PORTFOLIO IMPLICATIONS

Actionable insights for diversifying portfolios amid extended valuations

Grace Koo, Ph.D., *Quantitative Analyst and Portfolio Manager, Multi-Asset Solutions*
Sorca Kelly-Scholte, FIA, *Global Strategist, Global Pension Solutions*
Anthony Werley, *Chief Investment Officer, Endowments & Foundations Group*
Xiao Xiao, CFA, *Quantitative Analyst, Multi-Asset Solutions*
Michael Albrecht, CFA, *Global Strategist, Multi-Asset Solutions*

IN BRIEF

- Today's market conditions risk driving investors to extremes in portfolio allocation. Duration appears to have little place in long-term strategy; extended credit is squeezing out high quality credit; the U.S. equity market struggles to earn its place in portfolios; and alternatives are moving from optional to essential roles.
- Diversification – thoughtfully conceived, carefully modulated – is especially important in an environment of extended market valuations. Our portfolio optimization framework highlights the long-term value of assets facing near-term valuation challenges.
- In time, we expect duration to return to its core protection role in portfolios. Extended credit brings greater event and tail risks. Underweighting U.S. equities has been problematic during periods of U.S. exceptionalism and strong U.S. equity performance. And alternatives present risks not encountered in traditional assets.
- Our analytic framework for optimizing portfolios supports using high quality credit in place of sovereign bonds and diversifying portfolios by adding extended credit and real assets. Within equity, emerging markets and private equity are preferred. Managing currency dynamics is key.
- Rapid market moves present a particular challenge, as investors experienced the fastest-ever stock market sell-off and rebound in 2020. Separating short-term price impact from long-term investment strategy will be critical for investment success.
- Governance structures need to evolve in this changing world. Investors can build deeper relationships with their partners and providers to ensure a fully integrated approach to managing risk, capturing market opportunities and accessing manager capacity and skill.

J.P.Morgan
Asset Management

How can investors connect big investment themes to specific portfolio moves?

In this paper, we examine how the key themes of this year's Long-Term Capital Market Assumptions (LTCMAs) – notably, the power of aligned fiscal and monetary stimulus, the effects of elevated debt, the changing role of alternatives – might play out in investor portfolios. We look across different investor types and risk tolerances to highlight assets and strategies that could benefit from these themes. From various angles, we address the basic question that underlies all of our LTCMA work: How can an investor harvest an acceptable return without an unacceptable increase in portfolio risk? Among the particular challenges we explore:

- Achieving long-term return goals despite today's high valuations
- Diversifying effectively in markets where policy intervention may have served to systematically raise correlations
- Finding alternative safe haven assets to provide portfolio ballast in an ultra-low yield environment
- Building long-term inflation protection into portfolios

These challenges will continue to push investors away from traditional safe havens (in particular, sovereign bonds and the U.S. dollar) and toward assets that increase exposure to risks that are not easily measurable by volatility alone. For example, most investors identify private market assets and extended credit as attractive even as real assets bring liquidity risk and extended credit brings higher tail risks.

Investors must also grapple with the sheer speed at which markets can change, as demonstrated by this year's swift market sell-off and rebound. More than ever, portfolio strategies must distinguish between short-term, rapid price action and long-term, slower-moving fundamentals and structural drivers.

In the following pages, we present our first findings on the portfolio implications of this year's LTCMAs, starting with a traditional mean-variance (MV) framework.[1] An overview of key asset allocation themes from this year's assumptions leads us to a strong preference for non-U.S. equities, extended credit and alternative assets. At the end of the day, our analysis supports using high quality credit in place of sovereign bonds and diversifying portfolios by adding extended credit and real assets (**EXHIBIT 1**).

INGREDIENTS OF AN EFFICIENT PORTFOLIO

When we look to define an efficient, optimized portfolio, we start by using standard MV optimization tools to illustrate trade-offs among various key asset classes. We first consider public market assets only (**EXHIBIT 2**), before incorporating alternatives and liability-relative perspectives.

