Strategic Asset Allocation Review 2022

London Borough of Bromley Pension Fund

DECEMBER 2022

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Introduction

MJ Hudson conducted the previous triennial strategic asset allocation ("SAA") review for the London Borough of Bromley Pension Fund (the "Fund") in 2019. Further to MJ Hudson's recommendations, the Fund added a 5% allocation to global property, at the expense of slightly reducing exposure to both global equities and fixed income. This change was made to reduce risk (through additional diversification) and increase income, whilst maintaining the same expected return.

The purpose of this 2022 review is to reassess the Fund's SAA (from an asset-only perspective) and suggest potential alternative portfolios that optimise risk and return based on updated long-term capital market assumptions ("LTCMA"), expected cashflow requirements and other constraints.

As the Fund will be acutely aware, 2022 has been a very volatile year to-date with practically nowhere for investors to hide as most asset classes have fallen. In the public markets, both global equities and bonds have fallen for three consecutive quarters, whilst in the private markets, valuations are now starting to be marked down as they are slowly repriced. The backdrop of high inflation, rising interest rates, volatile energy prices, the war in Ukraine, political uncertainty in the UK and a possible recession is therefore a challenging one. However, the brighter message is that investment opportunities for long-term investors have now become more compelling than for several years due to lower valuations and higher starting yields.

Based on the LTCMA, we believe the Fund can retain a target investment return over and above the level assumed by the Actuary (which is anticipated to be between 3.5% and 4.0%). Whilst this can be achieved by the existing SAA (expected return = 6.1%), we have also illustrated some portfolios for the Pension Committee's consideration which could achieve a marginally lower expected return to the existing SAA, but with a moderate risk reduction. Please note that targeting an investment return above that assumed by the Actuary builds in an extra element of prudence and increases the probability that the Fund will retain a surplus of assets over current liabilities in the long term.

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Executive Summary

We propose two recommendations to the Pensions Committee, which we discuss further in this report.

Recommendation 1   Rebalance the current portfolio to the SAA

The current portfolio has drifted significantly from the SAA. Rebalancing the portfolio back to the SAA would reduce expected volatility by c. 0.8% and VaR[1] by c. £10m, with only a marginal impact on the expected return.

Recommendation 2   Implement a 50% currency hedge on the global equities portfolio

Based on the current strengths/weaknesses of global currencies (in particular the strength of the US dollar vs. the relative weakness of pound sterling) and their long-term outlook, it now could be prudent to crystallise some gains and part-immunise the Fund against a reversion of the US dollar towards fair value (i.e. depreciating US dollar).

Additionally, we present four potential portfolios for the Pension Committee's consideration. All portfolios would de-risk the Fund, offering greater diversification and increased yield, but with a slightly lower expected return relative to the SAA and increased illiquidity. Options 1a and Option 1b should also be considered with regards to the UK Government's "levelling up" agenda.

Alternative Option 1a   5% allocation to infrastructure

Funded by 5% disinvestment from global equities (58% to 53%). An allocation to infrastructure would increase both diversification and yield. In addition, it could align with "levelling up" and any ESG objectives that the Fund has, particularly if investing in renewables.

Alternative Option 1b   5% allocation to social/affordable housing

Funded by 5% disinvestment from global equities (58% to 53%). An allocation to social/affordable housing would increase both diversification and yield. In addition, it could align with "levelling up" and any ESG objectives that the Fund has.

Alternative Option 2   5% allocation to private debt

Funded by 5% disinvestment from global equities (58% to 53%). An allocation to private debt would reduce the expected risk by c. 0.8% relative to the existing SAA, with only a marginal impact on the expected return.

Alternative Option 3   5% allocation to global credit (hedged)

Reallocating 5% across UK gilts and UK investment grade corporates to global investment grade credit (hedged) would maintain the same overall fixed income allocation at 13%. This allocation explores formally widening the remit of Fidelity's current mandate following the discussion with investment managers last month. We note that currently Fidelity has tactically allocated 30% of their portfolio to global bonds hedged back to sterling within the combined Fixed interest portfolio.

[1] Value at risk, see page 25 for explanation.

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SAA and Current Asset Allocation

Figure 1: SAA and Current Asset Allocation (as at 30 September 2022)
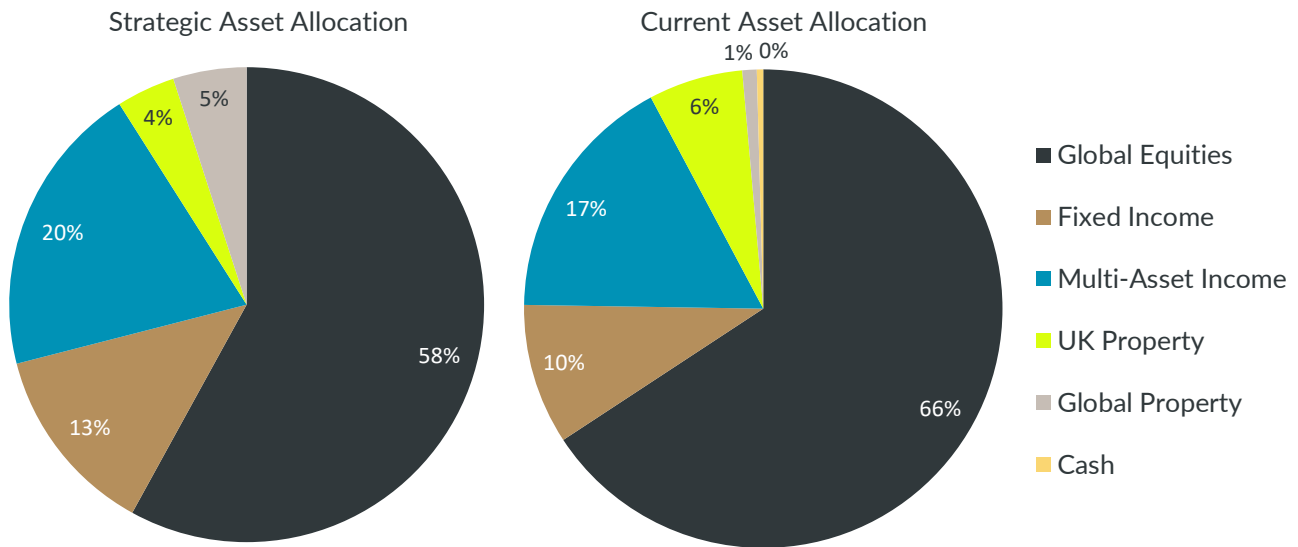
Source: London Borough of Bromley Pension Fund, MJ Hudson
Note: Figures may not sum to 100% due to rounding

Comparing the SAA to the current asset allocation (as at 30 September 2022) in Figure 1, the Fund is:

- 8% overweight to global equities
- 2% overweight to UK property
- 3% underweight to fixed income
- 3% underweight to multi-asset income ("MAI")
- 4% underweight to global property

There is also a small amount of operating cash in a US dollar liquidity fund and pound sterling cash. We note that despite the recent sharp declines, global equities and UK property have significantly outperformed fixed income and multi-asset income since the last SAA review in 2019, which to a large extent has led to the deviation of the Fund from the existing SAA. In addition, it will take several years for Morgan Stanley to fully draw the commitment to global property and reach the target exposure (5%).

