



Using credit in asset allocation

Expanding the liquid fixed income toolkit



Michael Walsh
Multi-Asset Solutions
Strategist



Andrew Armstrong
Solutions Analyst

Key Points

- As an asset class, fixed income is a mainstay of institutional portfolios. It offers investors a natural hedge against future liabilities, as well as generating returns and acting as a diversifier for other asset classes held in the portfolio.
- A multi-decade decline in interest rates has brought some of these objectives into conflict and falling yields have put pension fund and insurance company funding models under pressure.
- In present value terms, in 1999, a payment of £100 to be made 30 years in the future had a present value of just £26. By mid-2020 that had risen to £83.
- Many investors are turning to the private debt markets, such as real estate, infrastructure and corporate loans, to generate the required cash flow.
- Private debt markets are less transparent and less liquid than public markets, and they can create an increased governance burden for trustees.
- We believe investors building cashflow-matching focused portfolios should consider more liquid, less widely used fixed income sectors such as Asia credit, emerging market (EM) corporate debt and globally diversified high yield debt.
- We'll discuss how these sectors can offer relatively attractive and predictable cash flows in the medium term, enabling investors to generate extra income without compromising on liquidity and transparency.
- In **Appendix 1**, we profile the Asia credit, EM corporate bond and global high yield markets in more detail, and we show the patterns of expected sterling cash flows from each asset class compared with those from a high-quality corporate bond investment.
- The case study in **Appendix 2** takes a portfolio of global investment-grade corporate bonds and shows the potential impact of allocating 25% to each of these three credit markets in turn, and then to a combination of the three.

Fixed income and the funding conundrum

Fixed income plays multiple roles in the portfolios of institutional investors such as pension funds and insurance companies. The returns and cash flows from fixed income have the benefit of being relatively predictable, especially if bonds are held to maturity. Investors measure their future liabilities using the yields available on high-quality fixed income instruments, making bonds and other fixed income assets a natural hedge against changes in the current value of those liabilities.

But the two-decade structural decline in high-quality bond yields, compounded by lower central bank policy rates and quantitative easing, has reduced yields at all maturities, both in nominal and in real terms.

At the end of March 2009 (equity markets' post-crisis low), pension schemes in the UK had an aggregate deficit of £192 billion, as calculated by the PPF. By the end of September 2020, the deficit was still £166 billion².

In aggregate, this has boosted the present value of the liabilities faced by pension schemes; in effect, they need to put aside more to meet the same future pension obligation (expressed in nominal terms) as they did before. For example, the decline in UK government bond yields since the turn of the century has raised the present value of a sterling payment made 30 years in the future over threefold: at the end of 1999, when discounted by gilt yields, the present value of

Figure 1: Index-linked gilts have outpaced global equities

Cumulative returns in sterling



Past performance is not a reliable indicator of future performance.

For the period 31 December 2009 to 31 October 2020

Global equity return—50% MSCI ACWI Total Return Index in GBP, 50% MSCI ACWI Total Return Index hedged to GBP, rebalanced monthly; Index-linked gilt return—FTSE Actuaries Over 5 Year Index-Linked Gilt Index.

Source: Bloomberg Finance L.P.

a £100 payment to be made in 30 years' time was £26, but by June 2020 this had risen to £83.

Yields on inflation-linked bonds, which offer a natural hedge for investors worried about the impact of unanticipated future price rises, have also fallen dramatically over this period, making it more expensive for investors to offset future liabilities by holding such bonds.

Unsurprisingly, pension schemes have historically diversified their assets to seek extra sources of return. In the UK, for example, statistics produced by the Pension Protection Fund (PPF) show that, while defined benefit pension schemes have increased exposure to streams of future income via the bond markets, since the global financial crisis, they have continued to hold a mix of equity, property and other 'growth' assets also to maintain some potential upside resulting from economic growth¹.

Since equity markets have advanced strongly over the last 10 years, we might expect schemes' funding levels to have improved as a result. After all, the decision to hold riskier

assets like equities has been rewarded. Many sponsoring companies have also transferred money into their pension schemes to help improve funding levels.

But despite these steps, UK defined benefit pension schemes' solvency has improved little over the past decade. At the end of March 2009 (equity markets' post-crisis low), pension schemes in the UK had an aggregate deficit of £192 billion, as calculated by the PPF. By the end of September 2020, the deficit was still £166 billion².

The more pension schemes have worked to narrow their funding deficits, the more those targets have escaped them. **Figure 1** shows how long-dated index-linked gilts have actually outperformed global equities since 2009. In other words, long-term defined benefit pension liabilities (for which index-linked gilts serve as a proxy) have outpaced the increase in stock markets seen as 'growth assets' held to reduce the cost of such liabilities.

¹ Source: Pension Protection Fund, Purple Book 2020, Chapter 7:Asset Allocation

² Source: Pension Protection Fund, PPF 7800 index, <https://www.ppf.co.uk/ppf-7800-index>

Responses to the conundrum: LDI, cash flow hedging and private debt markets

Many pension schemes and insurance companies have followed a policy of immunising some or all of their interest-rate and inflation risk using liability-driven investment (LDI) techniques, which became widespread from the early 2000s onwards. Studies show that over £1 trillion of liabilities had been hedged by end 2018, accounting for over half of total UK defined benefit liabilities³.

More recently, some pension schemes, especially in the UK, have switched their focus from hedging liabilities to hedging cash flows, an approach that has long been practised by insurance firms.

Often, the switch to greater cash flow matching reflects the increasing average maturity of defined benefit schemes, which may mean that pension payments exceed the money coming in from employer and member contributions. If this is the case, regular, predictable cash flows from the investment portfolio can reduce the need to disinvest and sell assets, which can be a particular challenge during periods of market volatility.

Unfortunately, the current low level of yields makes it prohibitively expensive to pay now for high-quality, predictable, liquid sources of future cash flow. It can also be difficult to source bonds (in particular corporate bonds) that offer the desired maturities or, in the case of index-linked liabilities, it can be difficult to find assets with the necessary inflation linkages.

