks' reentry into the loan market indicate a growing preference for the most senior credit. In the future, direct lenders may need to meet the demands of lower rated borrowers, driving even greater return dispersion within direct lending.

## Hedge funds

Our 2025 return outlook for hedge fund strategies is slightly more optimistic than last year's, but the impact of underlying beta – the market-driven component of return – presents a mixed picture, consistent with our expectations of lower public equity and flat fixed income returns. Even so, prevailing market conditions and elevated base rates are expected to drive alpha higher and potentially increase return dispersion, too. That said, our return outlook for diversified strategies falls by 10bps, to 4.9%.

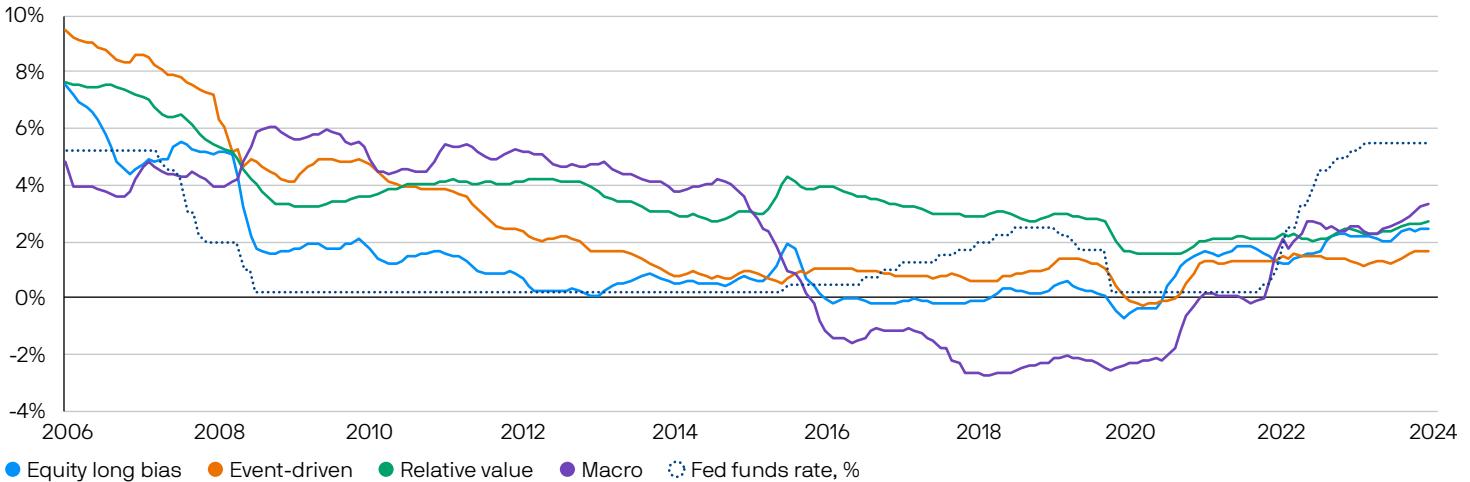
We now expect alpha to contribute approximately 40% of returns for equity long-biased strategies and 60% for diversified strategies. Higher projected cash rates, which we have raised by 40bps since issuing last year's projections, largely account for this increase in future alpha. A significant portion of this rate increase falls directly to hedge funds' bottom lines, boosting potential performance.

Seen against a backdrop of elevated fiscal spending and political uncertainty, higher rates and greater macroeconomic volatility are likely to keep equity volatility high, supporting hedge fund returns (**Exhibit 10**). At the same time, intrastock correlations are expected to remain low relative to the period of expansion after the global financial crisis – a condition that has historically been conducive to alpha generation. There is also potential for more alpha capture through short selling as funds earn more interest on their collateral.

Technological progress is expected to have an impact on future hedge fund returns. AI will provide investors with a set of tools likely to help boost alpha generation. However, these benefits probably will accrue to the largest and most diversified hedge funds, where skillful operators can adroitly deploy ample resources to adapt generally available AI models.

## Elevated interest rates and greater macroeconomic volatility are likely to support higher hedge fund returns

Exhibit 10: Hedge fund alpha trend line assumptions rise, consistent with a higher base rate environment



Source: Bloomberg Finance LP, J.P. Morgan Asset Management; data as of May 31, 2024. Alpha trend line represents alpha estimations derived from our proprietary hedge fund model.

## Conclusion

Our “higher starting points, healthier foundations” macroeconomic outlook sets up a strong base for long-term prospects across private markets. Additionally, the opportunity for alpha generation is significant, especially across small-sized funds executing flexible strategies. While we recognize the challenges posed by greater inflation volatility, elevated government deficits and rising populism, we are confident that higher real GDP growth, policy rates, fiscal spending, capital investment and productivity will help offset those risks.

This new era will be distinct from the 2010s. The period in the aftermath of the global financial crisis was marked by low investment, rock-bottom policy rates and muted inflation. Although it seemed necessary at the time, keeping real interest rates near zero – an act of unprecedented monetary activism by central banks – boosted asset prices and exacerbated income inequality. By the time Covid hit, fiscal austerity was prevalent.

In the 2020s and beyond, we expect to see higher policy rates and greater investment become the norm, with rising economic nationalism supporting a shift toward fiscal activism (i.e., increased government spending), especially in such strategically important areas as technology, energy sustainability and defense.

Changing market dynamics – specifically, elevated interest rates and greater inflation volatility – will impact private assets in various ways over the coming 10 to 15 years. While some sectors may face headwinds, others will find new growth opportunities, especially as the accelerating adoption of AI starts to propel gains in productivity across numerous industry sectors. In this new era, private assets, including financial alternatives, remain essential for a diversified portfolio, offering potential alpha, income and diversification.

Based on our current forecasts, many of these assets appear poised to deliver superior risk-adjusted returns and effective hedges against future public market volatility. But, as always, manager selection will be a crucial determinant of investment outcomes. As market conditions evolve, and new risks and opportunities emerge, private assets’ resilience and adaptability can help investors achieve their long-term return objectives.



## Volatility, correlation and portfolio implications

# No time for autopilot: Charting a path to resilient portfolios

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### In brief

- We make modest year-over-year changes to our volatility and correlation forecasts, but we also see a wider range of potential outcomes.
- This year, we forecast elevated inflation risks and anticipate higher rate volatility as fiscal activism rather than monetary activism increases. The shift will have a significant impact on the broader investment universe.
- We expect that higher inflation volatility will impact stock-bond correlation. In addition, we expect a wider range in correlations over the forecast horizon – a symptom of the tug-of-war between inflation risk and growth risk.
- Bonds, however, remain important portfolio diversifiers, especially for growth risks. Even low positive correlation will contribute materially to diversification. But portfolios should also incorporate inflation shock diversifiers.
- Broad equity risk forecasts are little changed. Despite current market concentration, we make no risk adjustments, as the top seven stocks exhibit low correlation with the rest of U.S. large cap stocks.
- Emerging markets stand out as a market for alpha rather than beta moving forward. Interestingly, the correlation between China and emerging markets excluding China (EM ex-China) has declined significantly, while the correlation between EM ex-China and developed markets has stayed elevated. If the relationship persists, it suggests a diversification benefit to a stand-alone China equity allocation.
- The next decade's portfolio needs to look different from the prior cycle's. Thoughtful strategies can draw on a few powerful themes: Bonds can help with growth risks; alternatives and active alpha can mitigate other risks (such as inflation, cost and fiscal risks) and advance the journey to an investor's final destination.

## Healthier foundations: Unpacking the risks beneath the surface

This year's Long-Term Capital Market Assumptions (LTCMAs) reflect a continuation of higher long-term nominal growth forecasts and nominal interest rates. This backdrop provides a relatively healthy and stable environment for most categories of risk assets. However, elevated inflation volatility is a concern and affects the forward-looking risk assumptions for cash and rates markets in particular.

In this chapter, we explore our outlook for volatility and correlations over our 10- to 15-year investment horizon and consider the implications for portfolio construction. Modest year-over-year changes in our forecasts often mask a fair amount of activity beneath the surface – and a wider range of potential outcomes.

From a portfolio construction standpoint, we see:

- Greater volatility in short-term stock-bond correlations and a wider range in correlations over the forecast horizon
- Higher nominal yields, allowing core bonds to effectively offset the impact of growth shocks on a broader portfolio and deliver a more meaningful level of total return and income over time
- A key role for active management and alternative asset classes in mitigating inflation risks while boosting potential risk-adjusted returns across portfolios

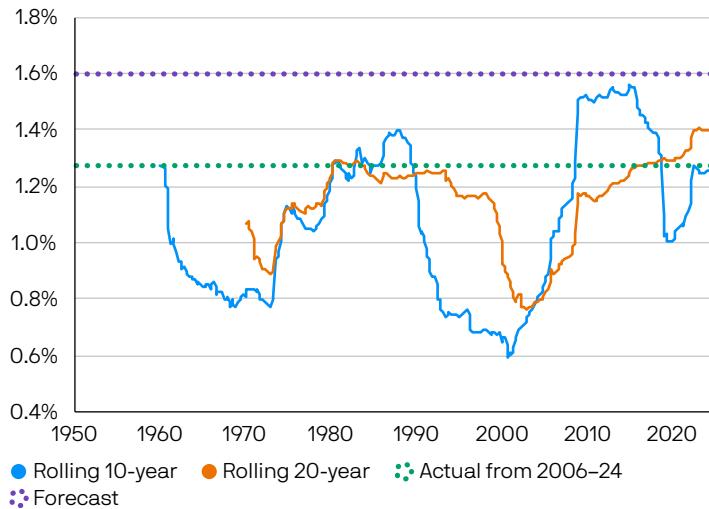
The key themes of our overall outlook for economies and markets – higher investment and nominal growth, increased fiscal activism and economic nationalism, the promise of artificial intelligence (AI) and automation – inform our discussion of the issues that will impact asset allocation and portfolio management over the coming decade.

## Inflation volatility, cross-asset correlations

The upward adjustment to inflation volatility in this year's outlook highlights the complexity of the internal dynamics at work. Consider: The recent decline in inflation from elevated levels is pulling down the estimates on inflation risks while at the same time our longer-term fundamental outlook suggests higher inflation risks. The overall effect: Our inflation volatility forecast remains around last year's level of 1.60%.<sup>1</sup> This sits at the upper range of long-term averages; it is also higher than what the recent data suggest (**Exhibit 1**).

**Our LTCMAs forecast elevated inflation volatility, beyond long-term average levels**

Exhibit 1: Inflation volatility forecast vs. history from 1950s



Source: Bloomberg, J.P. Morgan Asset Management; data from January 1950 to August 2024.

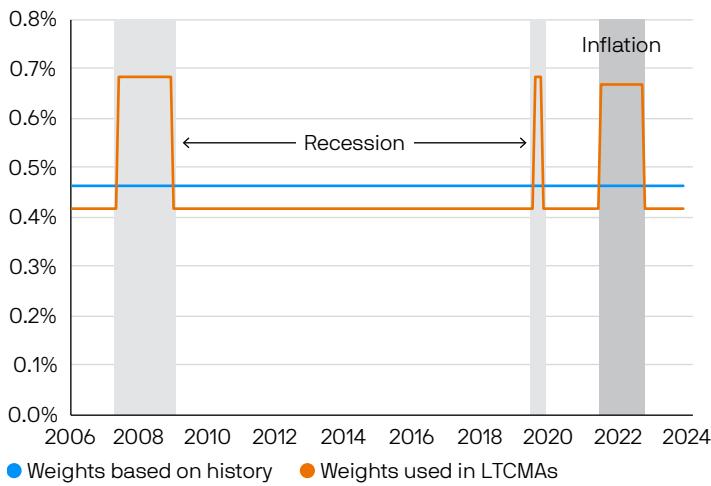
<sup>1</sup> 1.60% is the standard deviation of the monthly changes in U.S. inflation (annualized).