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Portfolio Optimisation Analysis

Model

The portfolio optimisation was performed using our proprietary mean variance optimisation (MVO) model. This allowed us to consider the level of uncertainty (or expected volatility) directly in the model and to determine portfolios with the highest expected returns for a given level of expected volatility. However, the model does not consider the sources of risk (e.g. country, sector, rates) or liquidity risk explicitly. Also, an important consideration in the portfolio construction within each asset class is the choice of strategy and manager(s), which can be selected to increase diversification of the sources of risk within each asset class and make the portfolio more efficient and resilient. For example, the split in global equities between Baillie Gifford and MFS. More information on MVO can be found in Appendix 3.

Assumptions

Our assumptions are from JP Morgan's 2023 LTCMA, based on data as at 30 September 2022, and reflect long-term expected returns, volatilities and correlations for asset classes. These have been challenged internally by our team, with consideration of risk/return forecasts from other large financial institutions, and the change in assumptions relative to our previous review are in line with our expectations. As such we have made no subsequent adjustments to the LTCMA.

Relative to the 2019 SAA review, the direction of assumptions shows an improvement in return expectations across most asset classes (albeit to varying degrees). Expected returns have increased by c. 4.0% for fixed income and by c. 1.5% for global equities, while property has seen a more marginal improvement. Volatility assumptions have also generally increased slightly, largely driven by the higher inflation and interest rate environment. Another important assumption is for the US dollar to depreciate relative to other major currencies over the long term.

It is important to note that the assumptions are based on benchmark level returns for listed asset classes and median manager performance for alternative asset classes. Therefore the assumptions do not include an allowance for active managers to generate alpha. This approach is consistent with our 2019 report, but we do note the generally good long-term performance of the Fund's existing managers.

Constraints

Our understanding is that the Fund has a long-term investment horizon and is thereby prepared to accept short-term volatility and some illiquidity in order to achieve higher investment returns. The Pensions Committee believes that, over the long term, equities are expected to outperform other liquid assets. We recognise this view and as such, we introduced a 50% level of minimum equities allocation into the model (consistent with our approach for the 2019 review).

In addition, we are cognisant of the Fund's cashflow requirements by holding a minimum of 20% in MAI. To set the constraints for MAI we have split out the underlying exposure of the MAI funds (based on 30 June 2022 data) managed by Fidelity and Schroders into their relevant asset class components (Figure 14 in Appendix 2). For further cashflow, liquidity and diversification reasons, we have also required the model to hold a minimum of 10% in fixed income.

As a final constraint we have recognised the Fund's current and future exposure to UK and global property by introducing a minimum of 9% (5% global and 4% UK property) to property in line with the current SAA. The rationale for this is twofold: firstly the commitment to the global property fund cannot be changed at the current time as money has been committed and is awaiting drawdown. Secondly, the UK property exposure

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valuation is currently unrealistic compared to market trading prices. The Fund would unlikely be able to easily realise cash from this investment at the current valuation and time.

The total fixed constraints sum to 89% of the Fund which leaves only 11% for the model to optimise between the included asset classes. Based on this we have modelled multiple scenarios and our approach has resulted in several potential portfolios.

Efficient Frontier

Figure 2 shows 30 modelled portfolios plotted by risk (i.e. expected volatility) and return, used to form an efficient frontier. The points on the efficient frontier represent the most efficient portfolios from a risk-return perspective, i.e. maximum level of expected return, for a given level of expected risk, based on the modelling assumptions and constraints. At the lowest risk level, the efficient portfolio would contain only the lowest risk asset, i.e. cash; at the highest risk level, the portfolio would contain only the asset classes with the highest assumed returns as the level of risk is no longer a constraint.

If we left the SAA model totally unconstrained it produces results which, whilst academically interesting, are not relevant to the Fund, as the model does not require any diversification by asset class, nor considers requirements for portfolio income and liquidity. However, what is noticeable from these unconstrained models is that they skew away from listed equities as an asset class. This is because listed equities have traditionally been more volatile than other asset classes, and yet have relatively high correlations to alternatives with a more attractive risk/return payoff. This leads the modelling to propose reducing listed equities to the benefit of some of these less liquid alternative investments.

The point highlighted in dark red represents the current asset allocation of the Fund (based on the portfolio valuation as at 30 September 2022) whereas the point in yellow represents the existing SAA. As can be observed below, the alternative portfolio options have a moderately lower level of risk for only a marginally lower level of expected return. Moreover, the alternative portfolio options are more diversified, as are their sources of risk and return generation, which should provide for a more resilient investment portfolio. All portfolios modelled are greater than the Fund's target investment return assumed by the Actuary (which is anticipated to be between 3.5% and 4.0%).

