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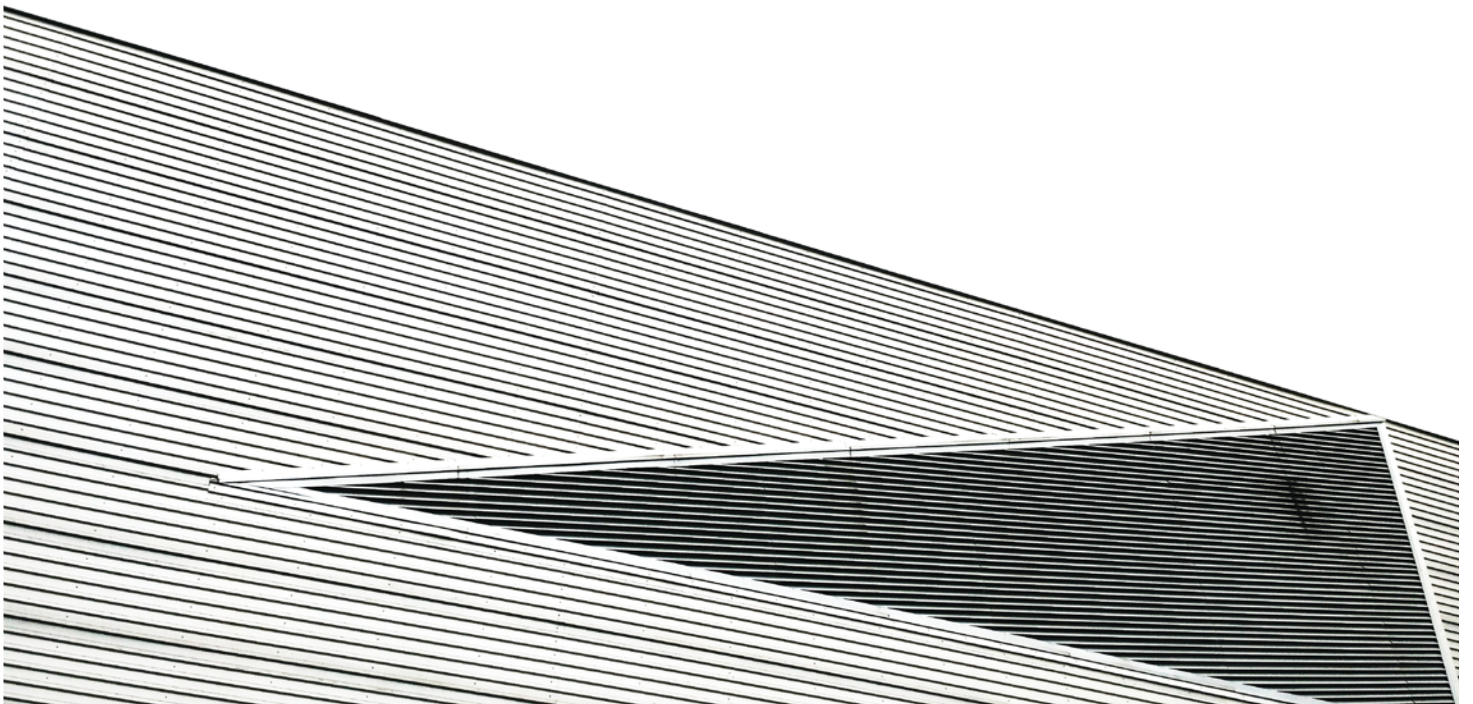
# Enhancing diversification

## in a low-yield world



Simple portfolio structures face potential hazards in light of the low interest rate environment, but the good news is that they can be improved.

## Highlights

- The ability of developed market bonds to protect portfolios from growth shocks is challenged by the low level of yields and proximity of central bank policy rates to their effective lower bounds.
- Most investors cannot resolve this issue by adopting a more defensive posture, as this would introduce an obstacle to meeting return and income objectives.
- Bonds remain an important component of a well-balanced portfolio, but we recommend that investors take steps to diversify their suite of safe haven assets to improve the resiliency of multi asset portfolios moving forward.
- From a strategic point of view, Chinese bonds appear to be the best positioned to take on some of the role traditionally played by developed market debt. The incorporation of alternative assets to portfolios may also improve income generation, diversification benefits, and the risk/reward profile.
- Tactically expanding liquid diversifying assets to parts of the foreign exchange and commodities markets that share some price characteristics with US Treasuries may help produce more robust drawdown mitigation.
- Incorporating explicit risk control solutions that dynamically manage drawdown risk may enable investors to increase exposure to asset classes with higher expected returns.