As a result, pension funds with long-term liabilities are increasingly seeking the cash flows they need from debt instruments available in private markets. Private market debt includes asset types like real estate debt, ground rents, infrastructure debt and private corporate loans.

Investments in this area of the market often require capital to be committed for a decade or more in closed-end structures (with no automatic right to early redemption).

Private assets are attractive on two levels: they offer a higher expected yield, often 2% to 4 % per annum above government bond yields, inflation or swap rates; and they promise long-dated, stable cash flows, often with investment grade credit ratings.

Drawbacks of private debt structures

Using the private debt market to meet long-term retirement cash flows has its challenges.

First, this approach carries a significantly increased governance burden. Lending transactions in private debt markets are, by design, idiosyncratic in nature. Investors need to carry out in-depth due diligence both on the proposed private debt investment strategies and on the prospective investment managers appointed to manage those strategies. Getting these decisions wrong can be costly and risky: the lack of liquidity if a private debt investment fails to deliver can lead to penalties for early exit, if that is possible at all. There is also a lack of relevant historical data with which to model long-term return and risk characteristics, especially in a wider portfolio context.

Second, the structure of private debt investment opportunities often leaves the future cash flow schedule uncertain. Any capital committed will only be drawn upon once the private debt manager has raised sufficient funds, launched the investment vehicle and found suitable investment opportunities. This time frame also depends on levels of demand: currently, there are record levels of 'dry powder' (i.e. cash) waiting to be invested in the private debt markets.⁴

Once capital has been drawn and invested, it is usually not accessible until the underlying debt holdings have started to be repaid

and the fund begins to return capital to investors. This means that, in the interim, asset disposals will only be possible from the client's remaining portfolio assets, potentially resulting in unwanted deviations from strategic allocations.

Third, private debt is less transparent than publicly traded debt. Once an investment is in place, the value of private debt holdings can be difficult to ascertain due to the lack of an observable market price.

Investing in traded debt markets like Asia credit, EM corporates and global high yield can offer a complementary intermediate step to exploring options in private debt markets.

Finally, substantial holdings in private debt structures limit a pension scheme's flexibility in moving to a desired endgame, such as a risk transfer to an insurance company or pension scheme consolidator. For example, it may not be possible to exploit an improvement in the pricing for insurance company buy-ins or buy-outs if the insurance company is unwilling to accept holdings in private debt as part of the consideration for such transactions.

An alternative approach: expand the liquid fixed income toolkit

While private debt holdings undoubtedly can have their place in institutional investment portfolios, there are other options available. When managing their assets to reflect future liabilities, pension schemes are likely to continue to take a diversified approach, balancing positions in cash flow-generative assets with LDI programmes and growth-focused assets.

³ XPS Investment, Liability Driven Investment: a GBP1trillion market, Annual Survey 2019

⁴ 2020 McKinsey Global Private Markets Review

Given that pension funds have the most certainty in the short to medium term about the cash payments they will have to make to beneficiaries, one obvious investment approach is to focus the cash flow-driven allocation on periods out to, say, 10 years and to hedge the more uncertain, longer-dated payments by using LDI.

This approach gives pension schemes the flexibility to respond to changes in areas outside their control, such as changes in mortality and regulation. In the UK, the increased pension freedoms for individuals, introduced in 2015⁵, are a recent example of such changes.

Unsurprisingly, the increased freedoms have led to higher levels of transfers by members out of defined benefit schemes (and, as a knock-on effect, to greater demands by those schemes to generate income and/or partially sell their assets).

Another possibility for pension schemes is to expand their fixed income toolkit by exploring less utilised areas of the more liquid fixed income markets, some of which currently offer interesting medium-term yield opportunities.

Investing in traded debt markets like Asia credit, EM corporates and global high yield can offer a complementary intermediate step to exploring options in private debt markets. In recent years, many of these markets have also grown in accessibility and attractiveness to UK investors.

These traded markets currently offer higher yields than more traditional fixed income assets. And, by comparison with private debt, they offer the advantage of not requiring investors to lock themselves into long-term, closed-end structures.

Asset profile: Asia credit, EM corporates and global high yield

Figure 2 shows the recent average yield to maturity, duration, credit rating, historical return, volatility, Sharpe ratio and default rate for three benchmarks representing the Asia credit, emerging markets corporate and global high yield markets. In the table, we compare these statistics with those for two developed market bond benchmarks representing UK gilts and global investment-grade corporate bonds. All returns are on a sterling-hedged basis.

From Figure 2 it is clear that the characteristics of the three fixed income asset classes under discussion differ substantially from both the gilt and global corporate bond markets, which we use as proxies for popular UK pension scheme fixed income exposure.

All three asset classes are of shorter duration than a typical global credit portfolio, which highlights their potential utility in generating short-term cash flows. The potential yield pick-up is evident and, in the case of both Asia credit and EM corporates, can be achieved on a hedged basis without a large sacrifice in terms of credit quality.

Navigating default risk

A common reservation among investors when expanding their credit toolkit is default risk, which is not a feature of the gilt or (typically) the high-quality credit market, where issues are likely to be downgraded to high yield prior to any default. That said, active security selection with diligent credit research should be able to deliver default rates well below the aggregate index rate. All three asset classes span a wide spectrum of issuers, so investors can tilt their exposure according to their risk tolerance and outlook.

Figure 2: Expanding the liquid fixed income toolkit

Asset class	UK gilts	Global IG corporates	Asia credit	EM corporates	Global high yield
Index	FTSE Actuaries All Stocks Gilt	Bloomberg Barclays Global Aggregate Corporate	JP Morgan Asia Credit Diversified	JPM CEMBI Broad Diversified	ICE BofA Global High Yield
Duration	12.9 years	7.2 years	5.3 years	4.6 years	4.4 years
Yield to maturity	0.6%	2.2%	3.2%	4.1%	5.0%
Average credit rating	AA	A3/BAA1	BBB+	BBB-	BB-
Annualized return (GBP)	5.2%	4.8%	6.5%	6.1%	7.2%
Annualised volatility (GBP)	6.1%	6.7%	7.1%	8.0%	10.5%
Sharpe ratio	0.61	0.49	0.70	0.58	0.54
5-year default rate	n/a	n/a	0.4%	0.8%	3.2%

Past performance is not a reliable indicator of future performance.