Figure 2: Efficient Frontier
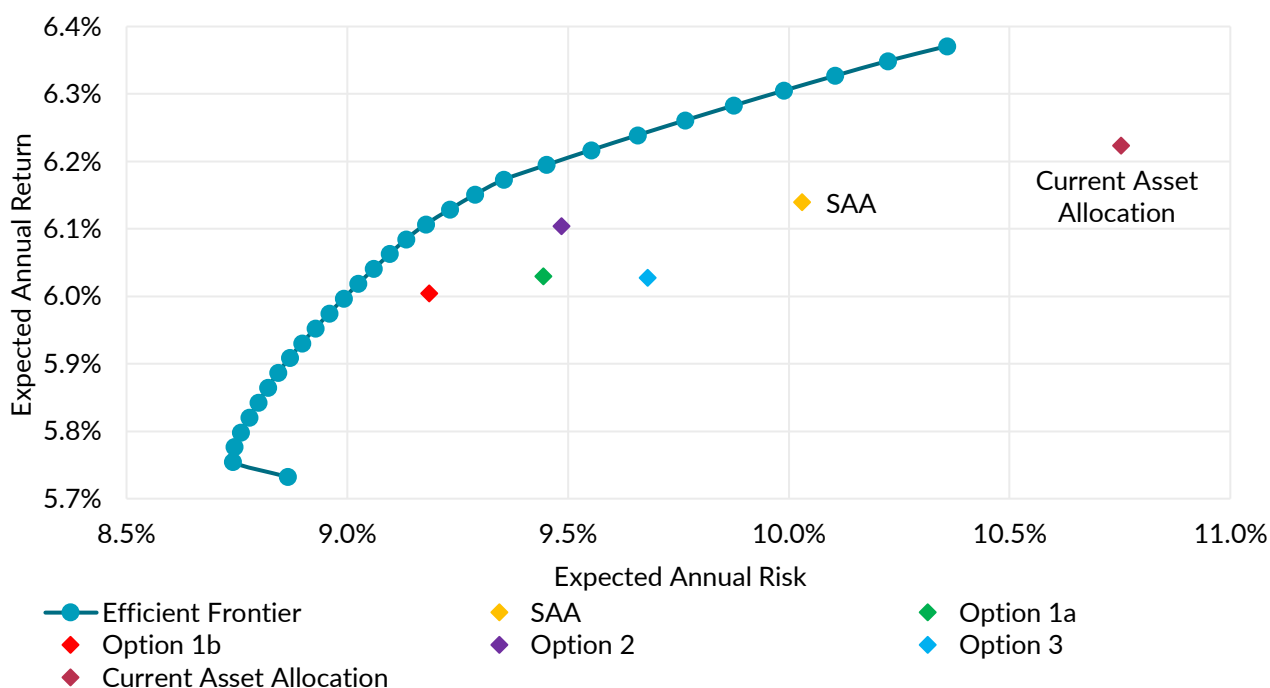
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Recommended Asset Allocations

Below we have provided a summary of the recommend option (rebalance to the current SAA) and potential alternative portfolio options to consider. These have been produced by our modelling, based on the assumptions and constraints discussed in this report.

Figure 3: Recommended and Alternative Portfolio Options

	Current Asset Allocation	SAA Rebalance	Option 1a 5% Infra-structure	Option 1b 5% Social Housing	Option 2 5% Private Debt	Option 3 5% Global Credit
Global Equities	65.6%	58%	53%	53%	53%	58%
MAI	17.0%	20%	20%	20%	20%	20%
UK Gilts	2.0%	3.25%	3.25%	3.25%	3.25%	2%
UK IG Corps	5.8%	9.75%	9.75%	9.75%	9.75%	6%
UK Property	6.4%	4%	4%	4%	4%	4%
Global Property	1.0%	5%	5%	5%	5%	5%
Infrastructure	-	-	5%	-	-	-
Social Housing	-	-	-	5%	-	-
Private Debt	-	-	-	-	5%	-
Global IG Credit	1.7%	-	-	-	-	5%
Cash	0.4%	-	-	-	-	-

Headline expected statistics of the portfolios are shown below in Figure 4:

Figure 4: Expected Statistics of Recommended and Alternative Portfolio Options

Portfolio Characteristics	Current Asset Allocation	SAA	Option 1a	Option 1b	Option 2	Option 3
Expected Return (pa)	6.2%	6.1%	6.0%	6.0%	6.1%	6.0%
Expected Volatility (pa)	10.8%	10.0%	9.4%	9.2%	9.5%	9.7%
Expected Sharpe Ratio	0.37	0.39	0.41	0.41	0.41	0.40
95% VaR	£155m	£141m	£131m	£132m	£130m	£142m

Stress Testing

We have also stressed the portfolios, by increasing the correlation coefficients by 20% (all negative correlations decreased in magnitude and positive correlations increased in magnitude) for all asset classes to simulate change in regime for the portfolios to see how the value at risk (VaR) would change. In Figure 5, the more diversified portfolios (Option 1a, 1b, 2) all returned a lower VaR than the current portfolio and SAA under stress.

Figure 5 Stress Test Analysis (20% Increase in Correlations)

Portfolio Characteristics	Current Portfolio	Current SAA	Option 1a	Option 1b	Option 2	Option 3
Expected Return (pa)	6.2%	6.1%	6.0%	6.0%	6.1%	6.0%
Expected Volatility (pa)	11.0%	10.3%	9.7%	9.5%	9.8%	9.9%
Expected Sharpe Ratio	0.36	0.38	0.40	0.40	0.40	0.39
95% VaR	£159m	£146m	£137m	£138m	£136m	£147m

Source: MJ Hudson

Cashflow Position Analysis

A large focus of previous SAA reviews was to improve the cashflow position of the Fund. The investment into MAI and the more recent switching of the fixed income funds to distribution units from accumulation units has helped this to a large extent. The current target yields are shown in Figure 6 along with current estimated income amounts.

Figure 6: Current Target Yields as at 30 September 2022

Fund	Income Producing	Valuation as at 30/09/22	Expected Target Distribution Yield	Estimated Income Amount	Source
Baillie Gifford Global Equity Fund	No	£474,402,523	n/a	n/a	n/a
MFS Global Equity Fund	No	£329,260,950	n/a	n/a	n/a
Fidelity Fixed Income Aggregate Fund	Yes	£116,062,361	4.8%	£5,513,000	Benchmark Yield Data
Fidelity Diversified Income Fund	Yes	£109,790,490	4.9%	£5,325,000	Fidelity Quarterly Report*
Schroders Multi-Asset Income Fund	Yes	£97,555,393	4.5%	£4,390,000	Schroders Quarterly Report*
Fidelity UK Pooled Property Fund	Yes	£77,989,776	4.1%	£3,200,000	MSCI Research
Morgan Stanley North Haven Property Fund	No**	£11,863,263	n/a	n/a	n/a

Based on the respective managers indicated distribution yield
**Fund is not currently income producing*
Source: Baillie Gifford, Fidelity, MFS, MJ Hudson, Morgan Stanley, Schroders, MSCI

At present, the actual level of income generated from the portfolios has not changed with the recent fall in asset values. This could change if we enter a severe or prolonged recession. The Fund is expected to be able to provide £20.9m of income based on rebalancing to the SAA (and with the target distribution yields provided above), which is expected to satisfy the Fund's cashflow requirements until 2025/26. The current portfolio is forecast to provide only £18.4m, due to the higher weight in non-distributing (and lower yielding) global equities. This assumes no income will be produced by the global property fund as capital is still being deployed by the manager, and the timing and quantum of future distributions is uncertain at this stage. If required, a further measure yet to be taken would be to switch the two equity funds from accumulation units to distribution units (as outlined in Figure 8), which would be expected to satisfy the Fund's cashflow requirements to the forecast horizon of 2028/29 (at the cost however of the long-term extra return from reinvestment).