The longstanding ability of developed-market bonds to provide positive real risk-free returns and reliably robust performance during equity market drawdowns has been eroded by decades of success.

Bond yields in advanced economies are approaching an effective lower bound, making the need to upgrade your asset allocation more urgent.

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A multi-faceted approach to address this challenge includes increasing exposure to Chinese sovereign debt and alternative assets to improve the medium-term risk/reward profile of a portfolio, adding macro-aware liquid diversifiers that share some return characteristics with US Treasuries, and utilizing strategies that more directly control for risk, volatility, and drawdowns.

We believe that investors would be well-served to adopt such a multi-asset approach that uses all the tools at their disposal: a strategic asset allocation to provide improved risk/return outcomes over the long-term, a flexible, creative tactical asset allocation program or overlay to mitigate drawdown risk, and systematic, outcome-oriented structured solutions to more precisely manage the volatility associated with equity exposure.

# Bonds: safe, unsound

## 60/40 portfolio structures are riskier because of the potential proximity of an effective lower bound for developed-market interest rates.

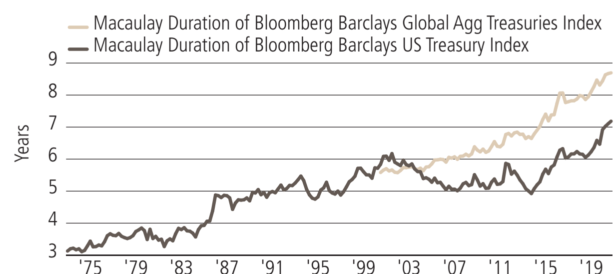
This means there is considerable compression in the scope for income generation and capital appreciation from these defensive instruments. Investors that rely on sovereign bonds as the sole source of portfolio diversification are forced to assume more duration risk for adequate protection. They also become increasingly reliant on a negative stock-bond correlation that may be jeopardized under both downside and upside economic scenarios. Developed market central bank policy rates are approaching an effective lower bound[1], with the Federal Reserve highly unlikely to cut rates below zero and other developed market central banks refraining from cutting rates further into negative territory in the wake of the COVID-19 shock, instead pursuing alternative forms of unconventional monetary stimulus[2]. This puts a ceiling on how much even longer-term bonds can rally, which may result in reduced diversification benefits as the negative correlation between stocks and bonds moves towards zero.

On the other hand, our prior research has found that a persistent rise in consumer price inflation to 2.5% for 36 months is associated with a shift to a positive stock-bond correlation.[3]

The 60/40 portfolio has historically benefitted from this negative correlation, but going forward investors should consider taking further steps to diversify their defensive holdings due to the emergence of threats to the negative correlation across multiple fronts.

Most investors cannot resolve this issue by adopting a more defensive posture, as this would introduce an obstacle to meeting return and income objectives. The strong record of sovereign bonds in providing both positive returns and diversification benefits has coincided with and contributed to a migration lower in the efficient frontier. Lower yields are reflective of a global environment in which the long-term outlook for economic activity and inflation – key inputs that feed into nominal earnings growth for equities – has come under pressure.

**Exhibit 1: Bonds are increasingly sensitive to interest-rate risk**




Source: Bloomberg, UBS Asset Management. Data as of 20 November 2020.