As of 31 October 2020. Returns and volatility are for the period 1 January 2006 to 31 October 2020. Default rate is for full-year periods 2015 to 2019

It is not possible to invest directly into an index. Returns and volatility are indicatively hedged to GBP.

Source: Bloomberg Finance L.P., BARRA One, FTSE Russell, J.P. Morgan, BofA. Analysis by T. Rowe Price. See Additional Disclosures for further source information.

⁵ See <https://www.gov.uk/government/news/pension-changes-2015>

Default levels in the broad EM corporate bond market have been low in recent years – less than 1% per annum over the five years to end 2019. The highest-quality region of emerging markets, and one that is not widely explored by UK investors, is Asia credit. Between 2013 and 2019, the annual default rate of the JP Morgan Asia Credit Index ('JACI') Diversified has ranged between about 0.2% and 0.7%. As shown in more detail in Appendix 1, Asia credit has a significantly stronger investment-grade tilt than other EM regions: 77% of the index is investment grade.

In the global high yield market, defaults are more common. Between 2010 and 2019 the annual default rate of the ICE BofA Global High Yield Index ranged from less than 1% in 2013 to about 6% in 2016 (linked to 2015–2016 energy market volatility). In the wake of the 2020 COVID-19 shock, defaults rose to their highest level in 10 years and are likely to continue into 2021. But we think the full impact may be muted by the significant fiscal and monetary intervention seen from governments and central banks.

Conclusion—stay liquid when searching for yield

As a result of the increased funding strains they face, many institutions are looking to private debt markets to improve their cash flow position. While promising higher future levels of income, private debt investments also come with an increased governance burden, reduced transparency and limited liquidity.

T. Rowe Price believes that three less-utilised areas of the global bond markets—Asia credit, EM corporate bonds and global high yield—can help institutions to address their funding objectives, enabling them to maintain asset liquidity while enhancing income levels.

It's clear that moving away from high-quality government or corporate bonds can result in less resilience within the overall fixed income portfolio in the event of a market or economic shock. This is particularly the case with global high yield, where a combination of lower credit ratings and lower duration can see bonds fare worse than those of more creditworthy issuers during periods of stress. When considering a new allocation to less-utilised areas of the fixed income markets, it is imperative to model the potential for loss under different scenarios and how this relates to other holdings in the scheme's portfolio.

It is also worth noting that, while each of the fixed income asset classes we discuss offers daily liquidity, the costs of moving into and out of these assets may change, particularly in comparison with the most liquid government bonds, during periods of market turmoil. We saw areas of reduced liquidity and dislocation in fixed income markets in March 2020 for example, although these resolved relatively quickly as markets recovered.

The economic outlook remains uncertain and entire sectors and industries such as travel and hospitality are likely to struggle for years following the pandemic crisis. Through diligent research focused on fundamentals, active managers can identify the potential winners into the post-pandemic period and avoid the likely losers. In a credit market environment where failures can lead to the permanent loss of expected future cash flows, avoiding the losers is even more important than backing the winners.

In **Appendix 1**, we profile the Asia credit, EM corporate bond and global high yield markets in more detail, and we show the patterns of expected cash flows from each asset class compared with those from a high-quality government bond investment. The case study in **Appendix 2** starts with a portfolio of global investment-grade corporate bonds and shows the potential impact of allocating 25% to each of these three credit markets in turn, and then to a combination of the three.

Appendix 1—Market profiles

Asia credit

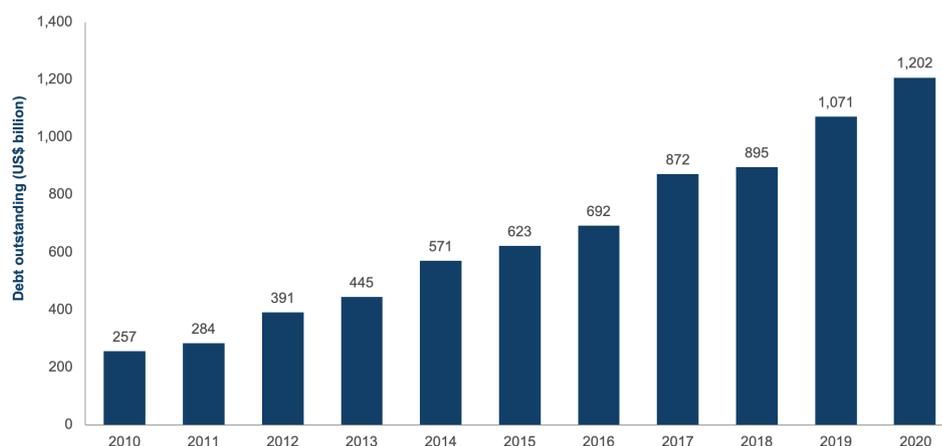
Development of the market

In recent years, many pension funds have widened their investment focus to include non-domestic corporate bonds. However, global corporate bond indices are still highly focused on the US and European markets: for example, at the end of August 2020, over 92% of the Bloomberg Barclays Global Aggregate Float Adjusted Corporate Index consisted of bonds from either North America or Europe.

Asia credit offers exposure to a region with high economic and demographic growth opportunities. Its fixed income markets have also developed rapidly in recent years. The Asia credit market grew more than fourfold between 2010 and 2019 as local corporations turned increasingly from bank loans to capital market bond issues to fund their growth plans (Figure 3).

Robust economic growth in the region has provided a powerful tailwind for corporates to capitalise on new markets, both at home and

Figure 3: Size of Asia credit market
J.P. Morgan Asia Credit Index Diversified



As of 31 December 2020

Source: J.P. Morgan, Bond Radar. See Additional Disclosures for further source information.