This inflation forecast is consistent with our macroeconomic forecasts, which expect higher nominal growth, on average, over the next 10–15 years, but also greater uncertainty around the growth and inflation paths. To account for this dynamic, our economic scenario weights have shifted relative to history (**Exhibit 2**).<sup>2</sup> Our 2025 LTCMA risk forecasts incorporate an elevated 15% probability of recession/downturn, above the 10% historical recession probability since 2006. Similarly, our forecast incorporates a 10% probability of higher inflation going forward, whereas history alone would suggest a 7% implied chance. In our view, the risk of economic nationalism driving inflation spikes warrants the higher probability.

The combined effect of these changes increases both the forecasted volatility and the cross-correlation across major asset classes. As a result, we anticipate less stable portfolios going forward.

### Shifts in economic scenario weights lead to less stable portfolios

**Exhibit 2: Weights of historical data points vs. LTCMA forecasts**



	Weights based on history	Weights used in LTCMAs
Recession	10%	15%
Inflation	7%	10%

Source: J.P. Morgan Asset Management. The weight represents the weight per data point used in the anchor risk estimations. Light gray shading represents recession periods. Dark gray shading represents elevated inflation periods.

### Biggest changes are in fixed income

The biggest changes to our risk and correlation assumptions this year are found in the realm of fixed income. In the near term, we expect increased volatility across bond markets – in short-term rates in particular – as central banks adjust policy rates to reflect a more balanced mix of growth, employment and inflation. Longer term, the presence of more-active fiscal policy and the need for high levels of capital investment suggest persistently elevated interest rates across the yield curve and higher rate volatilities.

Higher rate and inflation volatility also impact the correlation between equities and core government bonds. We project that the long-run correlation between global equity and core government bonds will be close to zero and that correlation between U.S. large cap equities and Treasuries will be low and slightly negative. These forecasts, while closer to traditional norms, are nonetheless a departure from the firmly negative correlation assumptions that were common between 2006 and 2022.

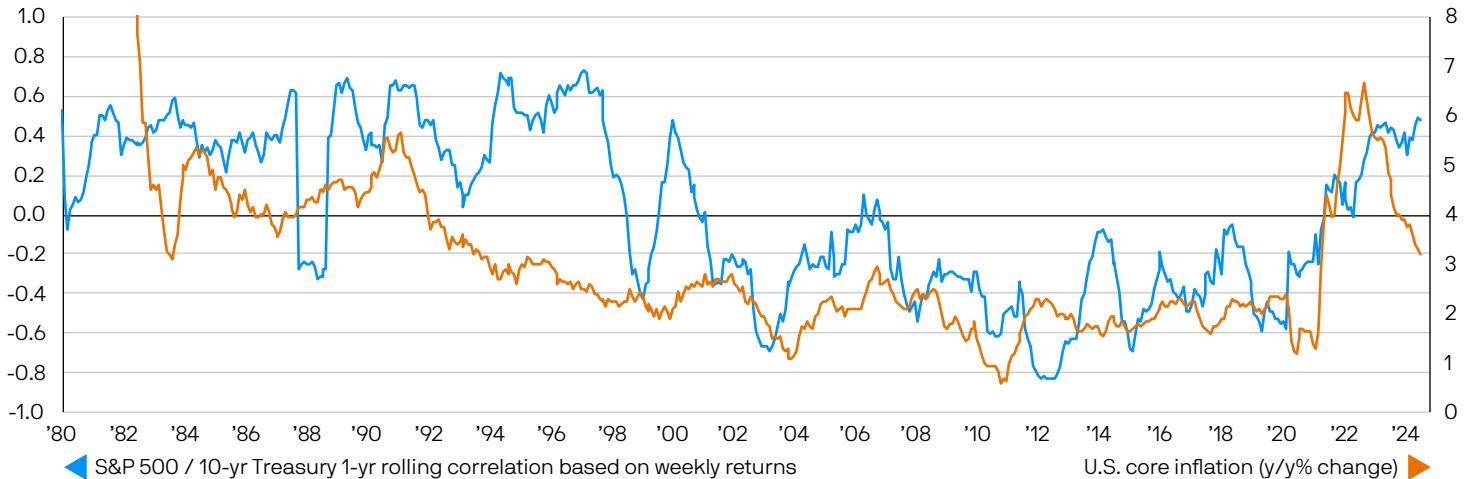
We expect greater volatility in short-term stock-bond correlations and a wider range in correlations over the forecast horizon – a symptom of the expected tug-of-war between inflation risk and growth risk. Short-term correlation can deviate substantially from long-term levels, with a more positive relationship during periods of inflation spikes and a more negative relationship during growth scares (**Exhibit 3**). This suggests the need to think holistically about portfolio diversification: Real assets can diversify during inflation shocks, while bonds can diversify during growth shocks (**Exhibits 4A and 4B**).

As with the rate outlook, our expectation of unstable correlations is anchored to both rising fiscal activism (even when inflationary) and constraints on monetary authorities – a reversal of the dynamic that existed in the low volatility pre-Covid era.

<sup>2</sup> For those interested in learning more about our methodology and how we incorporate economic weighting, please see the companion publication – *Long-Term Capital Market Assumptions: Methodology Handbook*

## Inflation spikes and positive stock-bond correlations have moved in tandem

Exhibit 3: S&P 500-U.S. 10-year Treasury correlation in different inflation regimes



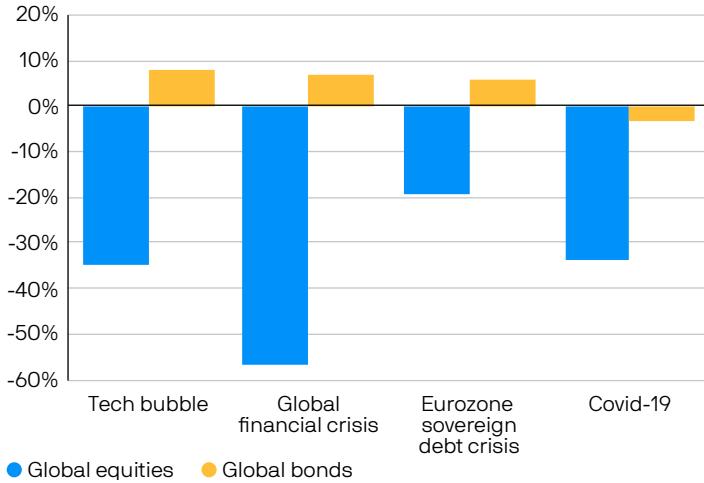
Source: BLS, LSEG Datastream, S&P Global, J.P. Morgan Asset Management; data as of August 19, 2024. Past performance is not a reliable indicator of current and future results.

The broad upward shift in interest rates that followed the recent inflation spike will allow bonds to retain their role as portfolio diversifiers, even if correlations are less stable going forward. While the move from firmly negative

to slightly negative (or even slightly positive) stock-bond correlation might feel significant, the reality is that any low positive correlation will contribute materially to portfolio diversification.

## Bonds act as diversifiers during growth shocks

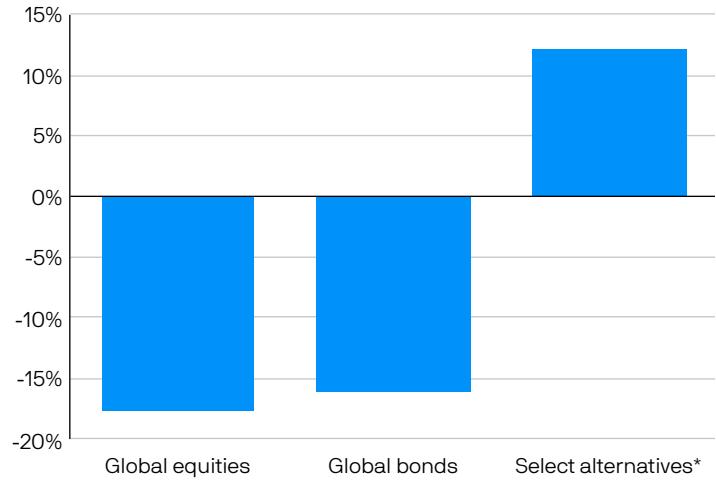
Exhibit 4A: Total return in U.S. dollars



Source: Bloomberg, LSEG Datastream, MSCI, J.P. Morgan Asset; data as of October 8, 2024. Global equities: MSCI World Index; Global bonds: Bloomberg Global Aggregate Index. Returns are shown over the period when MSCI World was falling in local currency terms. Tech bubble: March 24, 2000 to September 21, 2001; global financial crisis: July 13, 2007 to March 9, 2009; eurozone sovereign debt crisis: February 18, 2011 to October 3, 2011; Covid-19: February 19, 2020 to March 23, 2020. Past performance is not a reliable indicator of current and future results.

## Alternatives can diversify during inflation shocks, as they did in 2022

Exhibit 4B: Total return in U.S. dollars



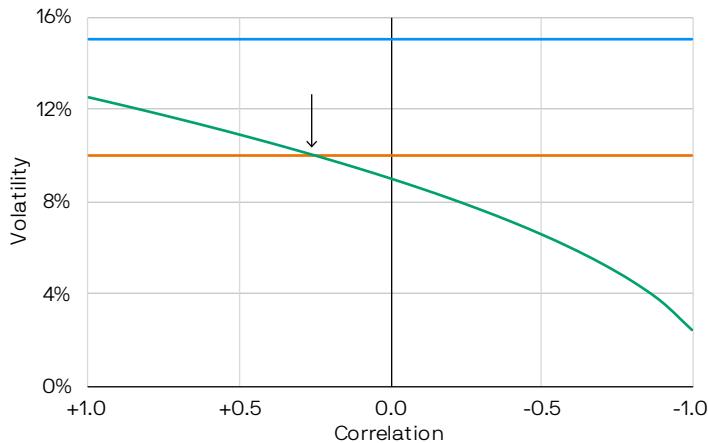
Source: Bloomberg, HFRI, LSEG Datastream, MSCI, NCREIF, J.P. Morgan Asset Management; data as of October 8, 2024. Global equities: MSCI World Index; global bonds: Bloomberg Global Aggregate Index.

\*Select alternatives is an equal-weighted aggregate comprising timber, infrastructure, transport and hedge funds. Hedge funds: HFRI Fund Weighted Composite; global infrastructure: MSCI Global Quarterly Infrastructure Asset Index (equal-weighted blend); timber: NCREIF Timberland Total Return Index. Transport returns are derived from a J.P. Morgan Asset Management Index. Past performance is not a reliable indicator of current and future results.

**Exhibit 5** uses a hypothetical equal-weighted two-asset portfolio to illustrate the point. In this example, any correlation below 0.25 leads the portfolio to have a lower volatility than either asset individually. This is a powerful (and, for some, surprising) insight that may reassure investors concerned about the sign rather than the magnitude of the stock-bond correlation.

### Even a low positive correlation can reduce portfolio volatility

Exhibit 5: Correlation's impact on portfolio volatility – a simple 2-asset portfolio illustration



Source: J.P. Morgan Asset Management. The simple two-asset portfolio is a 50%/50% blend of a 15% annualized vol asset and a 10% annualized vol asset, while varying the correlation assumption from +1 to -1 on the x-axis.