Across the risk spectrum and across regions, our MV framework displays a core preference for:

- Shorter-duration government bonds within fixed income for low to medium risk portfolios
- Extended credit assets, in particular emerging market debt (EMD)
- Non-U.S. equity markets as compared with the U.S. equity market

1 Mean-variance is used as a first step in our analysis, providing an early read on the implications of our assumptions. Mean-variance optimization is useful in calculating initial trade-offs and incorporating a range of portfolio constraints, but it is not sufficient on its own as a tool for portfolio construction. Further analysis is required for risks not captured by mean-variance, or indeed by any quantitative metric.

In considering our LTCMA themes, we find a reduced role for core duration and U.S. equities, and a more prominent role for extended credit and alternatives

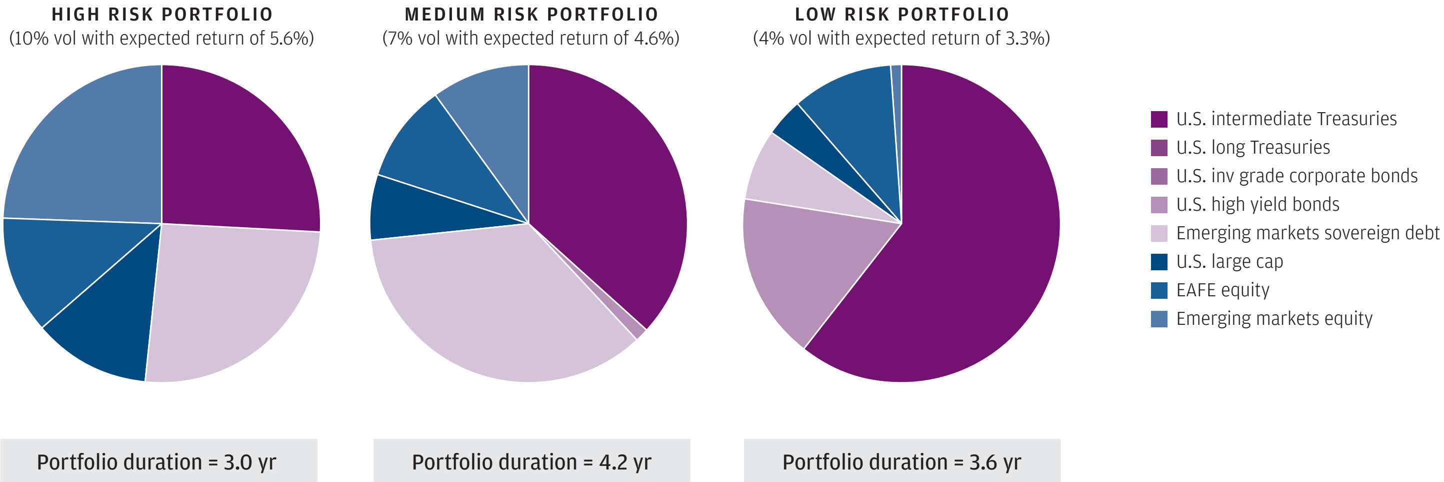
EXHIBIT 1: MAIN ASSET GROUPS BY INVESTMENT OPPORTUNITY SETS AND INVESTOR BASE

	Public assets-only portfolios	Portfolios with alternatives	Liability-relative portfolios
Core fixed income	Little duration – preference for shorter-duration assets with minimal allocation to core rates	Duration requirements sourced from core duration assets as broader fixed income is replaced with alternatives	Duration has an amplified role; it is largely sourced from high quality credit alongside or in preference to sovereign debt
Credit	Strong preference for extended credit such as high yield and emerging market debt	Weakened preference for extended credit, with preference for risk-taking moving to alternatives	Weakened preference for core and extended credit, with preference for risk-taking moving to alternatives
Equity	Strong preference for non-U.S. equity Emerging market equity is attractive	No change	No change

Source: J.P. Morgan Asset Management; data as of September 30, 2020. For illustrative purposes only.