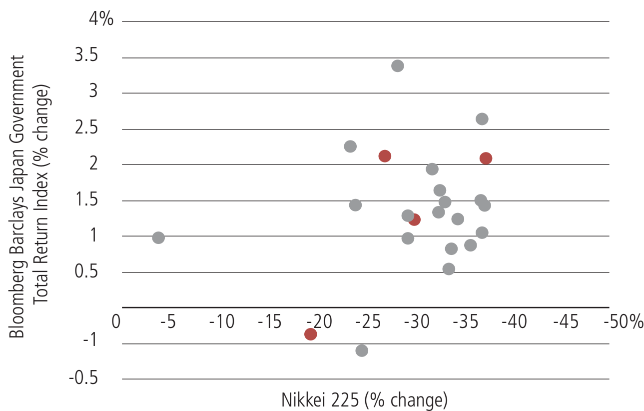
**Warning signs from non-US developed markets**

Some developed markets already demonstrate the challenges bonds face in providing an offset to equity drawdowns as central bank policy rates approach an effective lower bound. German and Japanese sovereign debt have shown much less potency in their ability to provide a cushion during risk-off episodes, even as some diversification benefits remain. This highlights the potential pitfalls of relying on some developed-market bond markets as the sole source of defensiveness in portfolios.

A broad basket of Japanese government bonds has failed to rise by 3.5% at the trough of every three-month drawdown in domestic equities of more than 12% in the past 20 years. And since the European Central Bank's deposit rate was lowered into negative territory in 2014, a basket of German bunds of varying maturities has offered substantially less protection during equity pullbacks of a similar magnitude relative to the previous 15 years.

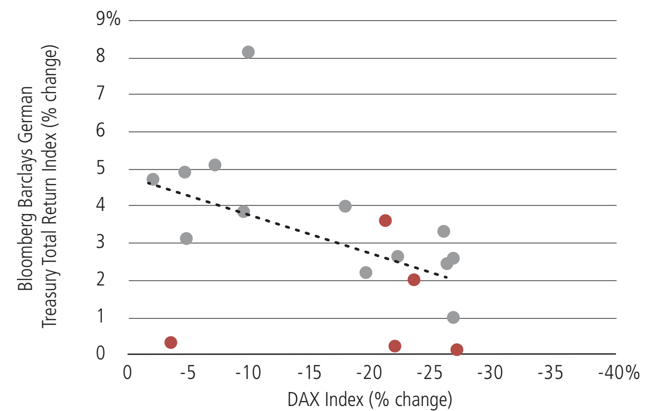
[1] European Central Bank working paper, "Reversal interest rate and macroprudential policy," https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2487~77052f3728.en.pdf?171e0b7f9536303d73ec8686b67f9158 (November 2020)
[2] This includes forward guidance, enhanced quantitative easing, credit easing, yield curve caps, negative funding rates in funding-for-lending schemes, and monetary-fiscal facilities that more directly support liquidity needs in the real economy. No central bank took policy rates into, or deeper into, negative territory.
[3] UBS Asset Management, "Stock/bond correlation in the coming decade," https://www.ubs.com/global/en/asset-management/global-sovereign-markets/overview/stock-bond-correlation.html (January 2020)

**Exhibit 2: Relative performance of stocks and bonds during worst three-month equity drawdowns since 2000**
Red dots indicate post-NIRP drawdowns




Source: UBS Asset Management, Bloomberg. Data as of November, 2020.

**Exhibit 3: Relative performance of stocks and bonds during worst three-month equity drawdowns since 1998**
Red dots indicate post-NIRP drawdowns




Source: UBS Asset Management, Bloomberg. Data as of November, 2020.

**Bonds in COVID-19 liquidity stress**
The COVID-19 market tumult demonstrates how the evolution and intersection of the regulatory, market structure, and macroeconomic backdrops also contribute to the potential unreliability of US Treasuries as a hedge.

US Treasuries are part of complex global funding chains[4] and utilized to build leveraged arbitrage positions. They are therefore vulnerable to disruptions in the event liquidity becomes scarce.[5] Regulations enacted in the aftermath of the 2008-2009 recession have also left markets more brittle, with a lower market-making inventory limit for banks effectively increasing the severity of price movements tied to broad de-grossing of positions. As such, stressed market conditions can foster simultaneous drawdowns in stocks and bonds, as was the case for a stretch during March 2020. Reliable hedges in severe negative growth/liquidity shocks that provide downside convexity through the full duration of the event are likely to consist of a structure that is short an asset in US dollar terms.

**The utility of bonds**
To be sure, we do not advocate eliminating developed-market sovereign bonds from portfolios, but rather augmenting their historical diversifying role with other assets in light of their likely future limitations over several market cycles.