### No additional adjustments for equity market concentration

Broad equity market risk forecasts are little changed compared with last year's assumptions but still warrant a closer look. The early benefits of the development and adoption of AI appear to have been captured by mega cap technology companies. This has increased U.S. equity concentration in a dominant sector (technology) – in a small subset of companies, at levels not seen over the last 70 years.

Yet we make no additional adjustments to our benchmark-level equity risk forecasts solely on the basis of market concentration. Our research suggests that the increased influence of a dominant sector is reflected in the return contribution of the overall index, and thus its risk is incorporated in the returns used in our forecasts. Importantly, concentration in individual stocks is not

necessarily a clear sign of higher risk levels in aggregate, because lower correlations across sectors and firms can offset potential risks.

The long-term volatility of the top seven names by market cap in the S&P 500 has increased. But correlation between the returns of these companies and the rest of the index has been decreasing (**Exhibit 6A**) due to the noncyclical drivers of the top seven names and the quality of these companies. This lower correlation with the rest of the index helps to dampen volatility at the benchmark level.

Here, we observe that active management (rather than passive benchmarks and strategies) can help with diversification, as an active equity manager's excess returns are negatively correlated to equity and bond betas.<sup>3</sup>

Within non-U.S. equities, the shifting geopolitical and trade environment, as well as the increased uncertainty around China's economic path, are having an impact on correlations. While on the surface the projected correlation between U.S. and emerging market stocks is steady at 0.74, that stability masks substantial movement beneath the surface (**Exhibit 6B**). The correlation between emerging markets excluding China (EM ex-China) and China itself has decreased significantly, from nearly 0.8 in 2019 to 0.6 today on a 15-year rolling basis. Meanwhile, the correlation between EM ex-China and the U.S. has stayed more elevated, which is consistent with increasing bilateral trade outside of China and perceptions of lower geopolitical risk in non-China emerging markets.

Emerging market allocations need to be thoughtful. We highlight these considerations:

- A need to focus on alpha in emerging markets and EM ex-China as the projected beta returns have converged toward developed markets
- A low diversification benefit from adding EM ex-China to a core U.S. equity allocation as correlations have remained elevated
- A potential diversification benefit from establishing a stand-alone China equity allocation as correlations have moved lower

<sup>3</sup> Grace Koo, Vincent Juvyns, Evan Grace, et al., "A smarter portfolio to mitigate shocks in a less predictable world," 2024 Long-Term Capital Market Assumptions, J.P. Morgan Asset Management, October 2023.

### Lower correlation between the top seven stocks and the rest of the U.S. large cap index offsets concerns on higher risks

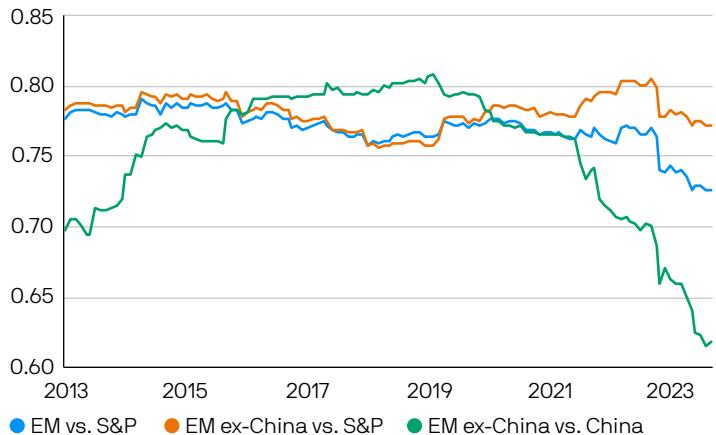
Exhibit 6A: 15-year correlation between the seven largest U.S. stocks vs. the rest of S&P 500



Source: FactSet, J.P. Morgan Asset Management; data as of July 31, 2024.  
Largest defined by market capitalization of the stocks.

### Chinese equities are pulling away from EM ex-China stocks

Exhibit 6B: 15-year rolling correlation of EM markets



Source: Bloomberg, J.P. Morgan Asset Management; data as of August 31, 2024.

### Higher rates and private markets

Turning to private market volatility assumptions, we highlight the varying impact of higher rates on less liquid asset classes:

- The real estate sector has been at the forefront of a broad repricing due to higher rates and changing fundamentals, which have driven a rise in its volatility. Despite the elevated volatility, real estate maintains one of the highest Sharpe ratios in our 2025 LTCMA universe because of its improved return potential.
- In contrast, other categories of real assets, such as infrastructure, transport and timberland – which are less sensitive to refinancing risk – continue to exhibit price stability, leading to a slight downward adjustment to our risk forecasts.
- Private equity also feels the impact of higher rates. We anticipate a lower leverage ratio for private equity going forward as higher borrowing costs reduce the use of leverage and increase the amount of equity in individual deals. This more conservative capital structure, all else equal, should lead to lower volatility and a widening volatility gap between private equity and venture capital.

- In commodities, we continue to expect elevated volatility, similar to last year's edition, as a dynamic macroeconomic environment, the ongoing impact of the energy transition and higher than normal geopolitical risks have the potential to result in larger price swings. As a result, commodities are a natural diversifier for these risks, and they can also help complement bonds as a diversifier for more traditional economic growth shocks.

### Portfolio implications of healthier foundations

We now shift our perspective and consider some of the portfolio implications of our 2025 forecast assumptions. Our goal here is to survey the output of the LTCMA process and identify significant shifts in asset class characteristics that should inform capital allocation decisions, both strategic and tactical.

### Stable strategic anchor, dynamic market conditions

Maintaining a stable strategic anchor and shifting to respond effectively, as needed, to dynamic market conditions can be challenging. Broadly, today's healthier macroeconomic environment presents several potentially significant portfolio impacts for investors to consider.

First, the good news. The expected return of a broadly diversified public market 60/40 portfolio remains significantly above the forecasted returns of the prior cycle of the 2010s, at 6.4% vs. 5.4% in 2020 (**Exhibit 7A**). Healthier economic foundations support higher returns from cash and bonds, providing investors a good starting point for balanced portfolios.

The drop in the expected return on a year-over-year basis is the result of declining returns in both equity and fixed income. Investors need not remain passive in the face of falling public market returns, of course. The current environment increases the relative benefits of adding active alpha in public markets, as well as alternative asset classes for their potential to generate returns and diversification (**Exhibit 7B**).

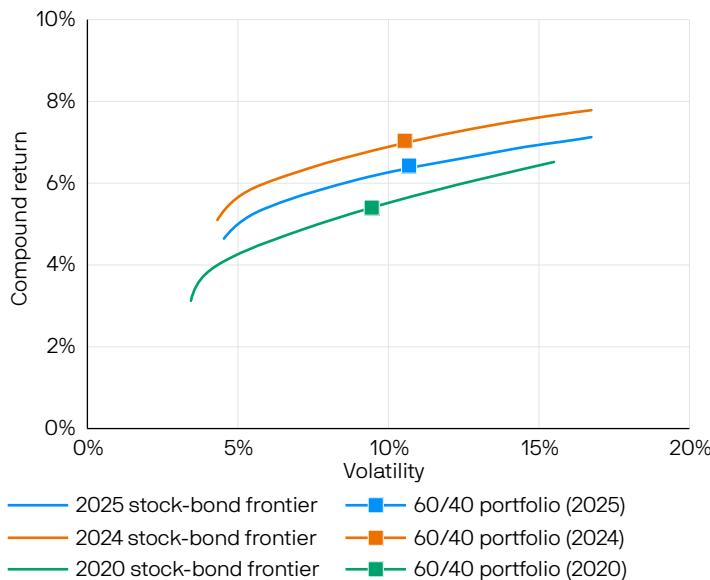
While we anticipate cash rates to remain higher than the previous cycle's extreme lows, we expect them to decline from currently restrictive levels. That reduces the incentive to maintain higher cash levels

and favors a return to more duration-sensitive core sectors (and, for some investors, long-duration bonds that are aligned with liabilities). The process can be implemented in a patient manner that seeks to use market volatility opportunistically.

Cyclical starting points matter. The reward for taking public equity risk remains positive (and above pre-pandemic levels), but the decline in year-over-year return expectations for U.S. equities suggests that meeting objectives will be more challenging. Investors may benefit from a shift toward active strategies within public markets and allocations to more attractively valued non-U.S. equity markets. These are not mutually exclusive: The ability of active global or broadly diversified international equity strategies to capture alpha is considerable. Additionally, incorporating certain alternatives into public market portfolios is key to generating alpha.

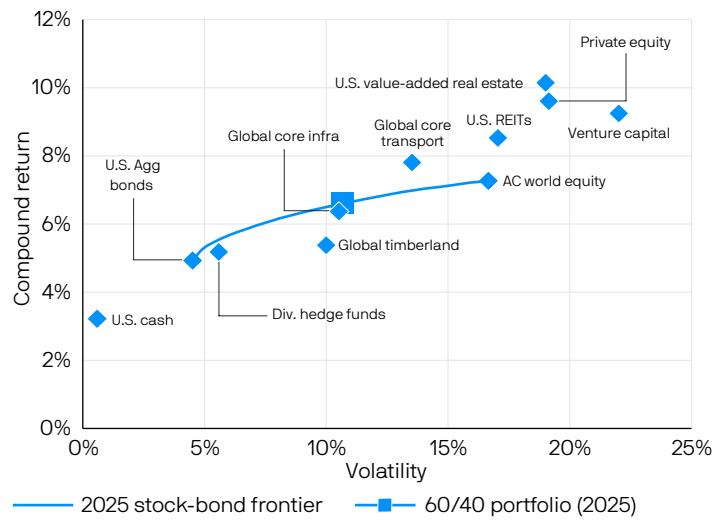
### **There is a better starting point for a 60/40 portfolio compared with the pre-pandemic reality ...**

**Exhibit 7A: Stock-bond frontier, U.S. Aggregate bonds and MSCI All Country World Index, USD**



### **... but despite a healthier foundation for a 60/40 portfolio, many alternatives can potentially boost returns**

**Exhibit 7B: Stock-bond frontier, U.S. Aggregate bonds and MSCI All Country World Index, USD**



Source: J.P. Morgan Asset Management; data as of September 30, 2024.

The stock-bond frontier edges lower vs. last year. Thus, fixed income expectations decline a bit less than equity expectations do relative to last year, consistent with a maturing business cycle. In our view, this shift implies a small increase in bond allocations in strategic portfolios.

In the short term, the projected continuing decline in inflation from currently elevated levels suggests a potential return to a low stock-bond correlation environment, enhancing the case for utilizing high quality fixed income and some types of alternatives to diversify portfolios, especially from economic growth risks as the cycle matures.

In the long run, however, the continued rise in inflation and rate volatility likely signals unstable stock-bond correlations, highlighting the need to continue to incorporate assets and strategies that can help portfolios navigate shocks from, say, increased inflation and fiscal activism.

### **The role of active management and alternatives as a source of diversification**

Expanding active management in public markets can benefit investors not only by increasing potential returns, but also by reducing risk. In an environment where stock-bond correlation is less reliable, even modest diversification across active equity managers' alpha can be helpful. Active alpha produces near-zero correlation to equity market returns for the median manager.<sup>4</sup>

Even more impactfully, a tactically flexible asset allocation strategy can introduce active management across asset classes, responding directly to a less stable world with higher levels of fiscal activism and economic nationalism.

For investors that can tolerate some illiquidity, alternatives should be part of the core portfolio.