Portfolio optimization highlights today's extended valuations, which push allocations toward short-duration bonds, credit and international equities

EXHIBIT 2: ASSET ALLOCATION OF HIGH, MEDIUM AND LOW RISK PORTFOLIOS USING TRADITIONAL MEAN-VARIANCE FRAMEWORK FOR PUBLIC MARKET ASSETS



Source: J.P. Morgan Asset Management; data as of September 30, 2020. For illustrative purposes only.

Note: We define a high risk portfolio as a risk equivalent of a blended portfolio mix of 70% equity and 30% bond; a medium risk portfolio as a risk equivalent of 50% equity and 50% bond; a more conservative low risk portfolio as a risk equivalent of 30% equity and 70% bond. Portfolio duration is the weighted average duration of the total portfolio, including non-fixed income assets, where we assigned zero duration. The contribution breakdown of the total portfolio duration between core government bonds and credit is as follows: High risk portfolio: 1.0/2.0 years; medium risk portfolio: 1.4/2.8 years; low risk portfolio: 2.4/1.2 years. We see a decline in core bond duration as the risk profile increases, while credit, especially emerging market debt, pushes up the total portfolio duration.

To ensure sufficient diversification, a key ingredient of robust outcomes, we impose minimal exposures within major asset classes such as fixed income and equities. We believe that core government bond duration can still play a role in protecting portfolios during periods of turbulence. The effectiveness of duration in hedging against risk assets is likely to evolve over our LTCMA horizon. In the near term, yields that are close to the effective lower bound greatly diminish the ability of bonds to provide ballast in diversified portfolios. But should yields rise, as we expect they will in several years' time, the hedging benefit of holding duration in diversified portfolios will be restored at the same time as bond valuations improve. We also include a minimum relative allocation to U.S. equities, given the size and quality of this market.[2]

Because the depreciation of the dollar presents a headwind for non- U.S. investors, our optimizer exhibits a preference to hedge U.S. equities.

Adding alternatives

Selective alternative assets are some of the most attractive assets in our LTCMA assumption set. Global core real assets are among the highest risk-adjusted return assets. Private equity is one of only a handful of assets with close to an 8% expected return. Further dispersion in manager performance among most alternative assets is the widest of any asset class, which implies financial and value-added alpha potential.

To address the increasingly essential role of alternative assets in portfolios,[3] a key theme in this year's LTCMAs, we bolster the standard MV optimization tools. We use new techniques to incorporate some of the specific risks associated with alternatives – in particular, illiquidity, which we address with a liquidity penalty function.[4] The application of the liquidity penalty helps balance the overall portfolio, with less concentrated positions in any single asset class across both public and private markets.

[2] We impose constraints requiring minimum regional exposures in equities (e.g., the minimum U.S. equities weight is 25% of the total equity weight) and minimum relative allocation in government bonds within total fixed income exposure (e.g., the minimum core government bonds allocation is 50% of total fixed income). For further details on the constraints applied, see Grace Koo et al., "After near-term choppiness, long-run forecast remains stable," *2021 Long-Term Capital Market Assumptions*, Exhibit 5.

[3] See Pulkit Sharma et al., "Alternatives: From optional to essential," *2021 Long-Term Capital Market Assumptions*, J.P. Morgan Asset Management, November 2020.

[4] Our liquidity penalty function formalizes liquidity considerations in strategic asset allocation design and mitigates the issue of corner solutions to provide a more diversified portfolio. See Grace Koo et al.

Our framework favors alternative assets as a source of high quality risk-adjusted returns and diversification to traditional assets. Our analysis shows a preference for holding a broad basket of alternative assets, including core real assets, along with direct lending and private equity (**EXHIBIT 3**).

How might the presence of alternatives reshape the public market portfolio? In our analysis, the strong preference for non-U.S. equities persists, along with the currency dynamics described earlier. However, in contrast to public asset-only portfolios, allocations to alternatives are funded heavily from fixed income and bring equity allocations to their lower bound. In general, extended credit positions are reduced in favor of core real assets, or in some cases direct lending, within alternatives. Within the remaining core bond allocations, duration preference continues to favor short duration for low to medium risk portfolios. For higher risk portfolios, long duration provides a capital-efficient ballast to a sizable diversified basket of alternative assets along with equities.