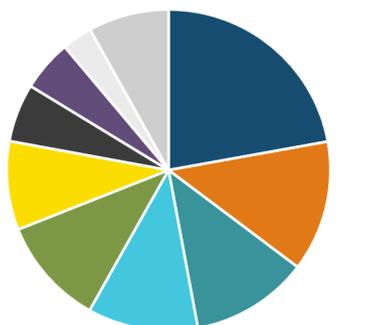
abroad. The entire region accounts for 27% of the global economy, up from 10% in 2000. High domestic savings rates mean strong structural demand for fixed income, with local investors accounting for 88% of corporate debt ownership.⁶ These factors suggest there is still scope for the asset class to continue to grow rapidly.

For illustrative purposes, in this section we use the J.P. Morgan Asia Credit Index Diversified to represent the Asian credit asset class. This index represents US dollar-denominated bonds and balances exposure across the Asia ex-Japan region to reduce concentration risk in any single market. It includes a cross-section of

⁶ J.P. Morgan data, debt outstanding as of 31 October 2018.

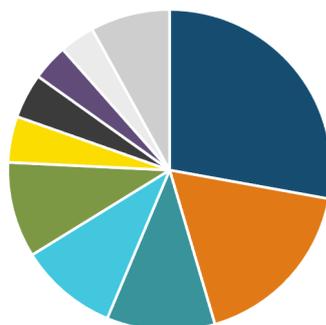
Figure 4: Composition of Asia credit
J.P. Morgan Asia Credit Index Diversified

Country composition



- China
- Indonesia
- South Korea
- Hong Kong
- India
- Philippines
- Singapore
- Malaysia
- Thailand
- Others

Industry composition



- Financial
- Government
- Oil & Gas
- Real Estate
- Utilities
- Consumer
- TMT
- Diversified
- Industrial
- Others

Rating breakdown

Credit Rating	Weights
AAA	1.0%
AA	8.7%
A	24.0%
BBB	43.0%
BB	7.6%
B	6.5%
CCC & below/not rated	9.2%

As of 30 September 2020

Source: J.P. Morgan, Moody's Investors Service. See Additional Disclosures for further source information.

developed markets, like Hong Kong and South Korea, as well as emerging markets. The US dollar denomination of the underlying bonds means currency hedging to sterling is straightforward.

Issuers, diversification and credit quality

Figure 4 shows the country and industry weights of the index and a breakdown of issuers by credit quality. While the debt of Chinese companies makes up over a fifth of the index, issuers are spread across the region. Countries such as Indonesia and the Philippines, to which pension scheme portfolios may otherwise have little exposure, are well represented.

No individual industry dominates the benchmark while, as in developed markets, financial companies are amongst the largest bond issuers. There is relatively low exposure to energy and materials firms, reflecting that many of the largest countries in the region are commodity importers.

Overall, the benchmark has a diversified investment-grade (IG) profile, with 77% of its bonds rated IG and an average credit rating of BBB as of 30 September 2020.

Figure 5: Return and risk of Asian credit

	Asia Credit (GBP Hedged)	Global IG Corporates (GBP Hedged)	UK Gilts
Return	6.50%	4.80%	5.20%
Volatility	7.10%	6.70%	6.10%
Return/Risk	0.91	0.72	0.86
Sharpe ratio	0.70	0.49	0.61
Maximum Drawdown	-19.00%	-16.90%	-7.30%
Periods of market stress			
April 2008–March 2009	-2.90%	-12.40%	10.30%
Q2 2013	-4.60%	-2.40%	-3.80%
August 2015–February 2016	1.80%	-0.30%	5.30%
Q4 2018	0.10%	-1.20%	1.90%
February–March 2020	-8.20%	-7.00%	2.70%

Past performance is not a reliable indicator of future performance.

For the period 31 December 2005 to 31 October 2020

Returns and volatility calculations are indicatively hedged to GBP. Asia credit–J.P. Morgan Asia Credit Index Diversified; Global IG corporates–Bloomberg Barclays Global Aggregate Corporate Index; UK gilts–FTSE Actuaries All Stocks Gilt Index

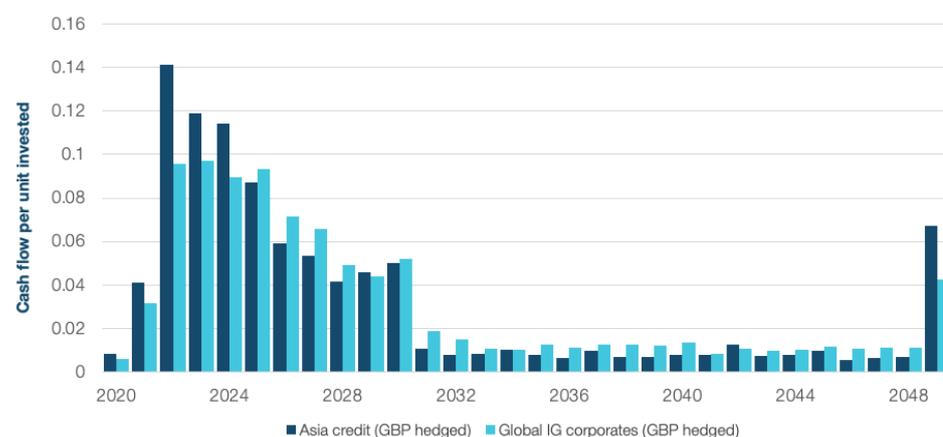
Source: Bloomberg Finance L.P., FTSE Russell, J.P. Morgan, analysis by T. Rowe Price. See Additional Disclosures for further source information.

Recent risk/return characteristics

Figure 5 compares the performance and volatility of Asia credit, hedged to sterling, versus gilts and global corporate bonds from the end of 2005 to the end of October 2020. We also highlight the asset class’s performance during periods of high market stress.