In general, the illiquidity and infrequent pricing of private markets lend those markets to higher returns and lower volatility than public strategies. Additionally, macro hedge funds and real assets (such as core infrastructure, transport and timber) offer essential portfolio diversification benefits.

At present, however, the impact of higher interest rates is leading to a reordering of the potential returns in this sector. Alternative asset classes that did not take a mark-to-market hit from rising interest rates will be less likely to see improved performance as rates decline, but the alternative asset classes that have repriced will likely be relatively more compelling. As private markets thaw and price discovery rises, the opportunity in alternatives is likely to grow. In the interim, real estate, particularly in the U.S. and Europe, offers an interesting cyclical starting point.

As always, broad assumptions about returns for alternative asset classes obscure the high degree of manager dispersion within each category. There is also dispersion among alternative asset classes, which introduces the opportunity to use actively managed multi-alternative portfolios to mitigate risk, reduce volatility and improve potential returns.

Investors should also weigh the trade-offs among liquid, semiliquid and illiquid assets. Semiliquid assets offer a middle ground by providing potentially higher returns and lower risk while still allowing for some level of liquidity and more efficient capital deployment.

The most effective response to all these market shifts will likely take place within the strategic asset allocation process itself. The burden, therefore, falls on the asset allocator to craft a strategy that can exploit opportunities to reallocate capital in the direction of sectors that offer the prospect of enhanced returns or risk management.

### **Some current market imbalances warrant a closer look**

A long-term forecast may at times run the risk of obscuring short-term market imbalances that present opportunities for asset allocators to realign their portfolios. At such moments, relying on the LTCMAs alone can underestimate the magnitude of the opportunity or the seriousness of the short-term risks.

For example: If aligned with improving fundamentals, elevated concentration and valuations in and of themselves are not a concern. But the time horizon matters a great deal. Over a shorter time horizon than that of our LTCMAs, rotations and repricings can occur, with painful consequences and potential opportunities for portfolios.

<sup>4</sup> Grace Koo, Vincent Juvyns, Evan Grace, et al., "A smarter portfolio to mitigate shocks in a less predictable world," *2024 Long-Term Capital Market Assumptions*, October 2023.

Here, we discuss four current market imbalances – yield curve shape, U.S. equity market concentration, global equity market concentration and tight credit spreads – and identify potential responses. In some instances, the appropriate response will be to adjust the strategic asset allocation; in others, it may involve thinking differently about benchmarks and strategies.

### **Yield curve shape**

As we've noted, we project a continued decline in cash yields from today's level and a return to more normal yield curves (upward sloping) over the LTCMA investment horizon. However, the prolonged flatness of the yield curve has shifted the relative risks and returns of key asset classes. For a while, the negative carry vs. cash made longer-duration fixed income comparatively unattractive. We expect the yield curve will likely continue to revert to a more normal term structure as inflation declines, monetary policy becomes more accommodative and fiscal activism keeps longer-duration yields elevated.

Additionally, the positive nominal and real returns on the safest asset class have raised the bar for all risky asset classes.

Potential portfolio responses include:

- Expanding the short-duration opportunity set to include corporate and securitized credit sectors at modestly longer durations to increase yield and allow some capital appreciation in a Federal Reserve rate-cutting environment
- Returning bond portfolios to a more natural yield curve environment (with a bigger role for long-duration core fixed income) in anticipation of normalizing rates that should deliver improved performance and portfolio risk management
- Tactically and actively managing duration positioning in bond portfolios while rate volatility remains elevated

### **U.S. equity market concentration**

In certain equity markets, a small number of companies dominate. For some countries or regions, this market concentration has been the norm for the past few decades. But in the U.S., the trend is relatively recent.

This concentration increases single-stock risk and biases portfolios toward a sector (technology) and a style (growth).

Historically, the largest companies in the S&P 500 have rarely stayed constant across decades. Over the next few years, the roster of winners from technological advancements like AI will likely broaden out across companies and sectors, permitting other parts of the market to catch up to the early winners. We note as well that today's levels of market dominance face several challenges, including business competition and government regulation.

Potential portfolio responses include:

- Using active equity strategies that are not obligated to replicate the concentrated nature of benchmarks, or using alternative non-market cap benchmarks
- Considering equity strategies that can use a combination of long and short positions, expanding the impact of active management across the many firms with smaller weightings in the benchmark
- Rebalancing toward other companies and market sectors, including small and mid cap equity and value strategies that may offer better valuations and risk diversification

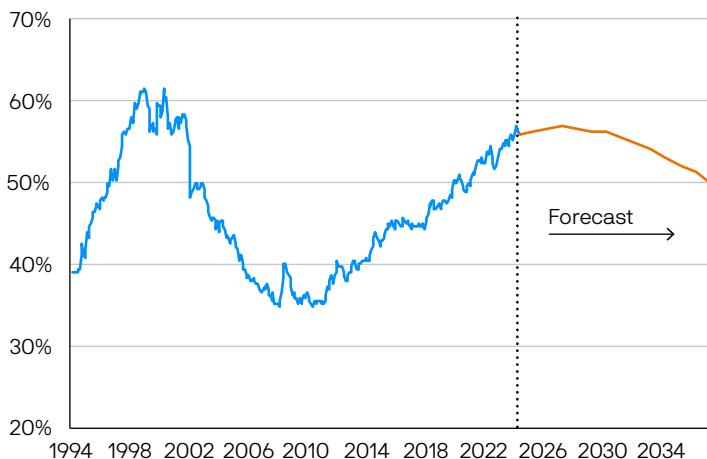
### **Global equity market concentration**

Concentration is also present at the global equity index level. The U.S. now accounts for 56% of the equity benchmark. That compares with a 60% weight during the dot-com bubble. We believe the U.S. share of global equities should remain large, given the market's size and liquidity, as well as the positive outlook for cycle-neutral earnings and return on equity, but we expect it to moderate from currently elevated levels (**Exhibit 8**).

Over the next few years, other markets have the potential to catch up to the U.S. The reasons for that possible shift include less demanding cyclical starting points in local equities and more favorable starting points for currencies (**Exhibit 9**), a broadening out of technology winners and idiosyncratic positive developments. Emerging markets have lower cycle-neutral projected returns than developed markets. This means investors need to focus much more on the alpha than the beta in this space.

## The U.S. share of global equities should moderate somewhat

Exhibit 8: U.S. large cap equities as a % of global equities



Source: MSCI, J.P. Morgan Asset Management. U.S. share includes only large cap U.S. equities. Forecast uses the LTCMA equity projections for the MSCI countries forecasted in the publication. It is rebased to the MSCI weights. Our market capitalization assumptions are a function of each market's price return (rather than its total return), as well as our forecasts for issuance and buyback rates.

With respect to China, cycle-neutral projected returns stand out for being below those of EM ex-China. As a result, investors need to focus on idiosyncratic opportunities in this low information market. A stand-alone Chinese equity allocation may be advantageous, as it gives investors greater ability to make tactical allocation decisions and to use this allocation to diversify other EM exposure.

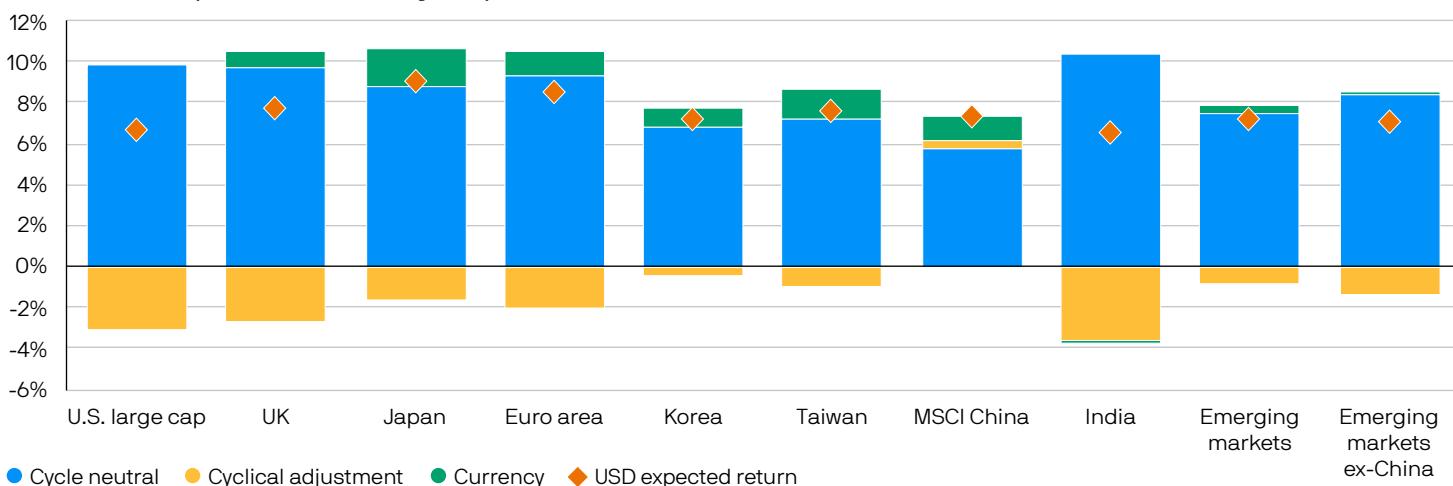
For U.S. dollar investors, global equity returns are boosted by the currency factor, which should help to lower global equity concentration over time. Our work on economic nationalism translates to lower forecasted inflation differentials, and we are expecting less dollar weakness compared with prior years. But investors should still benefit from non-U.S. dollar currency exposure as an additional return contributor. That said, the currency boost may occur over short time horizons, so investors should use active currency management to benefit from the currency component.

Potential portfolio responses include:

- Rebalancing allocations to non-U.S. markets that offer a better valuation starting point to complement core U.S. equity allocations
- Using active global equity strategies that can allocate between the U.S. and other markets as cyclical drivers change
- Creating a stand-alone Chinese equity allocation separate from EM ex-China to allow for a more dynamic asset allocation to China based on valuation extremes

## Starting points are difficult (outside of China), but FX helps boost non-U.S. returns

Exhibit 9: 2025 expected total return by component



Source: J.P. Morgan Asset Management; data as of September 30, 2024.

## Tight credit spreads and the legacy of low interest rates

Investment grade and high yield corporate debt spreads are currently at the low end of historical norms. Despite higher interest rates, there are reasons to be less concerned with tight spreads than in prior cycles. Many companies termed out their debt during the low interest rate era, and the rise of private credit markets has kept capital flowing to more levered companies.

That said, there are nuances to consider. First, market quality. High yield bond markets have improved in quality over the past 15 years, making spreads look optically tighter than they would if they had been adjusted for fundamentals. At the same time, investment grade bond markets have decreased in quality, making spreads even tighter than they optically appear.<sup>5</sup> Time horizons are another important consideration. Over the next few years, history suggests that we are likely to see a credit cycle in which security selection will be paramount, especially for the lowest quality segments.

More broadly, today's markets are still living with the legacy of low interest rates, which contributed to a rise in leverage across markets. Many public balance sheets are operating with an elevated level of debt that will need to be refinanced at higher cost and usually to the detriment of the borrower.