We expect most developed market sovereign debt, particularly US Treasuries, to retain a negative correlation with risk assets for at least the next few years, thereby contributing to smoother performance at the portfolio level. Their negative correlation to and historically lower volatility than equities also provides optionality to redeploy capital into riskier assets after a market retreat.

Bonds are also poised to remain the optimal vehicle of reliable capital preservation in the event of a sustained deflationary growth shock that weighs on risk asset returns for a prolonged period. However, such an outcome is not our base case. It would be suboptimal to construct portfolios for bearish scenarios in which even the ideal asset allocation would leave portfolio managers unable to meet total return expectations.

[4] Bank of International Settlements, "US dollar funding: an international perspective" https://www.bis.org/publ/cgfs65.pdf (June 2020)
[5] Bank for International Settlements, "Leverage and margin spirals in fixed income markets during the Covid-19 crisis" https://www.bis.org/publ/bisbull02.pdf (April 2020)

# Holistic solutions to the problem of low yields

**Considerations for Strategic Asset Allocation**
To this point, we have illustrated the inability of developed-market bonds to provide the best profile of returns and sole source of downside risk mitigation on a going-forward basis. We have moved to an environment in which augmenting defensive exposure to holdings beyond developed-market bonds should make portfolios more resilient. But the task of diversifying among different defensive assets is challenging precisely because of the magnitude of success the simple 60/40 portfolio structure has had to date from the global and US perspective.

There is no perfect substitute for the role developed-market sovereign debt has played in portfolios. However, geographic diversification and broadening the universe of defensive or income-generating assets will prove useful in addressing this challenge, in our view.

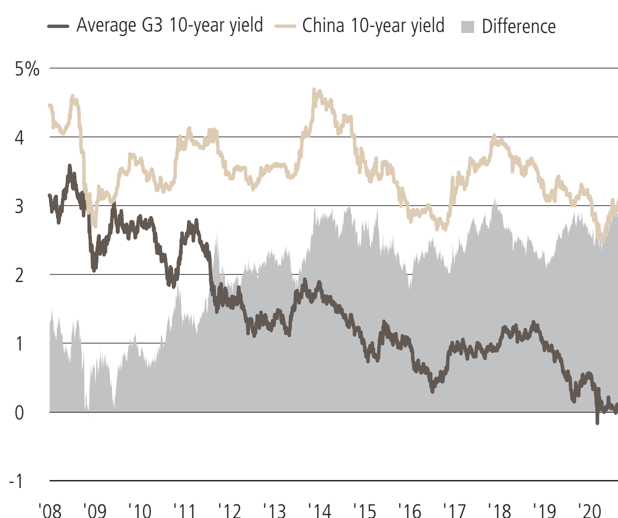
We believe that Chinese sovereign debt is the most structurally appealing candidate to assume a similar portfolio function on a sustained basis. Thanks in part to the much higher tields, both local and hedged returns in Chinese 10-year sovereign debt are expected to deliver superior returns relative to other major global markets over the next five years.

The People's Bank of China has established a track record of delivering countercyclical monetary policy, and has more traditional room to ease policy than developed-market central banks. As such, we expect Chinese sovereign bonds to display a more reliably negative correlation with global equities going forward. The country's economic stature ensures meaningful direct and indirect ramifications on the outlooks for global growth and markets. Chinese financial deepening and inclusion of Chinese assets in more global benchmarks should further entrench this trend.

Our prior research has found adding Chinese stocks and bonds to an already diversified portfolio of global assets increases expected five-year returns and the Sharpe ratio.[6]

Many classes of institutional investors may also be able to bolster portfolio durability or improve income generation prospects by accessing less liquid alternative investments.

**Exhibit 4: Chinese bonds offer substantial yield premium to G3**




Source: Bloomberg, UBS Asset Management. Data as of 23 November 2020.

Our research suggests the addition of private equity, infrastructure, real estate, and hedge funds may improve the risk/reward profile relative to a traditional 60/40 portfolio structure, albeit with lower liquidity.[7] This holds even after taking into account the true economic volatility of these holdings, rather than their smoother appraised volatility. In addition, skilled managers may be able to identify alpha opportunities in less liquid alternative assets. This could further improve the risk/reward profile for this asset class.