Over the period, the volatility of Asia credit has been similar to that of global corporate bonds, while offering higher returns. The drawdowns in periods of market volatility have been larger, however. See, for example, the performance during the ‘taper tantrum’ in 2013 or the first quarter of 2020. In other periods, notably during the global financial crisis, Asian corporate bonds fared better than their global peers.

Figure 6: Indicative cash flows from Asia credit



As of 30 September 2020

Cash flows are indicatively hedged to GBP. Asia credit–J.P. Morgan Asia Credit Index Diversified; Global IG corporates–Bloomberg Barclays Global Aggregate Corporate Index

Source: Bloomberg Finance L.P., J.P. Morgan, analysis by T. Rowe Price. See Additional Disclosures for further source information.

Pattern of coupons/maturity payments

Figure 6 shows the pattern of expected sterling cash flows from benchmark indices for Asia credit and global IG corporate bonds for the purposes of comparison. It assumes that the investor buys each index and then holds it to maturity. As might be expected given the somewhat shorter duration (as previously shown in Figure 2), the expected cash flows from the Asia credit portfolio are higher in the early years, but the overall cash flow profile is relatively similar.

Emerging market corporate debt

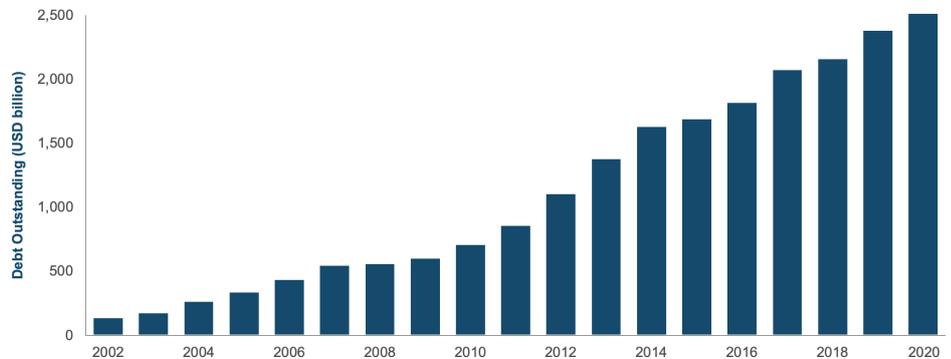
Development of the market

Emerging market (EM) debt markets offer a large and diverse opportunity set. At around US\$6 trillion, the market's size is similar to that of the US IG corporate bond market. Although corporate debt makes up around 40% of overall EM debt issuance, EM corporate bonds are still regarded by many as a niche investment. Consequently, they are infrequently held in UK pension scheme portfolios. This is in contrast to EM sovereign debt, where both hard currency (predominantly US dollar) and local currency bonds are relatively common holdings. Meanwhile, the asset class has grown rapidly in size in recent years (Figure 7).

Relative to developed markets, emerging markets should benefit from a continued long-term growth premium and more favourable demographics. Other recent developments have also made EM corporate debt more attractive.

The moderation of inflation has allowed more accommodative central bank policies,

Figure 7: EM corporate debt investable universe



As of 31 December 2020. Shows a broad measure of the universe including bonds that don't meet index inclusion criteria.

Source: J.P. Morgan. See Additional Disclosures for further source information.

which should support lower bond yields over the long term, while also reducing borrowing costs for corporate borrowers. Corporate governance standards are improving, while structural changes have meant many countries have shifted from being dominated by industrial production and natural resources to having more balanced economies.

The EM corporate debt market offers a mix of sectors and credit quality, while offering more diverse regional exposure than EM equity. For illustrative purposes, in this

section we use the J.P. Morgan Corporate Emerging Market Bond Index (CEMBI) Broad Diversified Index to represent the asset class. It offers investment-grade exposure on average, with bonds generally denominated in US dollars, making currency hedging easier for a sterling investor.

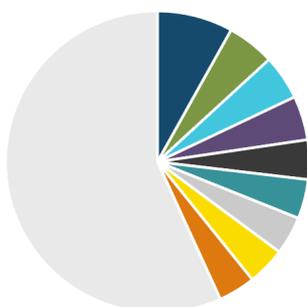
Issuers, diversification and credit quality

Figure 8 shows the country and industry weights of the index and a breakdown of issuers by credit quality.

Figure 8: Composition of EM corporate debt

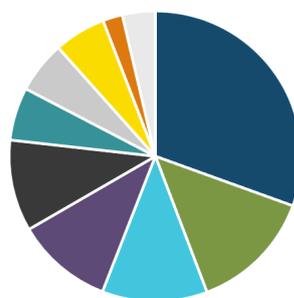
J.P. Morgan CEMBI Broad Diversified Index

Country composition



- China
- Hong Kong
- Russia
- India
- Saudi Arabia
- Brazil
- Mexico
- United Arab Emirates
- South Korea
- Others

Industry composition



- Financial
- Utilities
- Consumer
- Real Estate
- Diversified
- Oil & Gas
- TMT
- Industrial
- Metals & Mining
- Others

Rating breakdown

Credit Quality	Weight
AAA	0.10%
AA	3.30%
A	19.80%
BBB	36.40%
BB	19.00%
B	11.70%
CCC & others/not rated	9.70%

As of 30 September 2020

Source: J.P. Morgan, Moody's Investors Service. See Additional Disclosures for further source information.

Figure 9: Return and risk of EM corporate debt

	EM Corporates (GBP Hedged)	Global IG Corporates (GBP Hedged)	UK Gilts
Return	6.1%	4.8%	5.2%
Volatility	8.0%	6.7%	6.1%
Return/Risk	0.77	0.72	0.86
Sharpe ratio	0.58	0.49	0.61
Maximum drawdown	-23.4%	-16.9%	-7.3%
Periods of market stress			
April 2008–March 2009	-10.1%	-12.4%	10.3%
Q2 2013	-4.3%	-2.4%	-3.8%
August 2015–February 2016	-1.5%	-0.3%	5.3%
Q4 2018	-0.5%	-1.2%	1.9%
February–March 2020	-11.7%	-7.0%	2.7%

Past performance is not a reliable indicator of future performance.