Potential portfolio responses include:

- Active management of fixed income portfolios with a significant credit component, including core, core-plus, investment grade, high yield and direct lending
- Substitution of corporate credit with securitized credit assets that source risk from more diversified pools of borrowers and can offer credit enhancement through subordination
- Rethinking of bond market allocations from traditional investment grade/high yield and public/private buckets to credit buckets that blur traditional lines and are more aligned with underlying risk and portfolio characteristics (ultra-high quality, broad credit and speculative credit)<sup>6</sup>
- Sensitivity to credit cycles across the portfolio, including in equities and alternatives. Small cap companies exhibit high leverage and relatively low interest rate coverage ratios vs. their large cap peers, continuing the last two decades' trend

## A better destination but an uncertain journey

The next decade's portfolio needs to look different from the prior cycle's. "Lower for longer" has been replaced by "healthier foundations." With higher growth, inflation and rates come opportunities and risks for asset allocators.

The opportunities are clear. Income is now less scarce (with attractive risk-adjusted returns for cash and bonds), and fixed income can once again provide true risk diversification during growth shocks. In addition, the shift to positive real rates has created a favorable starting point for assets that have repriced, such as core bonds and U.S. and European real estate. Even in a higher rate environment, the backdrop of healthy growth, technological innovation and strong investment can support positive returns across most or all categories of risk assets.

But risks remain. Geopolitical risks are elevated, and monetary policy may be constrained to act as a buffer against financial volatility when the risk of inflation remains present. Less stable asset class correlations underscore the need to include a range of portfolio diversifiers to insulate portfolios against such shocks. Fixed income continues to be essential, but the broader use of active management, geographic diversification and alternative asset classes is more important than ever.

While long-term forecasts may provide investors more clarity about the ultimate destination, uncertainty about the starting point and the journey ahead leaves little room for an autopilot strategy. Thoughtful strategies can draw on a few powerful themes: Bonds can help with growth risks, alternatives can mitigate inflation risks, and active alpha can advance the journey to an investor's final destination.

<sup>5</sup> Since 2007, the share of BB rated companies in the high yield index (as measured by the J.P. Morgan Domestic High Yield Index) has increased from 32% to 52%. Meanwhile, the share of BBB companies in the investment grade index (as measured by the J.P. Morgan U.S. Liquid Index ([JULI])) has increased from 36% to 47%.

<sup>6</sup> "Strategic Investment Advisory Group: A new perspective for credit investors," J.P. Morgan Asset Management, April 15, 2024.

## II Assumption matrices

Compound Return 2024 (%)													
Annualized Volatility (%)													
Arithmetic Return 2025 (%)													
Compound Return 2025 (%)													
Fixed income	U.S. Inflation	2.40	2.41	1.60	2.50	1.00	U.S. Inflation						
	U.S. Cash	3.10	3.10	0.65	2.90	-0.03	U.S. Cash						
	U.S. Intermediate Treasuries	3.80	3.85	3.34	3.90	-0.27	U.S. Intermediate Treasuries						
	U.S. Long Treasuries	4.30	5.07	12.83	5.20	-0.22	0.03	0.83	1.00	U.S. Long Treasuries			
	TIPS	4.10	4.26	5.78	4.60	-0.02	0.02	0.62	0.60	TIPS			
	U.S. Aggregate Bonds	4.60	4.70	4.52	5.10	-0.24	0.08	0.84	0.85	0.76	1.00	U.S. Aggregate Bonds	
	U.S. Securitized	4.90	4.97	3.82	5.30	-0.23	0.10	0.78	0.74	0.69	0.93	1.00	U.S. Short Duration Government/Credit
	U.S. Short Duration Government/Credit	3.90	3.91	1.55	3.90	-0.30	0.28	0.84	0.59	0.63	0.82	1.00	U.S. Long Duration Government/Credit
	U.S. Long Duration Government/Credit	4.70	5.29	11.19	5.70	-0.22	0.02	0.74	0.90	0.69	0.94	0.81	0.66
	U.S. Inv Grade Corporate Bonds	5.00	5.25	7.28	5.80	-0.19	0.01	0.52	0.60	0.72	0.87	0.75	0.66
	U.S. Long Corporate Bonds	4.90	5.58	12.08	6.00	-0.19	0.00	0.51	0.67	0.67	0.87	0.74	0.60
	U.S. High Yield Bonds	6.10	6.44	8.52	6.50	0.00	-0.05	-0.02	0.00	0.48	0.38	0.38	0.28
	U.S. Leveraged Loans	6.60	6.88	7.80	6.50	0.18	-0.05	-0.37	-0.28	0.18	0.03	0.04	-0.05
	World Government Bonds hedged	3.90	3.97	3.87	4.20	-0.29	0.10	0.86	0.87	0.62	0.87	0.78	0.72
	World Government Bonds	4.20	4.44	7.06	4.80	-0.17	0.09	0.75	0.66	0.69	0.80	0.72	0.69
	World ex-U.S. Government Bonds hedged	3.80	3.87	3.81	4.00	-0.28	0.10	0.72	0.74	0.58	0.79	0.70	0.63
	World ex-U.S. Government Bonds	4.20	4.57	8.76	4.90	-0.16	0.08	0.65	0.55	0.65	0.74	0.67	0.68
	Emerging Markets Sovereign Debt	5.80	6.24	9.71	6.80	-0.14	0.03	0.31	0.34	0.62	0.66	0.60	0.49
	Emerging Markets Local Currency Debt	6.10	6.78	12.15	6.00	-0.05	0.09	0.22	0.18	0.45	0.47	0.42	0.36
	Emerging Markets Corporate Bonds	6.20	6.58	8.96	6.70	-0.07	-0.02	0.19	0.23	0.55	0.57	0.50	0.44
	U.S. Muni 1-15 Yr Blend	3.60	3.68	4.04	4.00	-0.17	0.06	0.52	0.51	0.58	0.72	0.69	0.55
	U.S. Muni High Yield	4.70	5.05	8.61	5.80	0.17	-0.05	0.15	0.25	0.47	0.43	0.43	0.20
Equities	U.S. Large Cap	6.70	7.91	16.26	7.00	0.00	0.00	-0.06	-0.03	0.31	0.26	0.26	0.12
	U.S. Mid Cap	7.00	8.51	18.30	7.60	0.00	-0.04	-0.10	-0.05	0.31	0.25	0.25	0.10
	U.S. Small Cap	6.90	8.82	20.73	7.20	-0.03	-0.05	-0.13	-0.10	0.22	0.18	0.20	0.05
	Euro Area Large Cap	8.50	10.64	22.06	9.70	-0.02	0.05	-0.02	-0.04	0.29	0.29	0.29	0.22
	Japanese Equity	9.00	10.10	15.68	9.30	-0.07	0.00	-0.01	0.02	0.28	0.30	0.30	0.21
	Hong Kong Equity	7.40	9.36	20.96	9.90	-0.04	-0.05	-0.06	-0.03	0.23	0.26	0.24	0.18
	UK Large Cap	7.80	9.19	17.60	8.60	0.04	0.00	-0.14	-0.14	0.25	0.19	0.20	0.11
	EAFFE Equity	8.10	9.49	17.61	9.20	-0.02	0.03	-0.04	-0.04	0.32	0.30	0.29	0.21
	Chinese Domestic Equity	7.80	11.36	28.85	10.80	-0.05	0.06	-0.05	-0.02	0.11	0.16	0.15	0.10
	Emerging Markets Equity	7.20	9.18	21.08	8.80	-0.01	0.03	-0.05	-0.02	0.33	0.29	0.27	0.21
	AC Asia ex-Japan Equity	7.20	9.15	20.89	8.90	-0.06	0.02	-0.02	0.02	0.32	0.31	0.29	0.23
	AC World Equity	7.10	8.37	16.71	7.80	-0.01	0.01	-0.06	-0.04	0.34	0.29	0.28	0.18
	U.S. Equity Value Factor	7.70	9.08	17.52	8.40	-0.03	-0.04	-0.10	-0.09	0.26	0.22	0.24	0.10
	U.S. Equity Momentum Factor	7.60	8.86	16.74	7.90	0.01	0.00	-0.07	-0.02	0.35	0.27	0.26	0.11
	U.S. Equity Quality Factor	6.70	7.71	14.89	7.00	-0.02	0.00	-0.04	-0.01	0.32	0.28	0.27	0.14
	U.S. Equity Minimum Volatility Factor	7.00	7.77	12.99	7.40	-0.01	-0.07	-0.03	0.02	0.32	0.28	0.27	0.20
	U.S. Equity Dividend Yield Factor	7.70	8.89	16.24	8.00	-0.01	-0.07	-0.07	-0.05	0.30	0.25	0.25	0.13
	Global Convertible Bonds hedged	6.70	7.34	11.81	7.90	-0.09	-0.03	-0.07	-0.01	0.35	0.33	0.30	0.20
Alternatives	U.S. Core Real Estate	8.10	8.68	11.32	7.50	0.33	-0.18	-0.27	-0.19	0.08	-0.13	-0.09	0.29
	U.S. Value-Added Real Estate	10.10	11.70	19.11	9.70	0.33	-0.18	-0.27	-0.19	0.08	-0.13	-0.11	0.12
	European Core Real Estate	7.60	8.44	13.58	7.30	0.37	-0.09	-0.30	-0.27	0.20	-0.08	-0.04	0.05
	Asia Pacific Core Real Estate	8.10	9.25	15.94	8.70	0.20	-0.09	-0.25	-0.23	0.25	0.04	0.07	-0.12
	U.S. REITs	8.00	9.33	17.22	8.20	-0.02	-0.06	0.10	0.19	0.38	0.39	0.38	0.26
	Commercial Mortgage Loans	6.40	6.68	7.69	6.30	0.08	0.02	0.24	0.24	0.55	0.48	0.50	0.47
	Global Core Infrastructure	6.30	6.86	11.01	6.80	0.19	0.05	-0.22	-0.24	0.24	0.04	0.07	0.26
	Global Core Transport	7.80	8.63	13.54	7.70	0.22	0.15	0.04	0.06	-0.06	-0.09	-0.05	0.27
	Global Timberland	5.30	5.78	10.14	6.20	-0.05	0.18	-0.08	-0.17	0.17	0.09	0.11	0.09
	Commodities	3.80	5.32	18.10	3.80	0.27	-0.03	-0.17	-0.23	0.26	-0.01	-0.02	0.19
	Gold	4.00	5.31	16.76	4.10	-0.01	0.10	0.36	0.30	0.47	0.39	0.33	0.22
	Private Equity	9.90	11.59	19.62	9.70	0.09	0.00	-0.33	-0.37	0.18	0.00	-0.02	0.35
	Venture Capital	8.80	10.94	22.08	9.20	-0.06	-0.07	-0.24	-0.24	0.16	0.03	-0.03	0.27
	Diversified Hedge Funds	4.90	5.06	5.80	5.00	0.08	0.04	-0.30	-0.21	0.20	0.04	-0.05	0.06
	Event Driven Hedge Funds	4.90	5.24	8.50	5.00	0.07	-0.02	-0.23	-0.21	0.24	0.12	0.13	0.04
	Long Bias Hedge Funds	5.00	5.59	11.20	4.70	0.00	0.00	-0.16	-0.14	0.28	0.20	0.20	0.12
	Relative Value Hedge Funds	5.00	5.15	5.60	4.90	0.13	-0.04	-0.27	-0.22	0.26	0.13	0.13	0.09
	Macro Hedge Funds	3.80	4.03	7.00	3.60	0.00	0.05	-0.11	-0.09	0.07	-0.08	-0.01	-0.05
	Direct Lending	8.20	9.04	13.60	8.50	0.21	0.03	-0.29	-0.27	0.18	0.04	0.13	-0.06

## U.S. dollar assumptions

Note: All estimates on this page are in U.S. dollar terms. 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 to all of these asset classes and strategies. Exclusive reliance on this information is not advised. This information is not intended as a recommendation to invest in a particular asset class or strategy or as a promise of future performance. These asset class and strategy assumptions are passive only for liquid assets and industry averages (median managers) for alternatives. The assumptions do not consider the impact of active management. Reference to future returns are not promises or even estimates of actual returns portfolio's may achieve. Assumptions, opinions and estimates are provided for illustrative purposes only. Forecasts of financial market trends that are based on current market conditions constitute our judgement and are subject to change without notice. We believe the information provided herein is reliable, but to not warrant its accuracy or completeness. This materials is not intended to provide and should not be relied upon for accounting, legal or tax advice.