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Figure 7: Actuary's Cashflow Projections

Year	Total Liabilities (£m)	Total Expected Contributions (£m)	Cashflow Requirement (£m)
2022/23	-£51,875	£34,796	-£17,079
2023/24	-£55,042	£35,929	-£19,113
2024/25	-£57,673	£37,103	-£20,570
2025/26	-£54,417	£33,700	-£20,717
2026/27	-£56,804	£33,700	-£23,104
2027/28	-£59,119	£33,700	-£25,419
2028/29	-£61,550	£33,700	-£27,850

Source: London Borough of Bromley Pension Fund
Note: We have used the supplied figures as "Budget Plus Inflation" for 2022/23 to 2024/25 and then the "Forecast" figures thereafter.

We note that whilst the expected yield of global equities has increased since our 2019 report, the portfolio yield is below that of the global equities benchmark due to the strategies employed by the underlying managers Baillie Gifford (focusing more on growth) and to a lesser extent by MFS.

Figure 8: Equity Funds – Target Yields from Distribution Units

Fund	Target Distribution Yield
Baillie Gifford Global Alpha Growth Fund	0.2%
MFS Global Equity Fund	2.0%

Source: Baillie Gifford, MFS

The overall expected cashflow from the current SAA is higher now than in 2019, due to increased yield expectations for fixed income and an increase in the value of global equities, which has also improved the yield forecast for the two MAI funds. Of the alternative portfolio options we have provided, infrastructure, private debt and global credit are all expected to provide an improvement to the income forecast once invested, whilst social housing less so. We note that any alternatives may only start to provide ad hoc distributions once capital has been called and deployed by the manager. However this would likely take several years to source a manager and deploy capital before income can be expected. Expected income levels may also vary subject to the specific strategy pursued within these asset classes.

Portfolio Recommendations

Rebalancing to SAA (Recommendation 1)

Our first recommendation is simply rebalancing back to the existing SAA as the analysis shows that the SAA has a very similar return for moderately lower expected risk. After an initial rebalance, we recommend that regular rebalancing be implemented which would help to prevent any long-term drift from the SAA as short-term outperformance is crystallised more frequently. This could be implemented via a regular periodic rebalance (e.g. quarterly/biannually), or with tolerance ranges for each asset class which should automatically trigger a rebalance process if exposures have moved outside of these. We would be happy to discuss providing the Pensions Committee with a more detailed paper outlining the different approaches to rebalancing and the mechanics thereof if required.

It is currently also important to mention that the Fund is underweight in both of its main income generative asset classes (fixed income and MAI). Whilst the cashflow is currently manageable, continuing to be underweight income may hinder meeting this target and does not aid with planning for beyond this date.
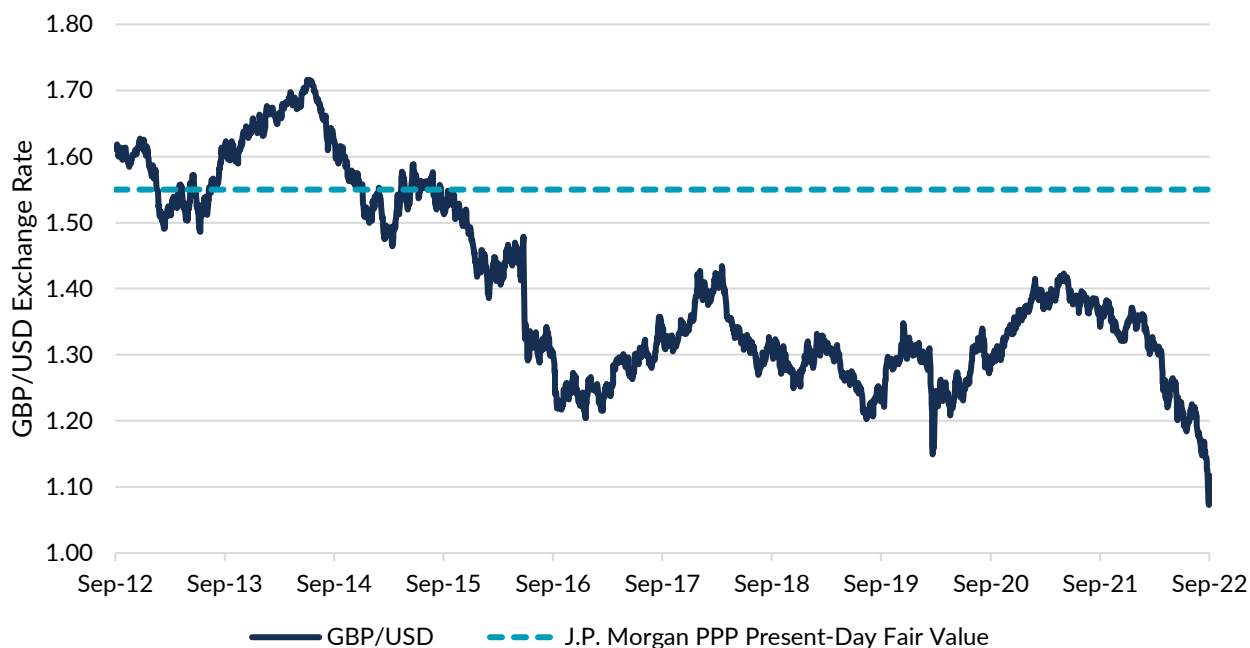
Currency Hedging (Recommendation 2)

The modelling has been conducted using unhedged proxies for the main asset classes. The global equities allocation is the largest component of the SAA exposed to foreign currency movements, and within that the US dollar due to the weight of the US equity market within this asset class (c. 63% based on the MSCI ACWI benchmark as at 30 September 2022). The US dollar has strengthened significantly this year against all major currencies, and whilst one could expect this to continue in the near term, there is scope for a reversion over the longer time horizon of the SAA. In addition, we note that the short-term outlook for sterling versus its peers broadly remains negative and is expected to depreciate against both the euro and the US dollar within the next few years before a longer-term recovery.

A strong US dollar and/or weak pound sterling has been beneficial to the Fund in absolute return terms but any future reversion of this will dampen returns and possibly make them more volatile. We have separately modelled different levels of hedging on the portfolio, and it suggests that some currency hedging would be beneficial to the Fund in terms of estimated return, particularly given the equity weight.

JP Morgan's assumption is for GBP/USD over the long term to move to 1.40 from 1.12 (as at September 2022). This is below the fair value implied from their PPP (purchasing power parity) model (see Figure 9), to reflect the demand for the US dollar due to its status as the global reserve currency and 'safe haven' attractiveness which is not explained by the PPP model. The effect of any future weakening of the US dollar and/or recovery of pound sterling would be offset by a hedge in this instance.