For the period 31 December 2005 to 31 October 2020

Returns and volatility calculations are indicatively hedged to GBP. EM corporates—J.P. Morgan CEMBI Broad Diversified Index; Global IG corporates—Bloomberg Barclays Global Aggregate Corporate Index; UK gilts—FTSE Actuaries All Stocks Gilt Index

Source: Bloomberg Finance L.P., FTSE Russell, J.P. Morgan, analysis by T. Rowe Price

The index’s country exposure is clearly well diversified. This is in contrast to EM equity exposure, where benchmark indices are becoming increasingly concentrated in Chinese stocks. By emerging market region, the CEMBI Broad Diversified Index is almost evenly split between Asia (39%), Europe, Middle East & Africa (34%) and Latin America & other (27%).

No individual industry dominates the benchmark. However, as in developed corporate bond markets, financial companies are amongst the largest issuers.

Overall, the benchmark has a diversified ratings profile, with 60% of its bonds rated investment grade and an average credit rating of BBB as of 30 September 2020.

Recent risk/return characteristics

Figure 9 compares the performance and volatility of the EM corporate debt asset class, hedged to sterling, versus gilts and global

corporate bonds hedged to sterling over the period from the end of 2005 to the end of October 2020. We also highlight the asset class’s performance during periods of high market stress.

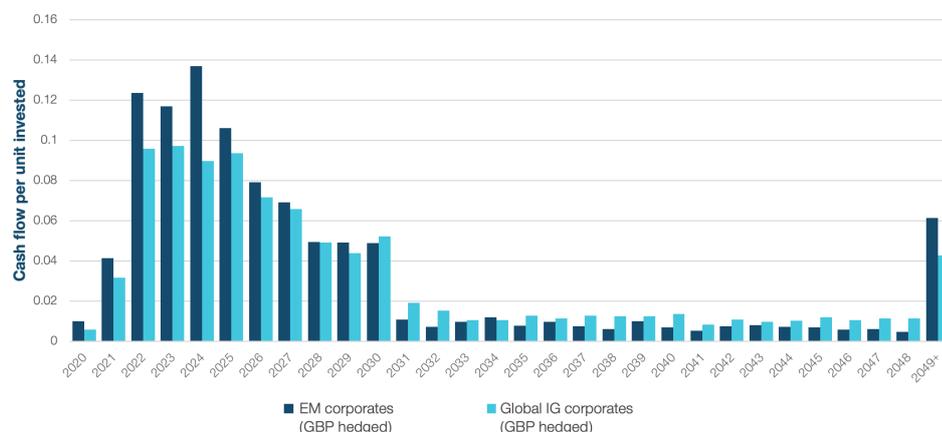
In terms of return per the amount of volatility experienced, over the period the risk/return profile of EM corporates has been similar to that of global corporate bonds. The drawdowns during periods of market volatility have been larger, however, in particular during the ‘taper tantrum’ in 2013 or the earlier stages of the COVID-19 pandemic in the first quarter of 2020. In other periods, notably the global financial crisis, EM corporates have fared better than their global peers.

Pattern of coupons/maturity payments

In Figure 10, we show the pattern of expected cash flows from benchmark indices for both EM corporate bonds and global corporate bonds, for the purposes of comparison.

As might be expected given the slightly shorter duration, the expected cash flows from the EM corporate bond portfolio are considerably higher in the initial years, but the cash flow profile is relatively similar overall.

Figure 10: Indicative cash flows from EM corporates



As of 30 September 2020

Cash flows are indicatively hedged to GBP. EM corporates—J.P. Morgan CEMBI Broad Diversified Index; Global IG corporates—Bloomberg Barclays Global Aggregate Corporate Index

Source: Bloomberg Finance L.P., J.P. Morgan, analysis by T. Rowe Price. See Additional Disclosures for further source information.

Global high yield

Development of the market

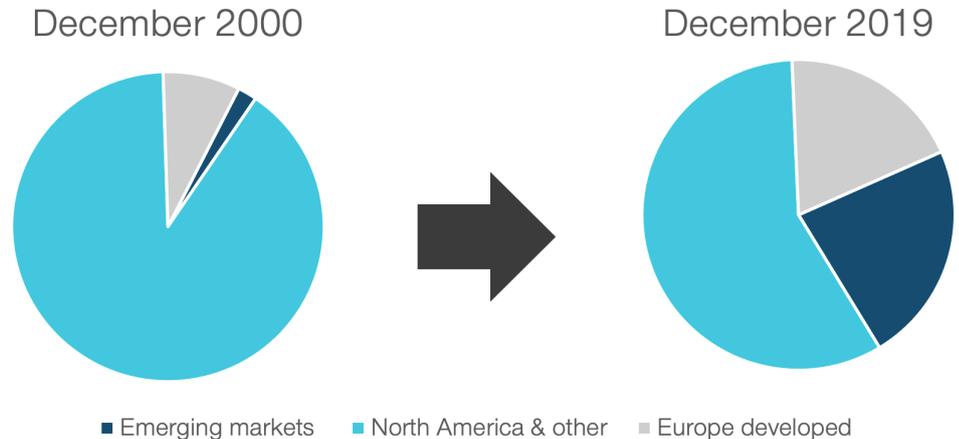
Two decades ago, the global high yield bond market consisted primarily of North American issuers. However, today it is much broader, with an increasingly international flavour coming from European and EM companies (Figure 11). This is largely due to an increase in issuance outside the US, while the US high yield market has shrunk modestly—trends we expect to continue.

In particular, the European high yield market has more than quadrupled in size since 2008 and is now almost one-third the size of the US high yield market.

Meanwhile, the EM high yield corporate segment has also experienced tremendous growth and now stands close to US\$1 trillion, almost a fifth of the global market. Contrary to many people’s assumptions, the balance sheets of EM corporations are often sturdier than those of their developed market peers, with lower leverage and higher cash-to-debt ratios.