Source: J.P. Morgan Asset Management; as of September 30, 2024. Alternative asset classes (including hedge funds, private equity, real estate, direct lending, transportation, infrastructure and timberland) are unlike other asset categories shown above in that there is no underlying investible index. The return estimates for these alternative asset classes and strategies are estimates of the industry average – median manager, net of manager fees. The dispersion of return among managers of these asset classes and strategies is typically significantly wider than that of traditional asset classes. For equity and fixed income assumptions we assume current index regional weight in composite indices with multiple countries/regions. All returns are nominal. The return forecasts of composite and hedged assets are computed using unrounded return and rounded to the nearest 10bp at the final stage. In some cases this may lead to apparent differences in hedging impact across assets, but this is purely due to rounding. For the full opportunity set, please contact your J.P. Morgan representative.

		Compound Return 2024 (%)																				
		Annualized Volatility (%)																				
		Arithmetic Return 2025 (%)																				
		Compound Return 2025 (%)																				
Fixed Income	Euro Inflation	2.00	2.01	1.12	2.20	1.00	Euro Inflation		Euro Cash		U.S. Aggregate Bonds hedged		Euro Aggregate Bonds		U.S. Inv Grade Corporate Bonds hedged		U.S. Inv Grade Corporate Bonds hedged		Euro Inv Grade Corp Bonds		U.S. High Yield Bonds hedged	
	Euro Cash	2.40	2.40	0.65	2.20	-0.13	1.00		U.S. Aggregate Bonds hedged		1.00		Euro Aggregate Bonds		1.00		U.S. Inv Grade Corporate Bonds hedged		1.00		U.S. Inv Grade Corp Bonds	
	U.S. Aggregate Bonds hedged	3.90	4.00	4.62	4.30	-0.30	0.19		1.00		Euro Aggregate Bonds		1.00		Euro Aggregate Bonds		1.00		U.S. Inv Grade Corporate Bonds hedged		1.00	
	Euro Aggregate Bonds	3.30	3.40	4.53	3.60	-0.25	0.19		0.75		1.00		U.S. Inv Grade Corporate Bonds hedged		1.00		Euro Inv Grade Corp Bonds		1.00		U.S. Inv Grade Corp Bonds	
	U.S. Inv Grade Corporate Bonds hedged	4.30	4.56	7.37	5.00	-0.27	0.11		0.86		0.71		1.00		1.00		U.S. Inv Grade Corporate Bonds hedged		1.00		U.S. Inv Grade Corp Bonds	
	Euro Inv Grade Corp Bonds	3.80	3.92	4.99	4.00	-0.21	0.09		0.65		0.81		0.84		1.00		U.S. High Yield Bonds hedged		1.00		U.S. High Yield Bonds hedged	
	U.S. High Yield Bonds hedged	5.40	5.75	8.61	5.80	-0.02	-0.04		0.37		0.30		0.63		0.64		1.00		1.00		1.00	
	Euro High Yield Bonds	5.30	5.72	9.42	5.70	-0.01	-0.06		0.23		0.31		0.53		0.68		0.87		1.00		1.00	
	U.S. Leveraged Loans hedged	5.90	6.19	7.81	5.70	0.07	-0.10		0.05		0.07		0.36		0.46		0.79		0.86		1.00	
	Euro Government Bonds	3.10	3.23	5.14	3.50	-0.23	0.18		0.72		0.98		0.62		0.70		0.19		0.18		-0.05	
	Euro Govt Inflation-Linked Bonds	3.30	3.46	5.85	3.20	-0.04	0.11		0.54		0.76		0.61		0.72		0.45		0.40		0.21	
	World Government Bonds hedged	3.20	3.27	3.90	3.40	-0.27	0.21		0.86		0.87		0.66		0.57		0.11		0.01		-0.19	
	World Government Bonds	3.00	3.23	6.93	3.10	-0.13	0.14		0.40		0.55		0.25		0.27		-0.15		-0.11		-0.19	
	World ex-Euro Government Bonds hedged	3.30	3.37	3.91	3.40	-0.27	0.14		0.86		0.69		0.62		0.42		0.04		-0.11		-0.27	
	World ex-Euro Government Bonds	2.90	3.31	9.23	2.90	-0.11	0.12		0.27		0.37		0.10		0.11		-0.25		-0.19		-0.24	
	Global Multiverse Bonds hedged	3.60	3.67	3.74	3.90	-0.28	0.22		0.95		0.89		0.87		0.77		0.41		0.32		0.68	
	Emerging Markets Sovereign Debt hedged	5.10	5.55	9.80	6.00	-0.22	0.06		0.64		0.54		0.80		0.71		0.74		0.59		0.45	
	Emerging Markets Local Currency Debt	4.90	5.26	8.77	4.30	-0.05	0.11		0.33		0.39		0.45		0.50		0.45		0.38		0.25	
	Emerging Markets Corporate Bonds hedged	5.50	5.88	9.01	6.00	-0.20	0.00		0.55		0.43		0.76		0.70		0.74		0.65		0.57	
Equities	European Large Cap	6.60	7.62	14.94	7.30	0.03	-0.15		0.17		0.23		0.42		0.53		0.71		0.76		0.64	
	European Small Cap	7.40	8.86	18.04	8.10	-0.02	-0.15		0.19		0.23		0.45		0.57		0.74		0.80		0.69	
	U.S. Large Cap	5.50	6.55	15.05	5.30	0.08	-0.18		0.09		0.24		0.29		0.46		0.57		0.60		0.56	
	U.S. Large Cap hedged	5.90	7.12	16.32	6.30	0.03	-0.15		0.25		0.26		0.47		0.54		0.73		0.66		0.57	
	Euro Area Large Cap	7.30	8.63	17.14	8.00	0.01	-0.13		0.19		0.24		0.42		0.52		0.70		0.73		0.59	
	Euro Area Small Cap	7.70	9.19	18.20	8.30	-0.02	-0.14		0.18		0.21		0.44		0.52		0.72		0.77		0.65	
	UK Large Cap	6.60	7.61	14.84	6.90	0.09	-0.19		0.04		0.12		0.31		0.46		0.63		0.72		0.67	
	UK Large Cap hedged	6.50	7.32	13.37	6.50	0.00	-0.09		0.15		0.14		0.37		0.43		0.61		0.60		0.35	
	Japanese Equity	7.80	8.73	14.35	7.60	-0.04	-0.10		0.13		0.24		0.34		0.45		0.49		0.55		0.39	
	Japanese Equity hedged	8.30	9.65	17.40	7.90	0.05	-0.13		-0.04		0.03		0.20		0.31		0.52		0.55		0.52	
	Chinese Domestic Equity	6.60	9.92	27.65	9.10	-0.11	-0.02		0.06		0.09		0.18		0.20		0.25		0.30		0.06	
	Emerging Markets Equity	6.00	7.31	16.92	7.10	-0.05	-0.08		0.18		0.19		0.44		0.50		0.67		0.69		0.64	
	AC Asia ex-Japan Equity	6.00	7.38	17.35	7.20	-0.10	-0.09		0.22		0.22		0.46		0.50		0.63		0.65		0.58	
	AC World Equity	5.90	6.83	14.15	6.10	0.05	-0.16		0.14		0.25		0.40		0.54		0.69		0.73		0.66	
	AC World ex-EMU Equity	5.80	6.72	14.12	5.90	0.05	-0.16		0.13		0.25		0.38		0.53		0.67		0.71		0.66	
	Developed World Equity	5.90	6.86	14.40	6.00	0.06	-0.17		0.13		0.25		0.38		0.53		0.66		0.71		0.68	

## Euro assumptions

Note: All estimates on this page are in euro terms. 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 to all of these asset classes and strategies. Exclusive reliance on this information is not advised. Please note that information shown may use quantitative frameworks but final forecasts are based on qualitative analysis. These asset class and strategy assumptions are passive only for liquid assets and industry averages (median managers) for alternatives. The assumptions do not consider the impact of active management. We believe the information provided here is reliable, but do not warrant its accuracy or completeness. Forecasts are based on current market and financial conditions, and our judgement, and are subject to change without notice. Assumptions, opinions and estimates has been prepared for information and illustrative purposes only and is not intended to provide, and should not be relied on for, accounting, legal or tax advice. They should not be relied upon as recommendations to buy or sell securities. This information is not intended as a recommendation to invest in any particular asset class or strategy. References to future returns are not promises or estimates of actual returns a client portfolio may achieve.

Source: J.P. Morgan Asset Management; as of September 30, 2024. Alternative asset classes (including hedge funds, private equity, real estate, direct lending, transportation, infrastructure and timberland) are unlike other asset categories shown above in that there is no underlying investible index. The return estimates for these alternative asset classes and strategies are estimates of the industry average – median manager, net of manager fees. The dispersion of return among managers of these asset classes and strategies is typically significantly wider than that of traditional asset classes. For equity and fixed income assumptions we assume current index regional weight in composite indices with multiple countries/regions. All returns are nominal. The return forecasts of composite and hedged assets are computed using unrounded return and rounded to the nearest 10bp at the final stage. In some cases this may lead to apparent differences in hedging impact across assets, but this is purely due to rounding. For the full opportunity set, please contact your J.P. Morgan representative.