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Figure 9: Historical GBP/USD Exchange Rate and PPP Current Fair Value

Source: JPM LTCMA 2023, MJ Hudson

Our recommendation would be to hedge 50% of the SAA allocation to global equities against currency movements and for this to be rebalanced on a quarterly or range based basis. Based on our modelling and JP Morgan's assumptions, a 50% hedge would increase the total Fund expected return by c. 0.4% pa over the long-term.

It is not our recommendation to engage in active currency management or to be over prescriptive about the exact weighting of the currency hedge as the data for this action, whilst supportive, is variable over different time periods. To some extent, the Pensions Committee would need to see sterling as undervalued on a ten-year view which, given the current travails in both the domestic economy and politics, would seem a reasonable position to take.

Levelling Up (Alternative Options 1a and 1b)

As the Fund is aware, there is possible future legislation mandating that UK Local Government Pension Schemes (LGPS) invest 5% of their assets in local projects, for example domestic assets like infrastructure and social/affordable housing. Whilst nothing concrete has been outlined yet, the Pensions Committee may wish to consider "getting ahead of the curve on this" if plans are set in motion. We understand that such legislation may require the Fund to have thoroughly considered investing in these areas and provide reasons for not doing so if they deem it to not be in their best interests.

Being early to consider investments in these asset classes could be beneficial in terms of finding suitable managers or by funding investments before demand increases and valuations increase or top tier managers are fully allocated to. It is worth also noting that the two portfolios that fit with this agenda, Option 1a and Option 1b, do have diversification benefits from the current SAA/portfolio showing a lower expected risk for similar expected returns. The two most probable asset classes that the Fund may wish to consider investing in are infrastructure and social housing, which we have discussed further below.

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Infrastructure

Our strategic assumptions are for "core" infrastructure, which is the most conservative in terms of risk/return profile. The regular income stream can provide good portfolio diversification with an often inflation-linked income profile. However, a key concern is the entry price of these assets in light of the wider market sell-off in 2022. Many assets, as they are private, have not yet been repriced to reflect more recent conditions and higher gilt yields. Consequently, the long-term assumptions are currently low, so the model does not allocate much, if any, to infrastructure along the efficient frontier. Our 5% allocation in Option 1a was forced as a result.

It is also illiquid, like the Fund's current property investments, and regular distributions would not be expected to be received for two to three years following initial commitment. The Fund is currently experiencing the comparatively slow investment path into the Morgan Stanley global property fund so further investment into similarly profiled assets may not be palatable, although we note the improvement in expected cashflow position of the fund may make this an attractive time to consider investment.

There are potentially higher returns in non-core infrastructure, the so-called "core-plus", "value-added" and "opportunistic" sub-strategies. These typically involve greater risk from higher leveraged assets and potentially some degree of construction risk. We have not modelled allocations to these.

Investing in renewable energy infrastructure is compelling from an ESG standpoint and attractive in the long term, as the world attempts to address climate change. The war in Ukraine has also highlighted the importance of energy security which is further supportive of the energy transition tailwind. However, the sector has faced challenges in recent years as many of the "early mover" subsidy incentives from the government have been withdrawn. In addition there are short-term concerns over government windfall taxes targeting all energy companies, including renewables, to help subsidise skyrocketing energy bills for both consumers and businesses.

Social/Affordable Housing

Investment into social/affordable housing is also attractive from a "levelling up"/ESG perspective and has started to gain popularity with other LGPS and Pools looking for ESG-friendly alternatives exposure. However one must consider the Fund's current allocation to property (9%), the lower risk/return profile compared to "standard" UK commercial property and the now comparative attractiveness of fixed income. Now that forecasted returns for gilts are much higher (making them comparable to social housing), with lower forecasted risk, there is little argument to make for the illiquidity risk premium of this asset class at the current moment in time.

Given the potential for both UK infrastructure and social/affordable housing to reprice downward to reflect higher UK gilt yields over the next couple of years, it may make sense to create an allocation to both these asset classes but not actually commit capital at the current time awaiting a more attractive entry point.

Private Debt (Alternative Option 2)

Private debt has certain benefits over listed fixed income in a rising interest rate environment, with loans typically being of short duration and floating rate – they have very limited exposure to rising interest rates and reprice quickly. As each loan is backed by a small-to-medium-sized corporate, the income received is a premium above the base rate. Return assumptions for private debt have risen following the recent repricing of bond yields, which makes them an attractive investment along the efficient frontier in the model. Indeed Option 2, shows how a 5% allocation lowers the comparative risk from the existing SAA by another 0.5% whilst sacrificing very little in expected return.

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However, avoiding defaults is the challenge for private debt managers, which we are particularly mindful of with potential recessions looming in private debt target markets (notably the US and Europe). Care would have to be taken to select a manager with a proven track record of identifying and working with companies in such environments and in portfolio construction. There is also the question of implementation; typical structures are close-ended with the initial commitment/drawdown phase followed by the run-off over the next several years. The Fund would have to be mindful that gaining exposure is also not quick and would be a similar story to choosing and funding Morgan Stanley for global property.

Fixed Income (Alternative Option 3)

We believe the Fund should continue to retain a similar level of exposure to investment grade credit/gilts to assist with the cashflow demands in the future. Fixed income return assumptions are materially higher now than in recent years, due to the sharp rise in yields (prices have fallen) in 2022 and look considerably more attractive at current levels.

Historically, bonds have been a diversifier and a defensive asset which investors would expect to retain or increase in value if any recession were to occur (as yields would fall). We do have a concern that if the correlation between equities and bonds remains positive (as has been experienced so far this year), any offsetting during further equity market selloffs would be minimal. Furthermore, the recent interventions made by the Bank of England to support long-dated gilts (in response to the LDI crisis) highlights the volatility that can be experienced in an asset class that is traditionally considered "safe". However, we expect over the longer term that volatility will reduce toward longer term averages. Our expectation is for credit spreads to remain relatively stable and for credit to offer a modest return premium over gilts.

We understand that one discussion point arising from the recent meeting with the Fund's asset managers was whether the mandate of the fixed income portfolio could be widened to incorporate additional exposure to overseas investment grade bonds (both government and corporate). Our current 10-year expected return assumption for overseas investment grade bonds (hedged) is 5.1%, which falls between the expected return assumptions for gilts (4.2%) and UK investment grade corporates (5.7%). This leads to the model allocating to overseas bonds in the "middle" risk portfolios. We note that the current SAA already allocates more to UK investment grade corporates over gilts so is already targeting a relatively higher return, for a minimal increase in the level of risk. Additionally, Fidelity already have discretion to tactically allocate off-benchmark to overseas investment grade and do so; 1.7% of the total portfolio is in overseas bonds currently.

