LONDON BOROUGH OF CROYDON PENSION FUND

CURRENCY HEDGING

Introduction

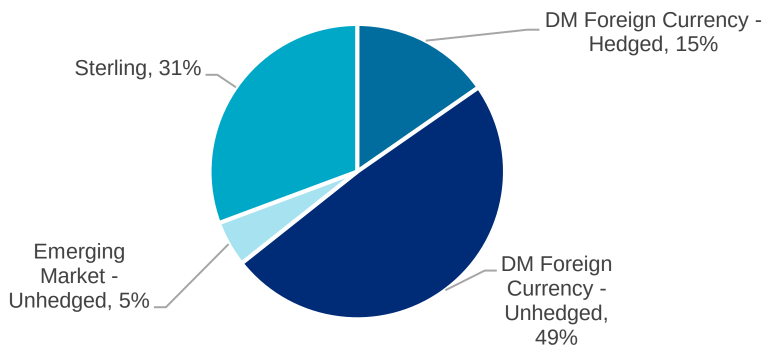
This note has been written for the Pensions Committee ("Committee") of the London Borough of Croydon Pension Fund ("the Fund"). Its purpose is to review the foreign currency exposure of the Fund's investment portfolio and to consider options available to manage the foreign currency risk.

We raised the concept of currency hedging to the Committee on 6 November 2018 as part of a wider risk management session. At that meeting the Committee agreed in principle to reduce the amount of currency risk in the Fund. The purpose of this paper is set out the options to implement that decision. This paper should be considered in conjunction with our paper entitled *"Scenario Analysis"* (dated October 2018) and the formal minutes of the 6 November 2018 meeting as they contain pertinant background to this paper.

Background

The Fund has overseas investments that are non-sterling denominated. The chart below shows the Fund's overall asset portfolio split between exposure to sterling denominated assets and assets priced in foreign currencies (based on the strategic benchmark allocation).

Figure 1: Fund's strategic currency exposure



Source: Mercer based on Stategic Asset Allocation as at 31 December 2018

The foreign currency exposure is split as follows:

- **Developed market exposure - hedged (15%)**
    - Aberdeen Standard Investment Absolute Return Bond Fund – 7.7%
    - Pimco Global Corporate Bond fund (via LCIV) – 7.7%
- **Developed market exposure - unhedged (49%)**
    - LGIM Developed World ex-Tobacco Fund – 37%
    - Infrastructure – 4%
    - Private Equity – 8%
- **Emerging market – unhedged (5%)**
    - Janus Henderson Emerging Market Equity ('EME') (via LCIV) – 5%

In terms of the current hedging policy inferred by the allocations above we would make the following comments:

- **Bonds –** given the bonds are used for risk management and cashflow purposes versus a set of sterling liabilities we are comfortable with the position to currency hedge these assets.

- **Private market assets (infrastructure and private equity) –** we would not recommend currency hedging these assets as stale pricing of the underlying exposures can lead to more risk. In addition, the relatively unknown frequency of investments and redemption payments create complications for managing the level of hedged exposure. We would note the this may need to be reviewed if/when the Fund relies heavily on the income from these assets for cashflow purposes, however given the Fund is in a reasonable cashflow position and has other sterling denominated cashflow generating assets (particularly property and PRS) we would recommend leaving the 12% private markets (the other 6% allocation to infrastructure is sterling) exposure as un-hedged.

- **Emerging Market Equity** - hedging emerging markets exposure can be costly, the exposure can also be considered as a rewarded risk i.e. economic growth above that of developed markets should lead to appreciation of emerging market currencies relative to developed markets over time and hence the exposure should benefit the Fund (noting that there will be a significant amount of volatility carried and return cannot be guaranteed). Therefore, we would not recommend looking to hedge this exposure at the present time.

As such, the remainder of this paper considers the proportion of the Fund's allocation to the LGIM Developed World ex-Tobacco Fund to hedge and the mechanism to implement this.

What is currency risk?

Developed market currency (typically US Dollar, Euro, Japanese Yen) exposure is generally considered an unrewarded risk (or at least poorly rewarded). That is, unlike equity risk for example, there is no expected long term return that comes with the risk (or the level of excess return is not commensurate with the volatility that results).