Investors must recognize the term nature of some of these alternative assets. For example, direct lending has a holding period between three and five years, and the return delivered is subject to roll risk. Private equity investors need to hold through the entire investment cycle (10 years-plus) to capture the forecasted return. The distribution of return and illiquidity metrics can be extensive in alternatives, leading to a wide range of outcomes around our median alternative forecasts. Investors allocating to alternative need to address illiquidity, identify asset manager skill and handle fee budgets.

Asset-liability analysis

Repeating this analysis from an asset-liability perspective leads to similar results. The mark-to-market of the liabilities amplifies the risk management role of core duration assets, with a preference to source duration from high quality credit alongside or in place of sovereign debt. However, when we adjust for the inherently higher volatility when measured relative to long-duration liabilities rather than on an asset-only basis, we observe similar results across both asset-only and liability-relative portfolios.

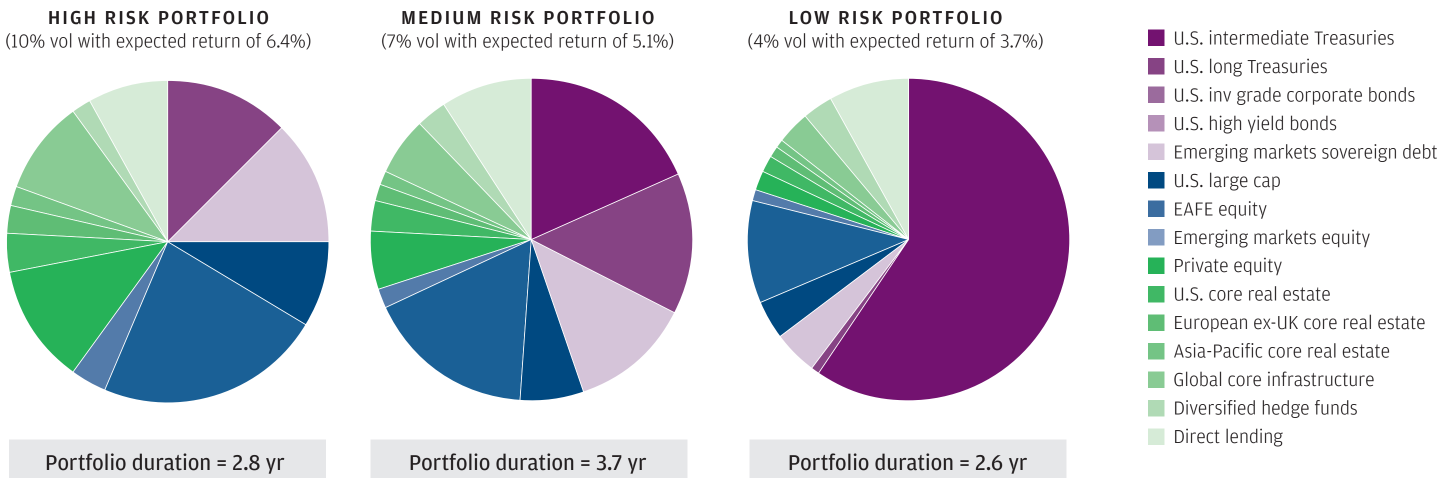
There are also some nuances in the currency hedging. In low to medium risk portfolios, unhedged U.S. equity is preferred despite the lower expected return. This is because the safe haven characteristics provided by dollar exposure are more highly valued in the asset-liability space, given the correlation structure when the liabilities are taken into account.

INVESTING WHEN MARKETS ARE IN EXTREMES: THE IMPACT OF THE STARTING CONDITION

Our framework, from both an asset-only and an asset-liability perspective, takes into account the significant effect of today's extreme valuations, which could drive investors to extremes in asset allocation. The impact of extreme valuations became clear when we ran a separate set of optimizations using equilibrium assumptions. This erases the impact of initial conditions such as valuations normalization for equities and the path of rates normalization for fixed income – all to help eliminate the cyclical component of returns.