However, overseas bonds do have slightly lower volatility expectation (5.4% compared to 7.8% for UK investment grade corporates and 7.7% for gilts) so the main benefit to allocating to them would be to lower expected overall risk whilst sacrificing some return (all other allocations remaining unchanged). We have shown the effect of a 5% allocation in Option 3 in the model. In addition, this may help to insulate the portfolio against country-specific events such as the aforementioned LDI crisis. Our modelling is based on a full currency hedged global bonds allocation, with implementation of currency hedging to be set at the manager level. Investors typically are more inclined to fully hedge the currency risk of foreign-denominated bonds due to the expected lower risk and return profile of bonds that can be more than offset by (unhedged) currency risk, and more potential direct interaction between factors impacting currency returns and bond returns.

Given that the current fixed income exposure is held within pooled funds, it could be difficult to simply "add" further overseas bonds to the mandate without incurring transition costs (primarily the bid-offer spread on selling and buying the assets). One option would be to permit the manager to invest into an additional pooled fund on a discretionary basis that focuses on overseas bonds, as and when they judge the timing to be right.

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Other Selected Asset Class Commentary

Equities

Our view is that the recent losses sustained by the equity markets over 2022 will eventually be made back once inflation is brought under control and any recession is navigated. This means that from current valuations, we believe that long-term equity return expectations should be higher. Somewhat offsetting this is the rise in interest rates (which will cap the extent of the upside), and expectations for corporate profit margins to compress towards the long-term historic average. Outside of the US offers more upside from a valuation perspective, whilst the US is expected to deliver stronger earnings growth. Additionally, there is potential for the US dollar to depreciate from its current levels which would somewhat lower returns in US equities for an unhedged sterling investor- all of this would justify maintaining a geographically diversified allocation. In addition, it should be noted that short-term volatility during any inflationary and recessionary period will be high.

Property

The expectations for UK commercial property in the near term appear challenged due to sharply rising interest rates (as property is often highly leveraged, as well as some valuation methods including a discount rate component) and a slowdown in economic growth (which typically reduces the demand for some property sectors). Additionally, in the very short term there has been some forced selling due to liquidity requirements. Overall commercial property has seen large inflows over the last decade, and this has led yields to become relatively compressed (i.e. valuations are relatively high). However, the long-term outlook remains positive for UK and global property, although in our view return expectations are somewhat muted relative to other private market options until assets reprice to reflect higher interest rates and the increasing likelihood of a recession.

Private Equity

Allocations to private equity have been an excellent source of high returns in recent years, although an element of this high return will have been driven by the effect of falling interest rates on relatively highly indebted assets. Whilst we still expect investors to be rewarded with a premium over public equities (to account for the illiquidity and complexity of the investment) in the long term, we are cautious that the increased capital flows into this asset class potentially reduces the investment opportunities. In addition, following the public market selloffs, pricing in private markets hasn't yet been fully reflected and the higher price of entry makes private equity currently less attractive relative to public equities than it has previously been. However, for investors with appetite to access the secondaries market, we have recently been starting to see interesting pricing in this space (with discounts of up to 15-20%), as corporate pension schemes are seeking liquidity and to de-risk from their growth portfolios. Private equity is incorporated into our MVO analysis although the Fund does not currently invest in this area.

Conclusion

In this report, we have conducted an SAA modelling exercise considering the Fund's beliefs, potential investment universe, liquidity and cashflow requirements, and reasonable constraints. We have combined these with our long-term capital market assumptions.

We have recommended more rigorous rebalancing from the current allocation back to the SAA both now and in the future and the implementation of a 50% currency hedge on the global equities portfolio.

Separately, we have compared four alternative portfolio options to the current SAA, recommending for consideration a de-risking of the global equity exposure from 58% to 53% and reinvestment into selected alternatives, or broadening the fixed income mandate. All portfolios would moderately de-risk the Fund, offering greater diversification and increased yield, but only a marginally lower expected return relative to the SAA. However, the reinvestment of the global equity proceeds into private market assets would increase illiquidity.

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Appendix 1 – Current Portfolio

Overall Portfolio Valuation

As at 30 September 2022, the Fund's assets had a valuation of £1.22bn, which was invested across five managers: Baillie Gifford, Fidelity, MFS, Morgan Stanley (North Haven) and Schroders.

Figure 10: Fund Allocation as at 30 September 2022

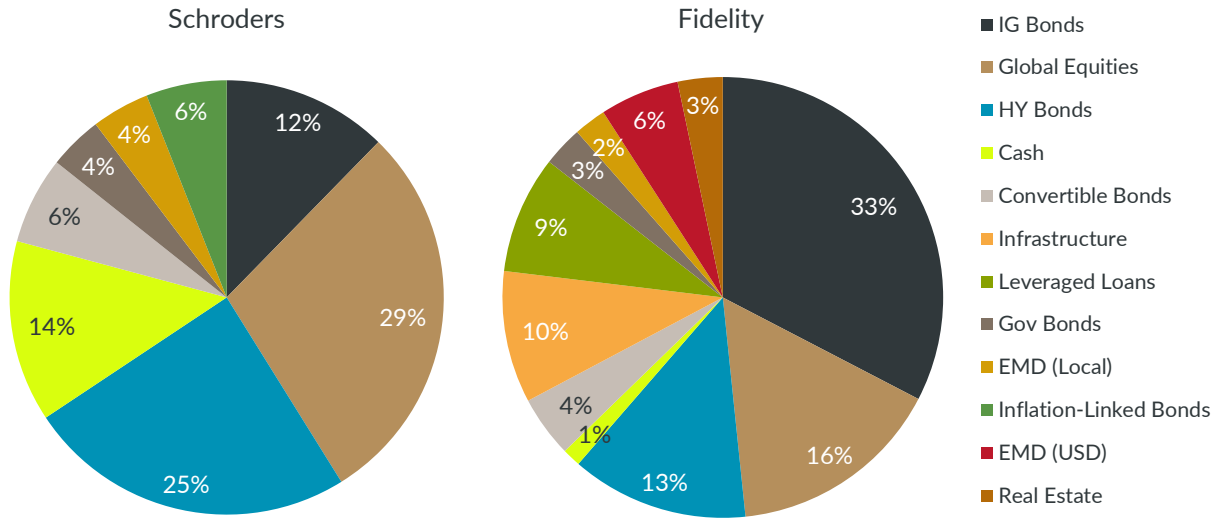| Fund	Asset Class	Valuation as at 30/09/22	% of Total Portfolio
Baillie Gifford Global Equity Fund	Global Equities	£474,402,523	38.1%
MFS Global Equity Fund	Global Equities	£329,260,950	26.9%
Fidelity Fixed Income Funds	Fixed Income	£116,062,361	9.5%
Fidelity Diversified Income Fund	Multi-Asset Income	£109,790,490	9.0%
Schroders Multi-Asset Income Fund	Multi-Asset Income	£97,555,393	8.0%
Fidelity UK Pooled Property Fund	UK Property	£77,989,776	6.4%
Morgan Stanley North Haven Property Fund	International Property	£11,863,263	1.0%
Fidelity Liquidity Fund – USD	Cash	£3,000	0.0%
Cash	Cash	£5,296,981	0.4%
Total		£1,222,224,737	

Source: London Borough of Bromley Pension Fund, MJ Hudson
Note: Figures may not add to 100% due to rounding

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Multi-Asset Income Fund Allocation

It is important to note that MAI funds can invest across a wide range of asset classes. Schroders and Fidelity, as at 30 June 2022, had allocations of 29% and 16% of their portfolios invested in equities, meaning the Fund's overall allocation to equities is higher than the 66% quoted above. MAI funds also have exposure to infrastructure, property and credit, as shown by Figure 11.