For illustrative purposes, in this section we use the ICE BofA/ML Global High Yield Index to represent the asset class. This index offers

Figure 11: Evolution of the global high yield market
ICE BofA/ML Global High Yield Index



Source: Bank of America/Merrill Lynch

a truly global universe of issuers, with around 60% exposure to borrowers from the US. The majority of exposure is in US dollars, with some issuance in euro and a smaller amount in sterling and the Canadian dollar.

to make up over half of the index exposure, diversification in terms of country and regional exposure continues to increase, with more issuance from emerging markets such as Brazil, Mexico and China in particular.

Issuers, diversification and credit quality

Figure 12 shows the country and industry weights of the index and a breakdown of issuers by credit quality.

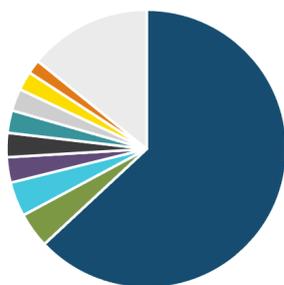
Investing in a truly global high yield index also allows greater diversification than in more US-focused allocations, with much less allocated to the energy sector, for instance.

As would be expected from a high yield index, credit exposure is generally sub-investment grade, but is heavily concentrated

Figure 12: Composition of global high yield

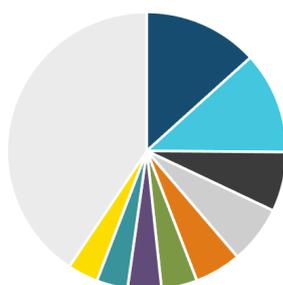
ICE BofA/ML Global High Yield Index

Country composition



- United States
- Mexico
- United Kingdom
- Canada
- Germany
- Brazil
- Italy
- China
- France
- Others

Industry composition



- Energy
- Financial
- Healthcare
- Building & Real Estate
- Automotives
- Non-Wireless Telecoms
- Metals & Mining
- Services
- Utilities
- Others

Rating breakdown

Credit Quality	Weight
BBB	4.3%
BB	52.5%
B	31.2%
CCC	9.6%
CC	0.5%
C & others/not rated	1.9%

Source: Bank of America/Merrill Lynch, Moody's Investors Service. See Additional Disclosures for further source information.

in the BB and B ratings, with only around 12% of the index represented by bonds below this credit rating level.

Recent risk/return characteristics

Figure 13 compares the performance and volatility of the global high yield asset class, hedged to sterling, versus gilts and global corporate bonds hedged to sterling from the end of 2005 to the end of October 2020. We also highlight the asset class's performance during periods of particular market stress.

Since the end of 2005, the returns of global high yield have been strong relative to both global corporate bonds and gilts, but at the expense of higher volatility. Given the more economically exposed nature of high yield credit, it is no surprise to see that such bonds have seen sharper losses than global credit during market downturns.

However, global high yield has also seen quick rebounds when investor sentiment recovered. 2020 has been a good example of this. Despite a fall in the index of over 14% during February and March, credit spreads have since contracted to the extent that the year-to-date performance of the asset class was unchanged by the end of September.

Figure 13: Return and risk of global high yield

	Global HY (GBP Hedged)	Global IG Corporates (GBP Hedged)	UK Gilts
Return	7.2%	4.8%	5.2%
Volatility	10.5%	6.7%	6.1%
Return/Risk	0.68	0.72	0.86
Sharpe ratio	0.54	0.49	0.61
Maximum drawdown	-33.3%	-16.9%	-7.3%
Periods of market stress			
April 2008–March 2009	-20.7%	-12.4%	10.3%
Q2 2013	-1.3%	-2.4%	-3.8%
August 2015–February 2016	-6.5%	-0.3%	5.3%
Q4 2018	-4.2%	-1.2%	1.9%
February–March 2020	-14.3%	-7.0%	2.7%

Past performance is not a reliable indicator of future performance.

For the period 31 December 2005 to 31 October 2020

Returns and volatility calculations are indicatively hedged to GBP. Global HY–ICE BofA/ML Global High Yield Index; Global IG corporates–Bloomberg Barclays Global Aggregate Corporate Index; UK gilts–FTSE Actuaries All Stocks Gilt Index

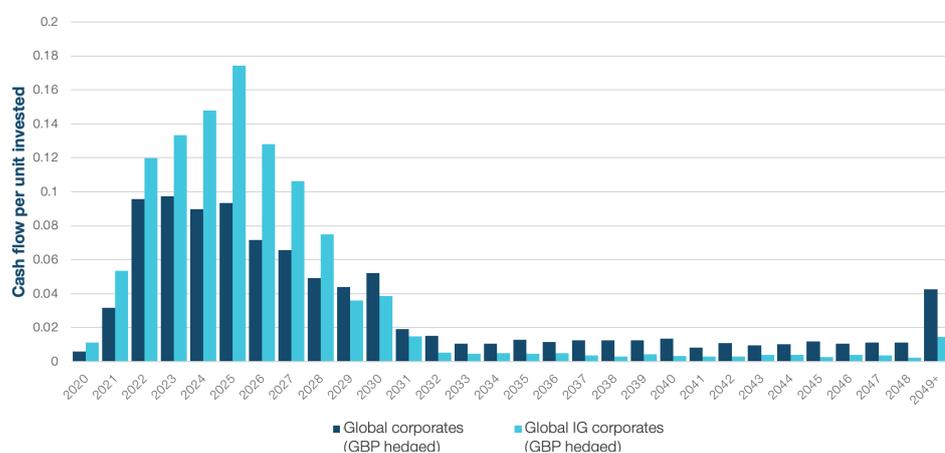
Source: Bloomberg Finance L.P., FTSE Russell, Bank of America/Merrill Lynch, analysis by T. Rowe Price. See Additional Disclosures for further source information.

Pattern of coupons/maturity payments

Figure 14 shows the pattern of expected cash flows from benchmark indices for both global high yield and global corporate bonds, for the purposes of comparison.