European Small Cap	U.S. Large Cap	U.S. Large Cap hedged	Euro Area Large Cap	Euro Area Small Cap	UK Large Cap	UK Large Cap hedged	Japanese Equity	Japanese Equity hedged	Chinese Domestic Equity	Emerging Markets Equity	AC Asia ex-Japan Equity	AC World Equity	AC World ex-EMU Equity	DevelopedWorld Equity	Global Convertible Bonds hedged	Global Credit SensitiveConvertible hedged	U.S. Core Real Estate	European Core Real Estate	European Value-Added Real Estate	Global REITs	CommercialMortgage Loans	Global Core Infrastructure	Global Core Transport	Global Timberland	Commodities	Gold	Private Equity	Venture Capital	Diversified Hedge Funds hedged	EventDriven Hedge Funds hedged	Long Bias Hedge Funds hedged	Relative Value Hedge Funds hedged	Macro Hedge Funds hedged	Direct Lending
1.00	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
0.81	0.82	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
0.89	0.75	0.85	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
0.97	0.69	0.80	0.93	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
0.85	0.77	0.72	0.84	0.81	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
0.78	0.62	0.75	0.85	0.81	0.84	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
0.64	0.71	0.55	0.62	0.60	0.68	0.51	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
0.67	0.62	0.69	0.73	0.68	0.67	0.62	0.78	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
0.29	0.28	0.23	0.26	0.27	0.32	0.21	0.26	0.26	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
0.72	0.62	0.68	0.71	0.71	0.72	0.67	0.57	0.59	0.51	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
0.68	0.60	0.63	0.66	0.66	0.68	0.62	0.57	0.55	0.57	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
0.87	0.96	0.87	0.86	0.82	0.87	0.75	0.77	0.72	0.34	0.78	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
0.84	0.96	0.85	0.82	0.78	0.86	0.71	0.78	0.71	0.35	0.78	0.74	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
0.86	0.97	0.86	0.85	0.81	0.86	0.73	0.77	0.72	0.31	0.72	0.69	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
0.84	0.67	0.85	0.80	0.83	0.68	0.71	0.57	0.67	0.36	0.77	0.73	0.80	0.78	0.77	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
0.52	0.41	0.51	0.49	0.51	0.43	0.40	0.36	0.35	0.16	0.40	0.38	0.48	0.46	0.47	0.57	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
0.27	0.43	0.24	0.19	0.20	0.38	0.14	0.34	0.28	0.15	0.30	0.30	0.39	0.42	0.40	0.13	0.11	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
0.41	0.46	0.39	0.33	0.36	0.48	0.29	0.31	0.43	0.37	0.50	0.47	0.49	0.50	0.47	0.39	0.13	0.72	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
0.40	0.45	0.37	0.31	0.35	0.49	0.30	0.32	0.46	0.37	0.50	0.46	0.48	0.49	0.46	0.38	0.10	0.70	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
0.54	0.54	0.42	0.45	0.49	0.62	0.46	0.47	0.36	0.31	0.61	0.60	0.60	0.61	0.58	0.44	0.29	0.67	0.60	0.59	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
0.75	0.80	0.73	0.73	0.71	0.74	0.67	0.64	0.54	0.22	0.66	0.64	0.84	0.84	0.84	0.67	0.39	0.49	0.38	0.34	0.65	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
-0.12	0.27	-0.21	-0.16	-0.21	0.03	-0.21	0.20	-0.12	0.14	0.00	0.05	0.14	0.18	0.15	-0.22	-0.22	0.44	0.19	0.15	0.32	0.21	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
0.24	0.40	0.18	0.20	0.16	0.38	0.10	0.34	0.28	0.09	0.33	0.31	0.38	0.40	0.38	0.15	-0.16	0.48	0.37	0.39	0.46	0.38	0.49	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
-0.32	0.10	-0.28	-0.24	-0.33	-0.13	-0.28	-0.03	-0.18	-0.06	-0.22	-0.16	-0.05	-0.02	-0.02	-0.44	-0.25	0.36	0.04	0.02	0.12	0.04	0.67	0.32	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
0.06	0.38	0.01	0.09	0.02	0.24	0.11	0.30	0.10	0.25	0.17	0.19	0.30	0.33	0.32	-0.07	-0.11	0.25	0.12	0.16	0.32	0.29	0.59	0.42	0.49	1.00	1.00	1.00	1.00	1.00	1.00				
0.31	0.32	0.25	0.22	0.26	0.47	0.34	0.24	0.22	0.09	0.40	0.33	0.38	0.39	0.36	0.25	0.16	0.41	0.48	0.54	0.52	0.29	0.11	0.35	0.00	0.27	1.00	1.00	1.00	1.00	1.00	1.00			
-0.14	-0.08	-0.19	-0.22	-0.18	-0.08	-0.15	-0.10	-0.32	0.13	0.02	0.01	-0.09	-0.07	-0.10	-0.10	-0.08	0.07	0.02	0.03	0.18	-0.04	0.43	0.13	0.27	0.24	0.26	1.00	1.00	1.00	1.00	1.00			
0.69	0.75	0.62	0.64	0.62	0.72	0.57	0.55	0.56	0.46	0.72	0.69	0.78	0.79	0.77	0.65	0.32	0.42	0.56	0.60	0.64	0.62	0.26	0.52	-0.04	0.45	0.48	0.40	0.00	1.00	1.00	1.00			
0.51	0.62	0.50	0.45	0.43	0.49	0.34	0.47	0.45	0.45	0.55	0.55	0.62	0.63	0.61	0.57	0.25	0.30	0.47	0.48	0.40	0.41	0.26	0.39	0.01	0.36	0.24	-0.02	0.76	1.00	1.00	1.00			
0.77	0.57	0.68	0.68	0.74	0.67	0.60	0.49	0.63	0.37	0.70	0.63	0.70	0.68	0.67	0.80	0.53	0.23	0.47	0.49	0.51	0.52	-0.15	0.22	-0.34	0.09	0.43	-0.02	0.70	0.60	1.00	1.00			
0.85	0.65	0.80	0.77	0.84	0.74	0.71	0.53	0.66	0.31	0.73	0.67	0.77	0.75	0.86	0.60	0.24	0.42	0.43	0.51	0.64	-0.19	0.22	-0.35	0.04	0.41	-0.12	0.70	0.54	0.86	1.00	1.00			
0.85	0.66	0.87	0.80	0.84	0.71	0.72	0.55	0.70	0.35	0.80	0.74	0.79	0.77	0.93	0.56	0.15	0.40	0.41	0.45	0.63	-0.27	0.17	-0.42	-0.02	0.36	-0.10	0.67	0.57	0.87	0.93	1.00			
0.78	0.57	0.67	0.70	0.76	0.72	0.65	0.53	0.62	0.36	0.76	0.71	0.71	0.70	0.68	0.81	0.50	0.32	0.51	0.51	0.59	0.60	-0.09	0.34	-0.31	0.08	0.47	-0.04	0.70	0.49	0.84	0.91	0.85		
0.19	0.06	0.15	0.17	0.24	0.20	0.29	0.05	0.11	0.06	0.22	0.17	0.15	0.14	0.14	0.24	0.12	-0.04	0.07	0.12	0.08	0.13	-0.16	-0.12	-0.17	0.18	0.36	0.22	0.21	0.08	0.48	0.27	0.32	0.27	1.00
0.00	0.41	-0.09	-0.03	-0.08	0.2																													

Compound Return 2024 (%)														
Annualized Volatility (%)														
Arithmetic Return 2025 (%)														
Compound Return 2025 (%)														
Fixed Income	UK Inflation	2.20	2.22	1.82	2.40	1.00	UK Inflation							
	UK Cash	2.90	2.90	0.68	2.80	-0.16	1.00	UK Cash						
	U.S. Aggregate Bonds hedged	4.40	4.50	4.58	4.90	-0.23	0.18	1.00	U.S. Aggregate Bonds hedged					
	Euro Aggregate Bonds hedged	3.80	3.90	4.51	4.20	-0.27	0.16	0.75	1.00	Euro Aggregate Bonds hedged				
	U.S. Inv Grade Corporate Bonds hedged	4.80	5.05	7.28	5.60	-0.23	0.09	0.87	0.71	1.00	U.S. Inv Grade Corporate Bonds hedged			
	Euro Inv Grade Corp Bonds hedged	4.30	4.41	4.90	4.60	-0.21	0.05	0.65	0.81	1.00	Euro Inv Grade Corp Bonds hedged			
	UK Inv Grade Corporate Bonds	5.20	5.52	8.19	5.40	-0.05	-0.04	0.64	0.66	0.79	0.82	1.00	UK Inv Grade Corporate Bonds	
	U.S. High Yield Bonds hedged	5.90	6.25	8.58	6.40	-0.07	-0.04	0.37	0.31	0.64	0.65	0.57	1.00	U.S. High Yield Bonds hedged
	Euro High Yield Bonds hedged	5.80	6.18	9.03	6.20	-0.04	-0.08	0.24	0.29	0.54	0.68	0.58	0.88	1.00
	Global Credit hedged	4.20	4.35	5.51	5.30	-0.23	0.08	0.87	0.79	0.98	0.90	0.84	0.64	0.56
	U.S. Leveraged Loans hedged	6.40	6.69	7.82	6.30	0.07	-0.12	0.03	0.05	0.34	0.45	0.41	0.76	0.85
	Euro Government Bonds hedged	3.60	3.73	5.14	4.10	-0.27	0.16	0.72	0.98	0.61	0.69	0.57	0.18	0.16
	UK Gilts	4.20	4.48	7.73	4.50	-0.12	0.15	0.72	0.68	0.55	0.45	0.66	0.08	-0.01
	UK Inflation-Linked Bonds	4.40	5.00	11.24	5.30	-0.17	0.03	0.65	0.58	0.60	0.51	0.62	0.36	0.23
	World Government Bonds hedged	3.70	3.77	3.90	4.00	-0.25	0.22	0.87	0.87	0.66	0.57	0.55	0.11	0.01
	World Government Bonds	3.40	3.75	8.50	3.20	-0.16	0.22	0.44	0.39	0.19	0.06	0.13	-0.26	-0.35
	World ex-UK Government Bonds hedged	3.70	3.77	3.74	3.90	-0.25	0.21	0.88	0.87	0.66	0.57	0.54	0.12	0.02
	World ex-UK Government Bonds	3.30	3.68	8.88	3.10	-0.17	0.23	0.42	0.38	0.18	0.05	0.11	-0.28	-0.36
	Emerging Markets Sovereign Debt hedged	5.60	6.05	9.79	6.60	-0.20	0.07	0.65	0.55	0.81	0.73	0.66	0.75	0.63
	Emerging Markets Local Currency Debt	5.30	5.82	10.56	4.40	-0.17	0.21	0.38	0.34	0.40	0.33	0.32	0.29	0.24
	Emerging Markets Corporate Bonds hedged	6.00	6.38	8.99	6.60	-0.19	0.00	0.56	0.45	0.77	0.71	0.63	0.74	0.68
Equities	UK All Cap	7.10	7.92	13.35	7.20	0.08	-0.12	0.17	0.17	0.41	0.48	0.49	0.67	0.67
	UK Large Cap	7.00	7.82	13.36	7.00	0.10	-0.12	0.14	0.13	0.37	0.43	0.46	0.63	0.64
	UK Small Cap	7.40	8.73	17.17	7.90	0.02	-0.12	0.23	0.23	0.47	0.55	0.53	0.71	0.49
	U.S. Large Cap	5.90	6.84	14.30	5.40	0.02	-0.09	0.20	0.26	0.36	0.43	0.44	0.56	0.50
	U.S. Large Cap hedged	6.40	7.61	16.27	6.90	0.02	-0.12	0.25	0.26	0.47	0.55	0.51	0.74	0.68
	Euro Area Large Cap	7.70	9.17	18.13	8.10	-0.01	-0.04	0.26	0.22	0.45	0.45	0.47	0.65	0.63
	Euro Area Large Cap hedged	7.80	9.12	17.14	8.60	0.02	-0.12	0.19	0.23	0.42	0.52	0.50	0.70	0.74
	Euro Area Small Cap	8.10	9.77	19.35	8.40	0.00	-0.08	0.24	0.19	0.45	0.45	0.48	0.68	0.66
	Euro Area Small Cap hedged	8.20	9.69	18.24	8.90	0.02	-0.15	0.17	0.20	0.43	0.52	0.51	0.73	0.78
	Japanese Equity	8.20	9.00	13.26	7.70	-0.11	-0.04	0.24	0.24	0.38	0.39	0.37	0.46	0.42
	Japanese Equity hedged	8.80	10.16	17.45	8.50	0.05	-0.12	-0.05	0.03	0.20	0.31	0.27	0.52	0.41
	AC Asia ex-Japan Equity	6.40	7.85	17.88	7.30	-0.10	-0.02	0.28	0.20	0.47	0.44	0.38	0.58	0.54
	Chinese Domestic Equity	7.00	10.26	27.41	9.20	-0.11	0.04	0.12	0.09	0.20	0.17	0.11	0.21	0.19
	Emerging Markets Equity	6.40	7.85	17.87	7.20	-0.05	-0.02	0.24	0.18	0.46	0.43	0.39	0.63	0.58
	AC World Equity	6.30	7.17	13.71	6.20	0.00	-0.07	0.25	0.25	0.45	0.49	0.46	0.61	0.57
	AC World ex-UK Equity	6.30	7.19	13.89	6.10	-0.01	-0.07	0.25	0.26	0.45	0.48	0.49	0.66	0.60
	Developed World Equity	6.30	7.17	13.78	6.10	0.01	-0.08	0.24	0.26	0.43	0.48	0.49	0.65	0.61
	Global Convertible Bonds hedged	6.50	7.15	11.84	7.70	-0.12	-0.06	0.31	0.29	0.59	0.62	0.54	0.82	0.78
	Global Credit Sensitive Convertible hedged	4.70	5.02	8.22	5.80	-0.03	-0.15	0.21	0.31	0.37	0.47	0.47	0.38	0.36
Alternatives	U.S. Core Real Estate	7.30	7.87	11.14	5.90	0.19	-0.36	-0.17	-0.11	0.01	0.07	0.22	0.21	-0.07
	European Core Real Estate	6.80	7.45	11.86	5.70	0.07	-0.29	-0.15	-0.11	-0.02	0.06	0.08	0.30	-0.01
	European Core Real Estate hedged	6.90	7.45	10.89	6.20	0.12	-0.31	-0.21	-0.16	-0.03	0.08	0.07	0.39	-0.02
	UK Core Real Estate	7.60	8.38	13.06	6.50	0.04	-0.30	-0.07	0.01	0.08	0.16	0.10	0.37	0.09
	European Value-Added Real Estate	8.90	10.35	18.04	7.60	0.13	-0.31	-0.30	-0.26	-0.11	-0.03	-0.02	0.30	0.26
	European Value-Added Real Estate hedged	9.00	10.41	17.81	8.10	0.16	-0.31	-0.31	-0.27	-0.10	0.00	-0.01	0.37	0.21
	Global REITs	7.20	8.17	14.55	6.90	-0.01	-0.12	0.35	0.34	0.50	0.51	0.57	0.64	0.57
	Global Core Infrastructure	5.50	6.02	10.58	5.20	0.20	-0.11	-0.08	-0.05	-0.04	-0.01	0.04	0.10	0.09
	Global Core Transport	7.00	7.88	13.84	6.10	0.09	0.04	-0.12	-0.11	-0.40	-0.43	-0.31	-0.52	-0.37
	Global Timberland	4.50	5.02	10.46	4.60	0.00	0.15	-0.01	0.01	-0.10	-0.14	-0.06	-0.30	-0.28
	Commodities	3.00	4.25	16.29	2.20	0.19	-0.08	-0.10	-0.16	0.03	0.01	0.02	0.24	-0.20
	Gold	3.20	4.54	16.88	2.50	-0.10	0.16	0.30	0.14	0.18	0.03	0.08	-0.10	-0.18
	Private Equity	9.10	10.42	17.20	8.10	0.07	-0.14	-0.08	-0.02	0.22	0.31	0.26	0.48	0.45
	Venture Capital	8.00	9.81	20.18	7.60	-0.16	-0.11	-0.01	0.07	0.15	0.23	0.17	0.33	0.27
	Diversified Hedge Funds hedged	4.70	4.86	5.80	4.80	0.08	-0.12	0.03	0.04	0.33	0.39	0.38	0.62	0.66
	Event Driven Hedge Funds hedged	4.70	5.04	8.51	4.80	0.04	-0.13	0.11	0.12	0.40	0.50	0.45	0.76	0.71
	Long Bias Hedge Funds hedged	4.80	5.39	11.18	4.50	-0.01	-0.08	0.19	0.15	0.47	0.51	0.45	0.74	0.72
	Relative Value Hedge Funds hedged	4.80	4.95	5.60	4.70	0.00	-0.08	0.12	0.12	0.43	0.51	0.44	0.81	0.85
	Macro Hedge Funds hedged	3.60	3.84	7.11	3.40	0.05	0.12	-0.08	-0.05	0.03	0.04	0.07	0.08	0.10
	Direct Lending	7.40	8.48	15.44	6.90	-0.03	0.03	-0.08	0.01	-0.22	-0.21	-0.17	-0.35	-0.37