Adding alternatives helps improve expected returns, with allocations funded heavily from fixed income

EXHIBIT 3: ASSET ALLOCATION OF HIGH, MEDIUM AND LOW RISK PORTFOLIOS USING A MEAN-VARIANCE-LIQUIDITY FRAMEWORK FOR ALL ASSETS, INCLUDING ALTERNATIVES



Source: J.P. Morgan Asset Management; data as of September 30, 2020. For illustrative purposes only.

Note: We define a high risk portfolio as a risk equivalent of a blended portfolio mix of 70% equity and 30% bond; a medium risk portfolio as a risk equivalent of 50% equity and 50% bond; a more conservative low risk portfolio as a risk equivalent of 30% equity and 70% bond. Portfolio duration is the weighted average duration of the total portfolio, including non-fixed income assets, where we assigned zero duration. The contribution breakdown of the total portfolio duration between core government bonds and credit is as follows: High risk portfolio: 2.1/0.7 years; medium risk portfolio: 3.1/0.6 years; low risk portfolio: 2.4/0.2 years.

Using these equilibrium assumptions and sensitivity analysis, efficient portfolios generally become more balanced and diversified, as shown in **EXHIBIT 4**. We highlight these elements:

- **RATES**: Duration and investment grade credit risk come back into portfolios. The duration of the portfolio increases as a result of extending core government holdings from the intermediate part of the curve to include longer-maturity government bonds; this is particularly apparent in our U.S. portfolios. Investment grade credit becomes a core allocation in non-U.S. portfolios in particular.

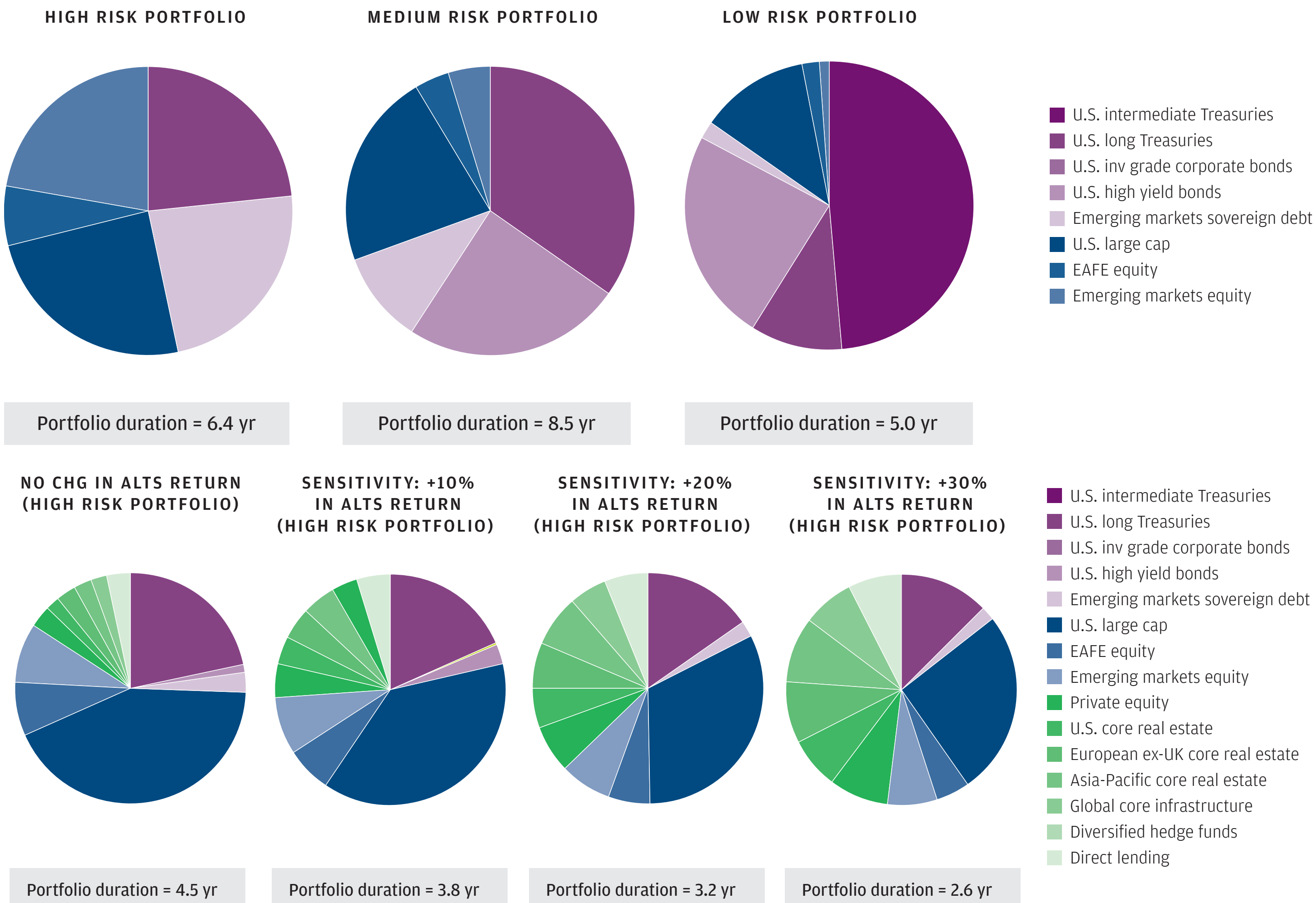
- **EQUITIES**: The preference for non-U.S. equities over U.S. equities disappears as valuation headwinds within U.S. equity abate.