Figure 11: MAI Fund Breakdown as at 30 June 2022

Schroders

Fidelity

Legend:
- IG Bonds
- Global Equities
- HY Bonds
- Cash
- Convertible Bonds
- Infrastructure
- Leveraged Loans
- Gov Bonds
- EMD (Local)
- Inflation-Linked Bonds
- EMD (USD)
- Real Estate

Schroders pie: 12%, 29%, 25%, 14%, 6%, 4%, 4%, 6%

Fidelity pie: 33%, 16%, 13%, 1%, 4%, 10%, 9%, 3%, 2%, 6%, 3%

Source: Fidelity, MJ Hudson, Schroders
Note: Figures may not add to 100% due to rounding

Appendix 2 – Key Assumptions and Constraints

Constraints

Figure 12: Modelling Constraints for Efficient Frontier

Group	Asset Class	Min %	Max %	Group Min %	Group Max %	Constraint Details
Equities	All Country World Equity	50%	100%	n/a	n/a	To reflect the minimum equity exposure the Fund wishes to retain.
Fixed Income	UK Investment Grade Corporate Bonds	0%	20%	10%	n/a	To reflect the range of fixed income exposure the Fund needs to retain.
	UK Gilts	0%	20%			
	Global Investment Grade Bonds	0%	20%			
Cash	Cash	0%	1%	n/a	n/a	To reflect the operating cash balance of the Fund.
Alternatives	UK Property	4%	10%	9%	30%	To reflect the maximum individual and combined alternatives exposure the Fund could have. Minimums in UK and Global Property reflect current investments.
	Global Property	5%	10%			
	Core Infrastructure	0%	10%			
	Private Equity	0%	10%			
	Direct Lending	0%	10%			
	Social Housing	0%	10%			
Multi-Asset Income	U.S. Investment Grade Corporate Bonds	4.5%	6.7%	20%	n/a	To reflect the range of multi-asset income the Fund needs to retain. Individual asset class ranges are set based on the current MAI fund allocations.
	AC World Equity	4.5%	6.7%			
	U.S. High Yield Bonds	3.8%	5.6%			
	Core Infrastructure	1.0%	1.5%			
	U.S. Leveraged Loans	0.9%	1.3%			
	Emerging Markets Sovereign Debt	0.6%	0.9%			
	Global Convertible Bonds	1.1%	1.7%			
	U.S. Core Real Estate	0.3%	0.5%			
	World Government Bonds	0.7%	1.0%			
	Emerging Markets Local Currency Debt	0.7%	1.0%			
	UK Cash	1.5%	2.2%			
	UK Inflation-Linked Bonds	0.6%	0.9%			

Source: MJ Hudson

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Risk and Return Assumptions

Figure 13: Forward-Looking Annual Risk/Return Assumptions (Over 10 to 15 Years)

Asset Class	Sub-Asset Class	Expected Annual Return	Expected Annual Volatility
Equities	All Country World Equity	6.7%	13.9%
Fixed Income	UK Investment Grade Corporate Bonds	5.7%	7.8%
	UK Gilts	4.2%	7.7%
	Global Investment Grade Bonds	5.1%	5.4%
Cash	UK Cash	2.2%	0.7%
Property	UK Core Real Estate	5.5%	13.0%
	U.S. Core Real Estate	3.9%	10.2%
Alternatives	Core Infrastructure	4.5%	10.7%
	Private Equity	8.1%	17.5%
	Direct Lending	6.0%	15.8%
	Social Housing	4.0%	10.8%
Multi-Asset Income	U.S. Investment Grade Corporate Bonds	5.3%	7.1%
	AC World Equity	6.7%	13.9%
	U.S. High Yield Bonds	6.6%	8.7%
	Core Infrastructure	4.5%	10.7%
	U.S. Leveraged Loans	6.0%	8.0%
	Emerging Markets Sovereign Debt	6.9%	10.3%
	Global Convertible Bonds	8.9%	11.8%
	U.S. Core Real Estate	3.9%	10.2%
	World Government Bonds	3.5%	3.7%
	Emerging Markets Local Currency Debt	5.3%	11.1%
	UK Cash	2.2%	0.7%
	UK Inflation-Linked Bonds	3.8%	10.7%

Source: JPM LTCMA 2023, MJ Hudson

We do not model UK equities as a separate asset class as the Fund's equities managers (Baillie Gifford and MFS) have global mandates and can tactically shift into UK equities if they deem them to be attractively valued.

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Multi-Asset Income Fund Mapping

Figure 14: Mapping Schroders and Fidelity's MAI Funds to Asset Classes in the Investment Universe

Asset Class	Schroders	Fidelity
All Country World Equity	28.8%	15.7%
U.S. High Yield Bonds hedged	24.5%	13.0%
UK Cash	13.5%	1.4%
U.S. Investment Grade Corporate Bonds hedged	12.3%	32.6%
Global Convertible Bond hedged	6.5%	4.5%
UK Inflation-Linked Bonds	6.0%	
Emerging Markets Local Currency Debt	4.3%	2.4%
World Government Bonds hedged	4.0%	3.0%
Core Infrastructure		9.7%
U.S. Leveraged Loans hedged		8.6%
Emerging Markets Sovereign Debt hedged		5.8%
U.S. Core Real Estate		3.3%