There is no perfect substitute for the role developed-market sovereign debt has played in portfolios.

[6] UBS Asset Management, "China: Five year capital market expectations and boots-on-the-ground insights," https://www.ubs.com/global/en/asset-management/insights/webinar/2020/china-5-year.html?campID=CAAS-ActivityStream (September 2020)
[7] UBS Asset Management, "Alternative Investments: Improving portfolio performance," December 2020.

An overview of our expected returns across global fixed income and equity universe, as well as commodities and hedge fund strategies, indicate there is merit in shifting the nature of defensive exposure in multi asset portfolios. These forecasts, which embed expectations for cross-asset correlations, suggest that five and ten-year returns and Sharpe ratios will be superior for portfolios that reduce developed market sovereign debt in favor of Chinese and other emerging-market government bonds compared to US or global 60/40 structures. Meaningfully improving Sharpe ratios when the starting point is an already diversified portfolio is a difficult achievement.

**Exhibit 5: Expected returns for a range of portfolios**

| Expected Returns | Global 60/40 | Global 60/40 (10% tilt to Chinese, EM debt) | 50% equities, 25% bonds, 25% alts | 50/25/25 (10% tilt to Chinese, EM debt) |
|---|---|---|---|---|
| **5-year Geometric Return** | 4.5% | 4.8% | 5.7% | 5.9% |
| **5-year Sharpe Ratio** | 0.46 | 0.48 | 0.52 | 0.54 |
| **Standard Deviation** | 10.5% | 10.5% | 11.7% | 11.7% |

Note: 60/40 = Global equities/global agg bonds (hedged)
Chinese, EM debt exposures blend of hedged/unhedged
Alternatives = 10% private equity, 5% infrastructure, 5% hedge funds, 5% real estate
Source: UBS Asset Management. 31 December 2020.

**Considerations for Tactical Asset Allocation**

A downward shift in the efficient frontier will push some investors further out on the risk spectrum to meet long-term return requirements. In such scenarios, the role of tactical asset allocation in mitigating downside risks through astute asset selection, timing, and sizing assumes increased importance.

The ability to assess the risk skew of different macroeconomic scenarios plays a crucial role in deciding which positions to build to increase portfolio resiliency. Hedging is a flexible, regime-dependent exercise, and requires that portfolio managers are able to correctly specify the nature of any negative shock in order to select the appropriate means of protection. In many cases, positions used to hedge shocks to growth would be reversed to protect against inflation shocks.

Quantitative signals can also be employed to support the tactical investment process. Systematic, data-driven quantitative tools that extract sentiment from news articles and provide insight into price momentum. The resulting signals can corroborate or contradict other pillars of the investment process, such as fundamental analysis. The application of these tools gives an additional lens to gauge the forward-looking outlook for asset prices. Incorporating this information, which is not available to all classes of investors, is intended to offer actionable, early-warning signals that improve outcomes, particularly around market inflection points.

**Tactical liquid diversifiers**

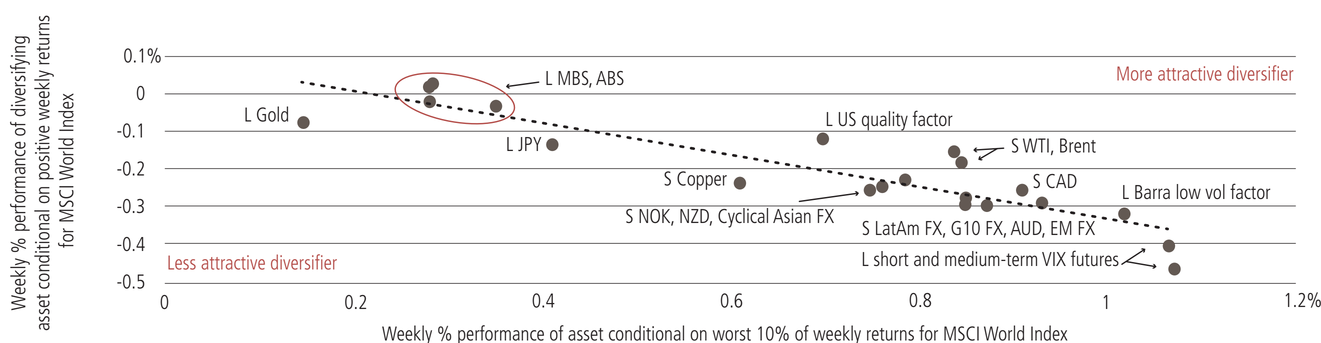
The low starting point for bond yields necessitates that investors identify assets that would provide bond-like protection in the event of a negative shock to growth.