- **CURRENCIES**: Currency dynamics further promote greater balance across regional equity exposures as currency impacts normalize following USD depreciation. For EUR- and GBP-based investors, currency hedging is no longer preferred: No further return leakage from USD depreciation is expected, and the safe haven characteristics of retaining exposure to the dollar dominate.

- **ALTERNATIVES**: When the expected return for real assets is set at the low end of our sensitivity range, we see generally much lower allocations to alternatives, with core real assets replaced largely by bonds. When the return is set at the high end of our sensitivity range, alternative allocations are retained or increased at the expense of fixed income – with core real assets generally the preferred allocation, followed by private equity. Investors with

Starting conditions matter: Our equilibrium analysis points to a more diversified portfolio when extreme valuations are eliminated

EXHIBIT 4: PORTFOLIO OPTIMIZATION RESULTS BASED ON EQUILIBRIUM ASSUMPTONS



Source: J.P. Morgan Asset Management; data as of September 30, 2020. For illustrative purposes only.

Note: We define a high risk portfolio as a risk equivalent of a blended portfolio mix of 70% equity and 30% bond; a medium risk portfolio as a risk equivalent of 50% equity and 50% bond; and a more conservative low risk portfolio as a risk equivalent of 30% equity and 70% bond. The breakdown between core duration/credit duration is as follows for public assets-only portfolios: High risk portfolio: 4.6/1.8 years; medium risk portfolio: 6.8/1.7 years; low risk portfolio: 3.9/1.1 years. The breakdown between core duration/credit duration is as follows for the bottom panel: No change 4.2/0.3 years; +10% sensitivity 3.6/0.2 years; +20% sensitivity 3.0/0.2 years; +30% sensitivity 2.5/0.1 years.

distribution needs will find the risk profile of a real asset strategy particularly attractive, given that a very high percentage of the strategy's returns are stable income.[5]

STARTING FROM CURRENT PORTFOLIOS: A HEAT MAP OF ASSET PREFERENCE

To take into account investor constraints and the incremental nature of how portfolios evolve, we conduct a substitution analysis on a range of sample investor portfolios with different objectives and constraints, and across different regions. This allows us to determine the marginal benefit of adding individual asset classes (**EXHIBIT 5**).