The expected cash flows from the global high yield portfolio are much higher for much of the next decade, but then tail off in comparison to those from global corporate bond holdings. This reflects the generally shorter maturity of high yield issuance, in comparison to that of bonds from investment-grade issuers.

Figure 14: Indicative cash flows from global high yield



As of 30 September 2020

Cash flows are indicatively hedged to GBP. Global high yield–ICE BofA/ML Global High Yield; Global IG corporates–Bloomberg Barclays Global Aggregate Corporate Index

Source: Bloomberg Finance L.P., Bank of America/Merrill Lynch, analysis by T. Rowe Price. See Additional Disclosures for further source information.

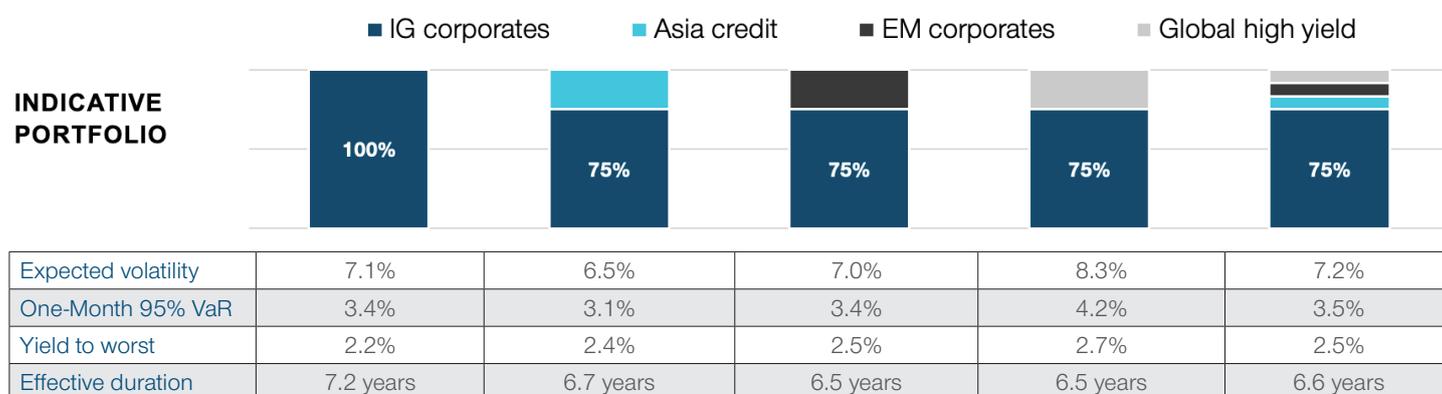
Appendix 2—Case study

Figure 16 examines the potential impact on forward-looking portfolio characteristics of blending allocations of Asia credit, EM corporates and global high yield with a global corporate bond allocation.

Overall, even relatively small allocations to other liquid fixed income asset classes increase the yield expected on the global corporate

bond portfolio. This is especially the case for an allocation to global high yield, but this comes with a greater increase in expected volatility and value at risk for the combined portfolio. An allocation to Asia credit actually serves to reduce expected risk at the overall portfolio level, while increasing the expected yield.

Figure 16: Forward-looking portfolio characteristics for indicative portfolio allocations



As of 31 October 2020

Index holdings are indicatively hedged to GBP. Global IG corporates—Bloomberg Barclays Global Aggregate Corporate Index; Asia credit—J.P. Morgan Asia Credit Index Diversified; EM corporates—J.P. Morgan CEMBI Broad Diversified Index; Global high yield—ICE BofA/ML Global High Yield

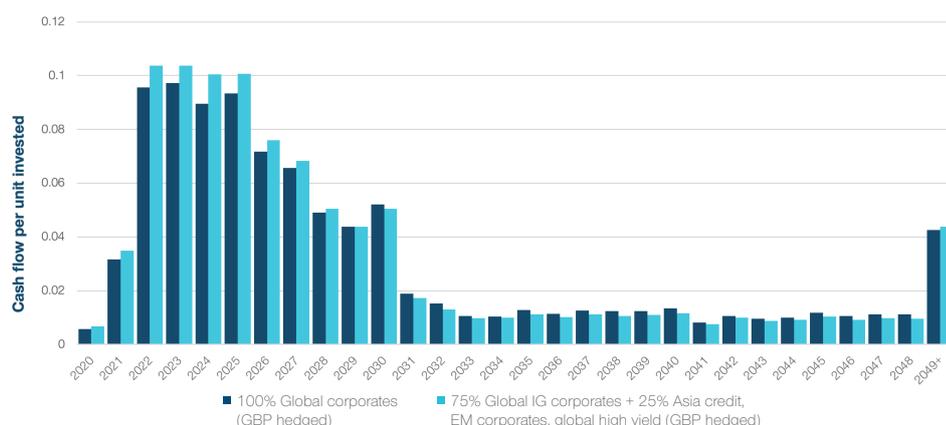
Source: BARRA One, Bank of America/Merrill Lynch, J.P. Morgan, analysis by T. Rowe Price. See Additional Disclosures for further source information.

Pattern of coupons/maturity payments

Figure 17 shows the pattern of expected cash flows from benchmark indices for a portfolio with 75% allocated to global corporate bonds and 8.33% each allocated to Asia credit, EM corporate bonds and global high yield, versus a portfolio entirely made up of global corporate bonds, for the purposes of comparison.

The indicative cash flows from the blended portfolio are higher for much of the next decade, helping schemes looking to put in place short- to medium-term cash flow-matching programmes.

Figure 17: Indicative cash flows for a mix of liquid credit sectors



As of 31 October 2020

Cash flows are indicatively hedged to GBP. Global IG corporates—Bloomberg Barclays Global Aggregate Corporate Index; Asia credit—J.P. Morgan Asia Credit Index Diversified; EM corporates—J.P. Morgan CEMBI Broad Diversified Index; Global high yield—ICE BofA/ML Global High Yield

Source: BARRA One, Bank of America/Merrill Lynch, J.P. Morgan, analysis by T. Rowe Price. See Additional Disclosures for further source information.

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