## Sterling assumptions

Note: All estimates on this page are in sterling terms. 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 to all of these asset classes and strategies. Exclusive reliance on this information is not advised. Please note that information shown may use quantitative frameworks but final forecasts are based on qualitative analysis. These asset class and strategy assumptions are passive only for liquid assets and industry averages (median managers) for alternatives. The assumptions do not consider the impact of active management. We believe the information provided here is reliable, but do not warrant its accuracy or completeness. Forecasts are based on current market and financial conditions, and our judgement, and are subject to change without notice. Assumptions, opinions and estimates has been prepared for information and illustrative purposes only and is not intended to provide, and should not be relied on for, accounting, legal or tax advice. They should not be relied upon as recommendations to buy or sell securities. This information is not intended as a recommendation to invest in any particular asset class or strategy. References to future returns are not promises or estimates of actual returns a client portfolio may achieve.

Source: J.P. Morgan Asset Management; as of September 30, 2024. Alternative asset classes (including hedge funds, private equity, real estate, direct lending, transportation, infrastructure and timberland) are unlike other asset categories shown above in that there is no underlying investible index. The return estimates for these alternative asset classes and strategies are estimates of the industry average – median manager, net of manager fees. The dispersion of return among managers of these asset classes and strategies is typically significantly wider than that of traditional asset classes. For equity and fixed income assumptions we assume current index regional weight in composite indices with multiple countries/regions. All returns are nominal. The return forecasts of composite and hedged assets are computed using unrounded return and rounded to the nearest 10bp at the final stage. In some cases this may lead to apparent differences in hedging impact across assets, but this is purely due to rounding. For the full opportunity set, please contact your J.P. Morgan representative.

UK Small Cap	U.S. Large Cap	U.S. Large Cap hedged	Euro Area Large Cap	Euro Area Large Cap hedged	Euro Area Small Cap	Euro Area Small Cap hedged	Japanese Equity	Japanese Equity hedged	AC Asia ex-Japan Equity	Chinese Domestic Equity	Emerging Markets Equity	DevelopedWorld Equity	Global Convertible Bonds hedged	Global Credit Sensitive Convertible hedged	U.S. Core Real Estate	European Core Real Estate	European Core Real Estate hedged	European Value-Added Real Estate	European Value-Added Real Estate hedged	UK Core Real Estate	Global REITs	Global Core Transport	Global Timberland	Commodities	Gold	Private Equity	Venture Capital	Diversified Hedge Funds hedged	Event Driven Hedge Funds hedged	Long Bias Hedge Funds hedged	Relative Value Hedge Funds hedged	Macro Hedge Funds hedged	Direct Lending			
1.00	0.67	1.00	0.78	0.84	1.00	0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00	
0.67	1.00	0.78	0.84	1.00	0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00		
0.78	1.00	0.78	0.84	1.00	0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00		
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.90	0.66	0.81	0.84	0.93	0.91	1.00	0.53	0.66	0.54	0.63	0.58	0.60	0.55	1.00
0.77	0.76	0.79	1.00	0.82	0.71	0.85	0.90	1.00	0.85	0.71	0.75	0.94	0.83	1.00	0.90	0.6																				



### III Appendix

# Acknowledgments

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## Glossary

**Alternatives** Nontraditional assets, including financial assets (such as private equity, private credit and hedge funds) and real assets (real estate, infrastructure, transport, timberland) that have historically mitigated portfolio volatility and reduced equity beta across time.

**Anglosphere economies** The economies of the U.S., U.K., Canada, Australia and New Zealand. More broadly, Ireland, India, South Africa and English-speaking Caribbean economies can be included as well.

**Capital deepening** The process of increasing the amount of capital per worker in an economy.

**Capital services** The flow of productive benefits derived from a business's capital stock, meaning its equipment, structure, land, and research and development.

**Cycle neutral (cycle-neutral yield, cycle-neutral spread)** The average level of a key parameter (yields or spreads) that we assume will prevail after an initial period of normalization.

**Dependency ratios** A statistic comparing the number of people likely to be working with those who are likely to be dependents or receive social benefits. It is calculated by adding the number of retirees (defined as people 65 and older) and children (those 14 and younger), and then dividing the total by the working-age population (those aged 15 to 64).

**Economic nationalism** Government policies that favor domestic companies and industries over foreign competitors, the opposite to a globalist suite of policies that are more supportive of international trade.

**Fiscal activism** Efforts by governments to stimulate economic growth or the growth of key economic sectors, using spending and tax policy. This can be considered a traditional approach compared with monetary activism.

**Generative artificial intelligence (AI)** A class of algorithms that can generate new content based on existing data to produce novel, human-like output in the form of text, images and three-dimensional models.

**GLP-1 drugs** Glucagon-like peptide 1 (GLP-1) agonist medications, a class of drugs initially developed to treat type 2 diabetes, which have become increasingly popular as weight loss medications. Clinical trials show that GLP-1 agonists can reduce blood sugar levels, suppress appetite and reduce calorie intake. Brands include Wegovy, Ozempic, Mounajro and Zepbound.

**Green energy transition** The global, long-term shift away from carbon-intensive fuels toward renewable energy sources.

**Large language model (LLM)** A type of artificial intelligence model designed to understand, generate and manipulate human language. These models are typically based on deep learning architectures, such as transformers, and are trained on vast amounts of text data to learn the statistical properties of language. They can be used for generating, translating, summarizing or evaluating texts.

**Monetary activism** Unconventional monetary policy such as negative rates and quantitative easing. Many of these tactics were used following the onset of the global financial crisis with the intent of stabilizing economies or contributing to growth. In some cases, these policies remained in effect into the 2020s.

**National champions** Companies and industries that are prioritized by government as part of an economic nationalist program. This strong government support may enhance the returns offered by their stocks and/or bonds.

**Nearshoring** The process of companies shortening supply chains, often by bringing aspects of production to nations that border their home countries. It is often an attempt to reduce geopolitical risk and is at times influenced by national economic policies. See also economic nationalism.

**Neutral cash rate** The rate at which monetary policy is neither accommodative to growth nor restricting it.

## Glossary continued

**Paradox of thrift** A phenomenon noted by John Maynard Keynes. When large numbers of people reduce their spending and increase savings, collective savings are reduced – because one person's spending becomes another person's income and savings.

**R\*** The real, long-term neutral interest rate when the economy is at full employment. This is a key element to understanding monetary policy. Rates lower than R\* are considered to be accommodative, stimulating economic growth by encouraging lending, while rates above R\* are considered restrictive.

**Ricardian efficiency** After 18th-century English economist David Ricardo, the notion that in global trade each country will tend to specialize and trade in goods in which it possesses advantages, and that this specialization ultimately contributes to greater global wealth.

**Sharpe ratio** A measure of an investment's return relative to the price risks involved. It is calculated by subtracting a risk-free rate of return (generally on cash) from the investment's expected or realized return and dividing the result by the investment's expected or realized price fluctuation.

**Terminal rate** The final benchmark interest rate at the conclusion of a cycle of rate hikes or cuts by a central bank. During hiking and cutting cycles, market participants often try to gauge the terminal rate and pay close attention to that rate as projected by policymakers.

**Total factor productivity** Growth in productivity that is not explained by the accumulation of capital stock or increased hours worked by the labor force, but rather captures the efficiency or intensity with which inputs are used. This makes it a residual that likely reflects technological change.

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