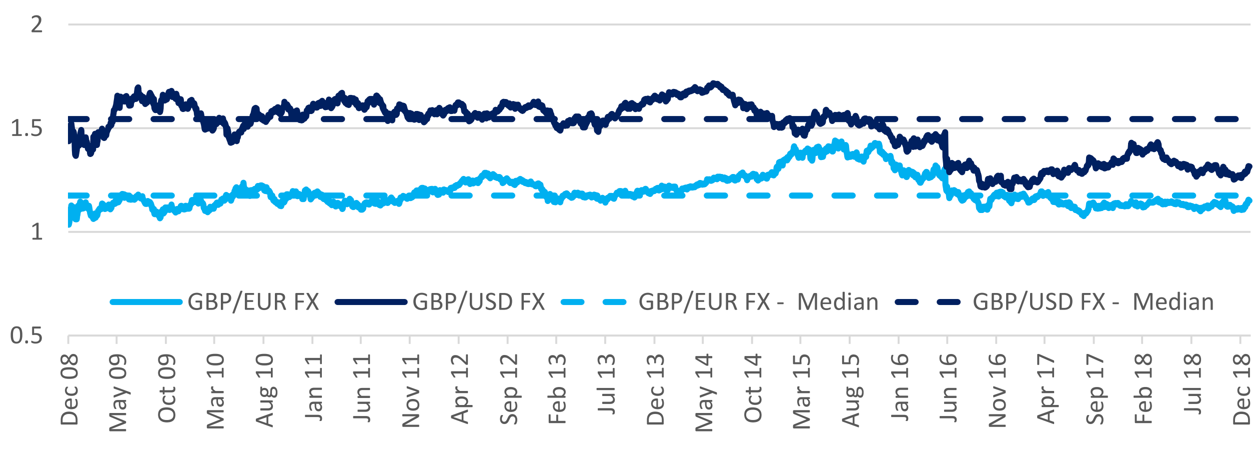
As a UK based pension scheme with 100% sterling denominated liabilities, being exposed to foreign currency through the asset portfolio leads to increase in expected volatility with little or no additional expected excess return. That said, there are valid reasons to have exposure to assets priced in foreign currencies. Examples of these reasons are:

- It allows the Committee to widen the opportunity set to enable the Fund to meet its objectives.
- Hedging currency exposures can be expensive (particularly in emerging markets) thus negating some of the additional gains from accessing these markets.
- Exposure to "reserve currencies" (e.g. USD, EUR, CHF and JPY) can act as a tail risk hedge as market stress events tend to result in a 'flight to safety' and an appreciation of these reserve currencies versus sterling.
- Exposure to reserve currencies can act as a second order liability hedge as a fall in UK interest rates (increasing the value of the liabilities) will likely coincide with a fall in the value of sterling and a relative gain on assets exposed to foreign currencies.

Market background and tactical considerations

The chart below shows how the sterling exchange rate versus the US dollar and Euro has moved over the last 10 years. Over the period (and particularly as a result of the 2016 EU referendum vote) we have seen a decline in the value of sterling to a point now where current pricing is below the 10-year average. We would however note that particularly versus the Euro rate, sterling has been relatively stable (albeit weak) since 2016.

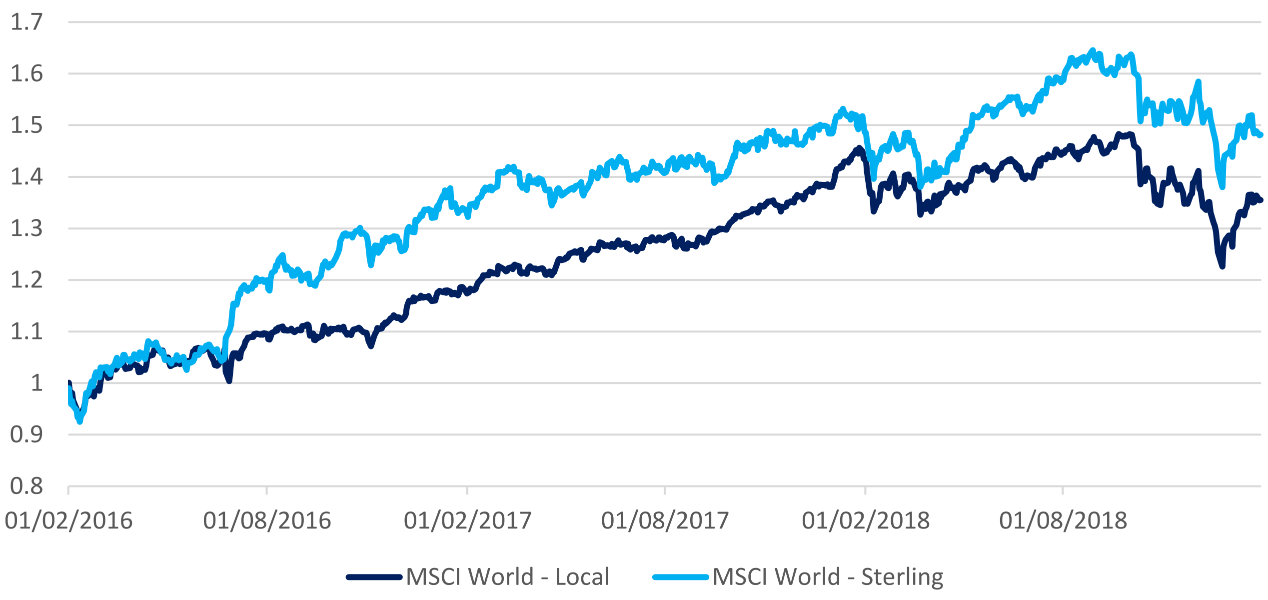
Figure 2: Exchange Rates – USD & EUR vs GBP over 10 years



Source: DataStream, Mercer

The result of this sterling weakness has been that UK investors with un-hedged overseas currency exposure have seen material gains from the position. If we consider the chart below the difference in performance between MSCI world index in local currency (hedged) and sterling (unhedged) terms has been c.3.3% p.a. over the last three years which equates to a gain of c.£40m per £400m (the Fund's approximate holding in the LGIM fund at 30 September 2018).