For each sample investor, we take a 5% "slice" of the total portfolio and invest that 5% in a single asset class. We then compare the portfolio statistics for the new portfolio with those of the original portfolio to test whether and how the portfolio efficiency has been improved.

What do we find? Adding extended credit and real assets improves portfolio efficiency across most investor bases.

Again, we highlight these elements:

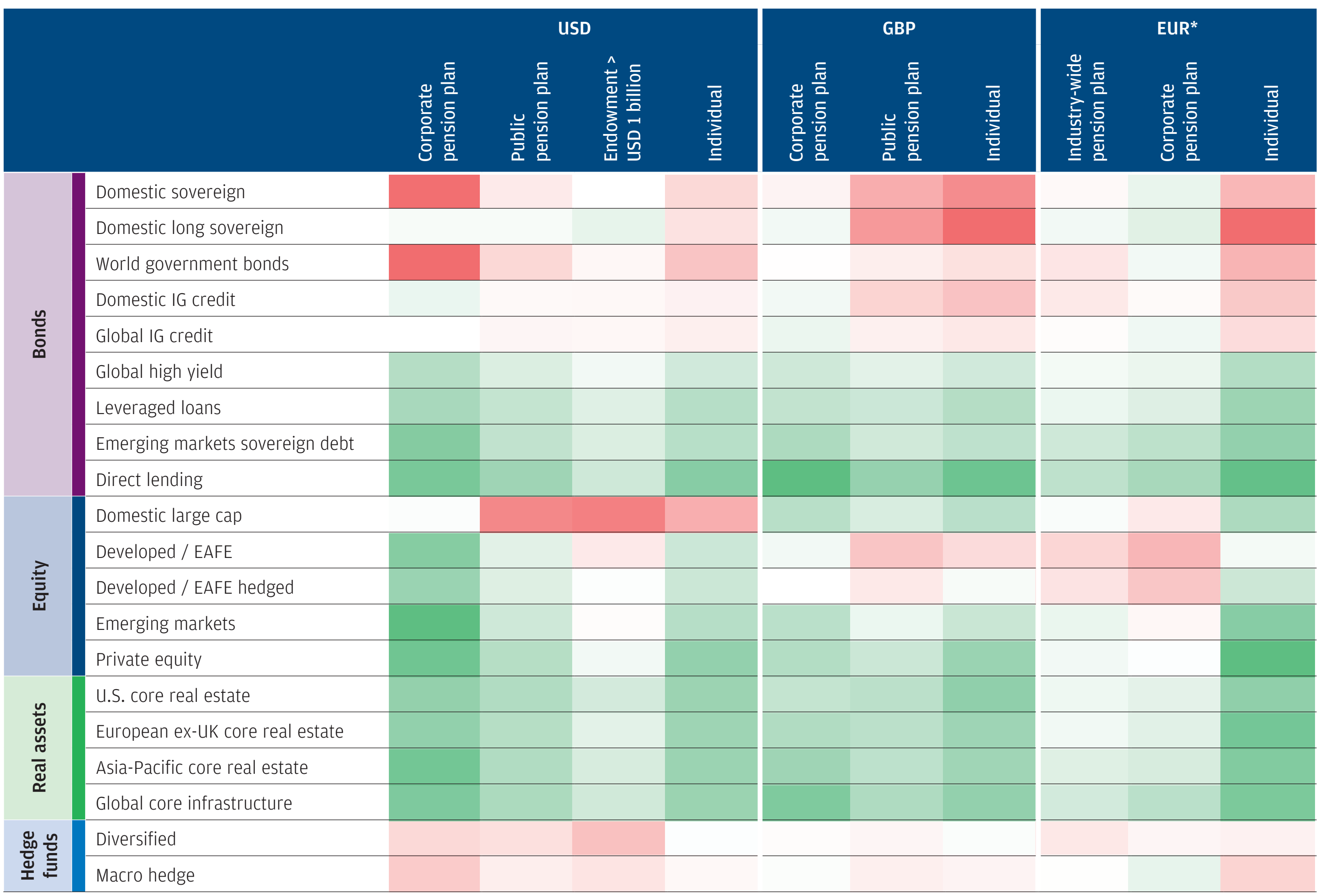
RATES: Overall, adding government bonds reduces the efficiency of most portfolios, as the return penalty is disproportionate to the reduction in risk. The exception: Pension plans that mark liabilities to market and investors with very little duration in their portfolios may still see some benefit from adding longer-dated bonds, despite the return headwinds.