To ascertain which liquid assets may improve portfolio resilience in a low-yield environment, we analyzed weekly returns across commodities, foreign exchange, and other parts of the fixed income universe from 2008 through July 2020. Assets were standardized to 10% volatility over the period to aid with comparability, with a focus on weekly performance relative to the MSCI World Index.

The ideal asset to diversify equity risk would offer:

- Reliably positive performance during stock market drawdowns (negative beta, down hit ratio)
- Particularly positive performance during more severe equity declines (downside convexity, tail performance)
- Limited or no "cost" (negative performance) during periods when equity markets are rising

**Exhibit 6: Weekly percentage performance of diversifying asset conditional on worth 10% of weekly returns for MSCI World Index**




Source: Bloomberg, UBS Asset Management. 30 November 2020.

The ideal hedge would be found in the upper right-hand corner of the above chart, displaying strong performance during the worst retreats in global equities, with minimal or no drag on returns when global equities are advancing.

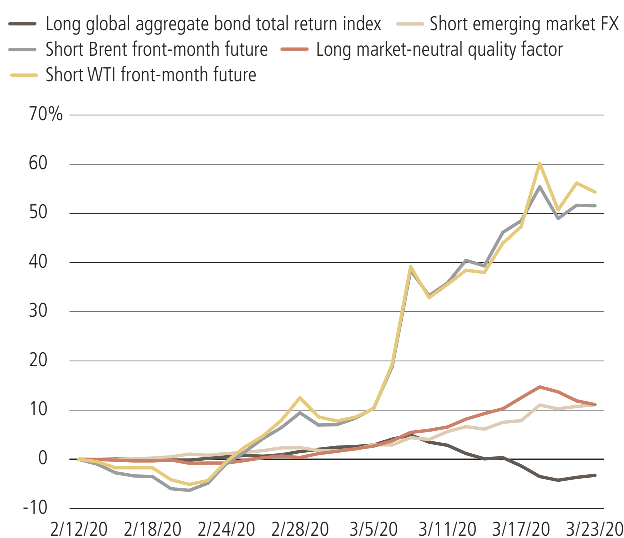
One conclusion that can be drawn from this analysis: Investors will no longer get paid to buy insurance, as was the case when developed-market risk free debt with positive real yields also provided an effective cushion via capital appreciation during risk-off episodes. Insurance will now have a cost. We can, however, look to optimize expected returns by dynamically managing allocations to defensive assets based on tactical considerations.

In general, there is an inverse relationship between an asset's ability to provide downside protection during tail events in global equities relative to its performance when risk assets are performing positively. For instance, long positions in short or medium-term VIX futures, which track the 30-day implied volatility of the S&P 500 Index, are the best sources of tail protection judging by performance and reliability. However, the cost of this protection – that is, the performance during weeks in which global stocks are up – is more than double that of the average for the universe of liquid diversifiers under consideration.

Securitized debt (mortgage and asset-backed securities) stands out as an asset that tends to gain in adverse equity conditions while providing a minimal drag, or even positive performance, when risk assets advance. However, the stock of securitized debt is not sufficiently large to be universally implemented in a meaningful fashion across portfolios. Nor does the asset class display sufficient downside convexity or reliability in buffering portfolios from the worst 10% of weeks of price returns for the MSCI World Index.[8] Because of these characteristics, securitized debt may be better suited to a role in strategic asset allocation for some investors rather than a more tactical diversifier.

Assets that have a similar profile as US Treasuries from a historical perspective include short positions in oil futures as well as the Canadian dollar, and a long position in the US market-neutral quality and low volatility factors. During the most recent equity market tumult linked to the global spread of COVID-19, many of these assets outperformed global bonds.