Source: Fidelity, MJ Hudson, Schroders

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Correlation Assumptions

Figure 15: Expected Correlation Coefficient Matrix

Asset Class		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
AC World Equity	A	1.00	0.48	0.12	0.23	0.19	-0.06	0.45	0.12	0.74	0.18	0.44	0.65	0.46	0.59	0.78	0.05	0.57	0.31
UK Investment Grade Corporate Bonds	B	0.48	1.00	0.60	0.04	0.13	-0.01	0.85	0.18	0.32	0.02	0.80	0.56	0.42	0.67	0.55	0.50	0.36	0.62
UK Gilts	C	0.12	0.60	1.00	-0.39	-0.22	0.24	0.56	0.12	-0.18	0.28	0.51	0.03	-0.17	0.30	0.06	0.85	0.32	0.74
UK Core Real Estate	D	0.23	0.04	-0.39	1.00	0.50	-0.35	0.01	-0.02	0.29	-0.26	0.03	0.49	0.55	0.18	0.40	-0.43	-0.29	-0.10
US Core Real Estate	E	0.19	0.13	-0.22	0.50	1.00	-0.40	-0.05	0.21	0.20	-0.06	-0.09	0.30	0.41	0.07	0.14	-0.28	-0.16	0.08
UK Cash	F	-0.06	-0.01	0.24	-0.35	-0.40	1.00	0.14	-0.09	-0.12	0.02	0.14	-0.01	-0.11	0.09	-0.02	0.32	0.28	0.09
Global Investment Grade Bonds hedged	G	0.45	0.85	0.56	0.01	-0.05	0.14	1.00	0.13	0.26	-0.02	0.98	0.64	0.34	0.82	0.60	0.65	0.44	0.58
Core Infrastructure	H	0.12	0.18	0.12	-0.02	0.21	-0.09	0.13	1.00	0.24	0.20	0.09	0.16	0.25	0.22	0.01	0.06	0.16	0.41
Private Equity	I	0.74	0.32	-0.18	0.29	0.20	-0.12	0.26	0.24	1.00	0.21	0.24	0.49	0.48	0.42	0.62	-0.26	0.32	0.18
Direct Lending	J	0.18	0.02	0.28	-0.26	-0.06	0.02	-0.02	0.20	0.21	1.00	-0.05	-0.17	-0.14	-0.11	-0.18	0.18	0.29	0.29
U.S. Investment Grade Corporate Bonds hedged	K	0.44	0.80	0.51	0.03	-0.09	0.14	0.98	0.09	0.24	-0.05	1.00	0.64	0.34	0.79	0.60	0.60	0.42	0.53
U.S. High Yield Bonds hedged	L	0.65	0.56	0.03	0.49	0.30	-0.01	0.64	0.16	0.49	-0.17	0.64	1.00	0.76	0.76	0.81	0.07	0.30	0.33
U.S. Leveraged Loans hedged	M	0.46	0.42	-0.17	0.55	0.41	-0.11	0.34	0.25	0.48	-0.14	0.34	0.76	1.00	0.43	0.66	-0.22	0.10	0.18
Emerging Markets Sovereign Debt hedged	N	0.59	0.67	0.30	0.18	0.07	0.09	0.82	0.22	0.42	-0.11	0.79	0.76	0.43	1.00	0.70	0.38	0.53	0.45
Global Convertible Bond hedged	O	0.78	0.55	0.06	0.40	0.14	-0.02	0.60	0.01	0.62	-0.18	0.60	0.81	0.66	0.70	1.00	0.04	0.29	0.26
World Government Bonds hedged	P	0.05	0.50	0.85	-0.43	-0.28	0.32	0.65	0.06	-0.26	0.18	0.60	0.07	-0.22	0.38	0.04	1.00	0.39	0.61
Emerging Markets Local Currency Debt	Q	0.57	0.36	0.32	-0.29	-0.16	0.28	0.44	0.16	0.32	0.29	0.42	0.30	0.10	0.53	0.29	0.39	1.00	0.33
UK Inflation-Linked Bonds	R	0.31	0.62	0.74	-0.10	0.08	0.09	0.58	0.41	0.18	0.29	0.53	0.33	0.18	0.45	0.26	0.61	0.33	1.00

Source: MJ Hudson, JPM LTCMA 2023

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Appendix 3 – Defined Terms and Methodologies

Portfolio optimisations have been conducted using both long-term market assumptions for each asset class. Constraints on asset class weights, sub-asset class weights and minimum required return were used for the mean variance optimisation.

Mean Variance Optimisation

Mean variance optimisation (MVO) seeks to obtain the optimal asset allocation that provides the minimum expected risk (volatility) for each given expected level of return based on the assumptions and constraints.

MVO is the most widely used approach to optimise portfolio allocations (following the work of Markowitz on modern portfolio theory). The inputs required, referred to as our long-term capital market assumptions (LTCMA), are expected returns for the assets under consideration and the covariance matrix of those assets. The covariance matrix itself can also be estimated separately as correlations and variance of the assets, which help in formulating forward-looking views.

Key benefits:

- This optimisation considers both risk and returns and from a pragmatic perspective, gives a good general framework for an SAA;
- The technique is comparatively fast-to-run, computationally, which is important when exploring different asset allocation scenarios;
- The output provides a range of optimised portfolios by expected returns and volatility, and the results are often intuitive.

Key considerations:

- The model is very sensitive to the initial inputs/assumptions made for each asset. Differences in expected returns or volatilities can make a meaningful difference in the optimal portfolio generated. As such, it is important to choose assumptions on a reasonable basis and refine them when appropriate.
- The MVO technique only takes mean and variance into account and does not (by default) take into account other properties of the distribution of returns (such as skewness or kurtosis). These factors can be important for those strategies which exhibit elements of tail risk.
- MVO identifies whether a portfolio allocation is diversified across asset classes, but not necessarily diversified across the sources of risk/risk factors.

There are several ways to refine the approach. For instance, a stressed correlation matrix can be used, consisting of estimates of correlations during stressed environments, calculating Modified VaR to address the skew and kurtosis of the likely return distributions and other techniques and risk measure or scenario analysis can supplement the approach, such as expected shortfall (an average of losses in the extreme part of the distribution).

The portfolio optimisation methodology was an MVO, using long-term forward-looking assumptions across asset classes (discussed later). The modelling was carried out using internal models built in Microsoft Excel.

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Value at Risk (VaR) 95%

The maximum expected loss of the portfolio with 95% level of confidence. The calculation method we used is the variance-covariance method, which is a parametric calculation that assumes normal return distribution.

$$VaR_p = \mu + z_p\sigma$$

Where: μ is the expected asset return, z_p is the distance between μ and the VaR_p in number of standard deviations. In other terms, number of standard deviations at (1-z_p) or -1.96 with p = 95% probability. σ is the standard deviation.

Sharpe Ratio

Risk-adjusted returns, where the portfolio returns over the risk-free rate (taken as the yield on cash) are risk-adjusted.

$$Sharpe\ Ratio = \frac{Portfolio\ Return - Risk\ Free\ Rate}{Volatility\ of\ Portfolio}$$

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