[5] For core real estate and global core infrastructure, up to 80% of the return comes from contractual coupons, lease payments and cash flows.

To illustrate the marginal change in portfolio efficiency, we substitute a 5% "slice" of a typical portfolio with an allocation to a single asset class

EXHIBIT 5: ASSET PREFERENCE BY INVESTOR BASE. RED REPRESENTS A DETRIMENT TO PORTFOLIO EFFICIENCY, AND GREEN REPRESENTS AN IMPROVEMENT TO PORTFOLIO EFFICIENCY

Detriment to portfolio efficiency   Improvement to portfolio efficiency



Source: J.P. Morgan Asset Management; data as of September 30, 2020. For illustrative purposes only. Exhibit includes selected asset classes that are in common use. The list is meant to be representative and not exhaustive.
* For this illustration, we used a Dutch industry-wide pension plan and a Dutch corporate pension plan as the representative portfolio.

CORE CREDIT is often a more efficient vehicle to capture duration. Compared with government bonds, core credit offers less reduction in portfolio volatility, but its return penalty is more than commensurately lower.

EXTENDED CREDIT is generally attractive in particular leveraged loans and emerging market debt. Higher quality EMD sovereign bonds, hedged back to the appropriate currency, are another source of duration.

In **EQUITIES**, adding developed market equities is attractive for U.S. investors. However, for non-U.S. investors currency effects compound valuation effects to make additions to equity allocations unattractive. Hedging currency exposure can mitigate some of this effect but, as discussed, it is associated with higher volatility. In adding emerging markets and private equity, the additional risk relative to existing portfolios is expected to be appropriately rewarded.

REAL ASSETS improve portfolio efficiency overall. Core real assets globally, and infrastructure in particular, offer a strong diversification benefit with little detriment to return. Even for corporate marked-to-market pension plans, the diversification benefit is enough to offset the reduction in liability-hedging. Adding real assets with income streams that tend to rise with inflation is also a key source of inflation protection.

HEDGE FUNDS in general look marginal in terms of improving efficiency – but, of course, this is at the median manager level. Investors confident in their manager selection skills could capture returns in the top end of the manager dispersion range, driving further gains in portfolio efficiency.

PORTFOLIO CONSTRUCTION AND GOVERNANCE STRUCTURES

In summary, our analysis supports using high quality credit in place of sovereign bonds and diversifying portfolios by adding extended credit and real assets. Within equity risk, we recommend weighting toward emerging and private equity. EAFE equities should form a larger part of a U.S investor's portfolio, while non-U.S. investors will need to reconcile the sheer size of the U.S. equity opportunity set with current high valuations when sizing their allocation. And in all portfolios, managing currency dynamics is key.

The speed of the market response to COVID-19 underscores the need for investors to be nimble in their responses to a changed environment – whether in rebalancing, taking advantage of pricing dislocations or adopting tactical positions. But this year's unusual market moves also highlight the importance of separating short-term rapid price action from long-term strategic thinking. Our framework separates the impact of a current short-term impact (extended valuations) from long-term strategy by comparing current and equilibrium assumptions.

In the face of the investing challenges we have discussed, governance structures would need to evolve. In our view, responses to rapid market movements should be increasingly delegated to actors that can implement changes in real time. It is no longer feasible to entirely separate the tactical and strategic dimensions of asset allocation (if it ever was). Investors will need to build deeper relationships with their partners and providers to ensure a fully integrated approach to managing risk, capturing market opportunities and accessing manager capacity and skill, especially in alternatives.

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