**Exhibit 7: Performance of select diversifying assets from MSCI World Index pre-COVID peak to trough**




Source: Bloomberg, UBS Asset Management. 23 March 2020.

To complement, we analyzed which assets reacted similarly to Treasuries for a given change in the macroeconomic backdrop – focusing on periods when growth is contracting or stress is increasing.[9] In particular we identify those assets that displayed a probability in excess of 80% to outperform during scenarios in which growth contracts and stress increases, which include short positions in the Canadian dollar, South African rand, and Taiwan dollar. Also screening well were a variety of alternative risk premia factor strategies, particularly quality and profitability, as well as market neutral sector tilts including health care, communication services, and consumer staples.

There is cause to believe that the return profile of several assets may be different going forward in a way that increases their appeal as liquid diversifiers. In particular, interest rate convergence between developing and developed markets should reduce the expected negative carry associated with short positions in emerging market currencies in the future, with little change to their downside convexity during periods of market stress. Tactical considerations may also factor into the attractiveness of a hedge. For instance, a contango structure in growth-sensitive commodities may offer a more efficient expression by avoiding roll yield costs.

Gold deserves special mention, given its strong price performance in 2020 and increased appeal to institutional investors in an environment where its lack of yield compares favorably with negative yields on inflation-linked developed market debt. Because of its higher volatility but generally positive correlation with inflation-indexed Treasuries, a traditionally defensive asset, gold may have some surface appeal as a more efficient portfolio hedge.

However, central banks reaching their effective lower bounds puts a firm floor under yields on inflation-linked debt in the event of a growth shock. From these starting points, lower real yields, and rising gold prices, may be more reflective of improving economic outcomes coupled with increased central bank tolerance for a pick up in price pressures. As such, we believe that gold is slated to serve as a superior hedge to inflation shocks rather than growth shocks. And even though the positive correlation between gold and Treasury inflation-protected securities is generally robust, it is not always so.

[8] See Appendix Table A.
[9] Quarterly GDP, ISM PMI, and OECD CLI was used to track growth; Chicago Fed financial conditions index and implied versus realized S&P 500 volatility were used to track stress. See Appendix Table B.

The unreliability and lack of potency of developed market bonds as a hedge in the event of growth shocks is a concern going forward, an artefact of a long track record of success in this regard. For gold, this lack of reliable defensiveness is already a documented part of its history.

**Considerations for Structured Solutions**

While expected returns are declining, investors' required returns may not be. This downwards pressure on the efficient frontier makes it more difficult to chart a course that adequately balances the trade-off between required returns and risks assumed. This task is then made more complex by the looming diversification challenges traditional balanced portfolio structures will face in a low-yield environment.

In addition to adjusting the different building blocks within a balanced portfolio, investors can also opt to increase exposures to strategies that manage risk more dynamically.

For some investors, this might take the form of increasing equity exposure relative to bonds and making use of derivatives to more directly guard against drawdowns as well as utilizing volatility or risk control thresholds[8]. Our analysis of liquid diversifiers showed how long volatility positions provide effective offset, but at a very expensive cost. More sophisticated options strategies would allow investors to benefit from the higher expected return in equities that would more than offset the cost of providing high-precision drawdown control, resulting in a superior return profile.

One such approach is a defensive equities strategy. Exploiting inefficiencies in the options market may allow investors to purchase relatively inexpensive insurance with varying terms to ensure consistent protection and provide more predictable outcomes.

For decades, bonds have functioned as a relatively convex put option on equities that the owner received a premium for holding. As such, incorporating overwriting strategies to generate premium and help finance protection via put options can be employed to attempt to replicate some characteristics of bonds as efficiently and systematically as possible.

**Conclusion**

Simple portfolio structures face potential hazards in light of the low interest rate environment, but the good news is that they may be improved. Investors have many opportunities to augment their suite of diversifying assets to help build more resilient portfolios as the need to do so grows more urgent.

We recommend a holistic, multi-faced approach to diversifying portfolios in a manner that is active, creative, and flexible.

Strategic asset allocation solutions focus on moving beyond developed market sovereign debt to pockets of the global landscape that offer a rare combination of carry and defensiveness. Tactical asset allocation should aim to identify relatively inexpensive sources of potential downside convexity based on the current and expected stages of the macroeconomic cycle. Structured solutions may allow investors to increase exposure to asset classes with higher expected returns, while more directly protecting against drawdown risk.

# Appendix

**Table A: Characteristics of Liquid Macro Diversifying Assets**

| Asset | Performance drag | Tail performance | Down beta | Tail hit ratio |
|---|---|---|---|---|
| Long medium-term VIX futures | -0.77% | 2.05% | -0.66 | 0.96 |
| Long short-term VIX futures | -0.89% | 2.06% | -0.68 | 0.95 |
| Long US low volatility factor | -0.61% | 1.96% | -0.61 | 0.93 |
| Short Canadian dollar | -0.49% | 1.75% | -0.55 | 0.93 |
| Short G10 FX | -0.56% | 1.79% | -0.57 | 0.91 |
| Short EM FX | -0.57% | 1.67% | -0.50 | 0.90 |
| Short Australian dollar | -0.57% | 1.64% | -0.54 | 0.90 |
| Short LatAm FX | -0.53% | 1.63% | -0.50 | 0.89 |
| Short Brent | -0.36% | 1.63% | -0.49 | 0.86 |
| Short Cyclical Asian FX | -0.49% | 1.43% | -0.42 | 0.86 |
| Short WTI | -0.30% | 1.61% | -0.47 | 0.86 |
| Short New Zealand kiwi | -0.47% | 1.46% | -0.47 | 0.84 |
| Short Norwegian krone | -0.44% | 1.51% | -0.41 | 0.80 |
| Long US ABS | -0.05% | 0.54% | -0.08 | 0.76 |
| Long US quality factor | -0.22% | 1.34% | -0.44 | 0.75 |
| Short copper | -0.45% | 1.17% | -0.33 | 0.75 |
| Long US AAA ABS | -0.06% | 0.67% | -0.12 | 0.75 |
| Long US MBS | 0.04% | 0.55% | -0.06 | 0.71 |
| Long US 30Y MBS | 0.04% | 0.53% | -0.06 | 0.71 |
| Long US 15Y MBS | 0.01% | 0.53% | -0.07 | 0.71 |
| Long Japanese yen | -0.27% | 0.79% | -0.23 | 0.69 |
| Long gold | -0.16% | 0.28% | -0.06 | 0.53 |

Source: UBS Asset Management. Data as of 31 July 2020. Performance drag: Weekly return of diversifier conditional on positive MSCI World weekly return
**Tail performance:** Weekly return of diversifier conditional on worst 10% of weekly returns for MSCI World
**Down beta:** beta of diversifier conditional on negative MSCI World weekly return
**Tail hit ratio:** Number of times diversifier delivers a positive return during worst 10% of weekly returns for MSCI World divided by number of instances of worst 10% of weekly returns

*(Full sample period: weekly returns from 12/31/2007 to 07/31/2020, diversifying assets standardized to 10% volatility)*

**Table B: The Sensitivity of Liquid Diversifiers to Macroeconomic Changes**

| Asset | Growth | Stress |
|---|---|---|
| US profitability factor | -0.91 | 1 |
| Global probability factor | -0.94 | 1 |
| Health care vs market (capital neutral) | -0.97 | 0.99 |
| US health care vs market (capital neutral) | -0.95 | 0.98 |
| Health care vs market (beta neutral) | -0.96 | 0.97 |
| US health care vs market (beta neutral) | -0.9 | 0.94 |
| US communication services vs market (capital neutral) | -0.96 | 0.8 |
| US staples versus market (capital neutral) | -0.9 | 0.9 |
| USDCAD | -0.92 | 0.96 |
| USDZAR | -0.97 | 0.92 |
| USDTWD | -0.88 | 0.83 |

Source: UBS Asset Management. Data as of 30 November 2020.
**Tracking variables for each macro driver:**
Growth (GDP, ISM purchasing managers' index, OECD composite leading indicator
Stress (Chicago Fed financial conditions index, implied versus realized equity volatility)

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