Figure 3: MSCI World Local Vs Sterling 31 January 2016 – 31 January 2019



Source: DataStream, Mercer

We don't have a strong view as to whether sterling is over- or under-priced versus the major developed market currencies at the current time. However, we would expect the uncertainty around sterling to remain, particularly while the UK's future relationship with the EU is still so uncertain.

We have worked on the basis that the Committee does not want to explore an active currency management strategy i.e. to appoint a manager who will aim to garner additional returns through taking views on currency movements. That said there is an opportunity to be tactical in setting the 'hedge ratio' of the Fund's foreign currency exposure.

Based on our scenarios (see our previous paper) we would assign a higher probability to the Brexit scenarios (e.g. negotiated deal) which lead to an appreciation in sterling and for some (or all) of the recent gains set out above to be unwound.

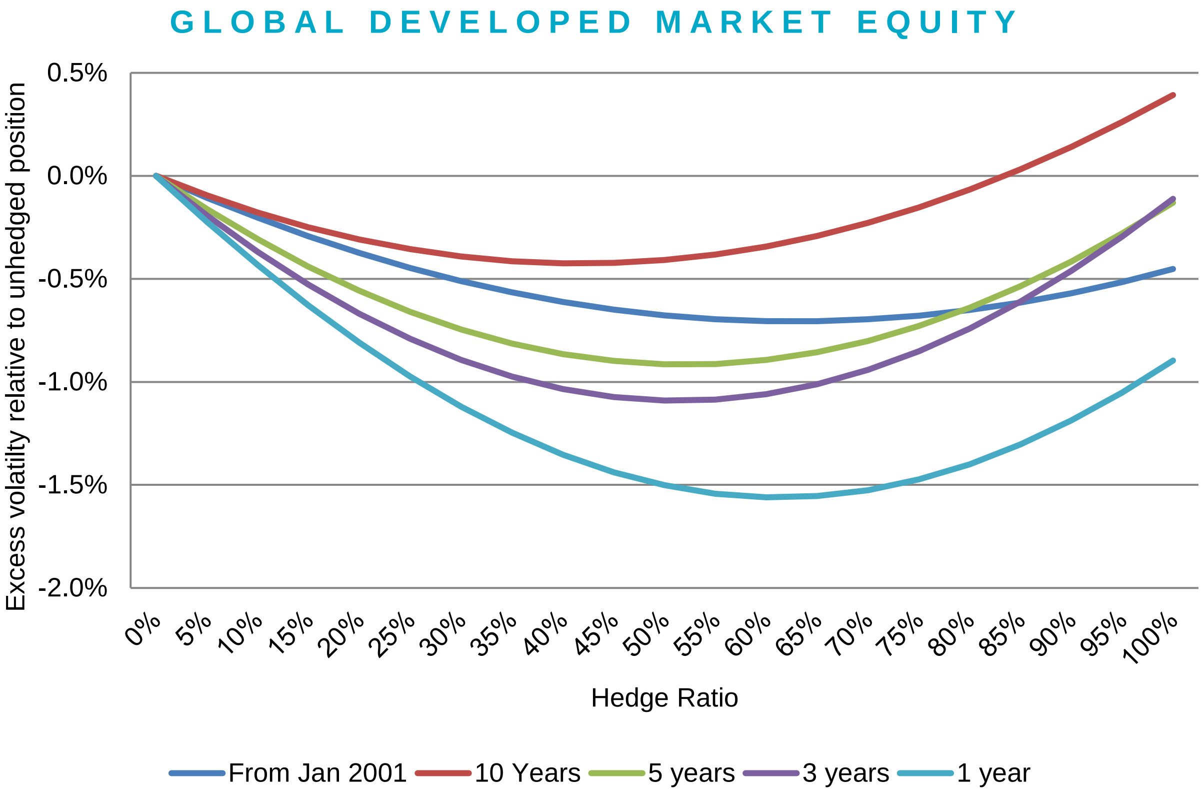
That said we are cognisant that there is a real risk that sterling could weaken further in which case the current un-hedged position would be more favourable.

Therefore, from a current tactical point of view there is an argument to remove some foreign currency risk to 'lock-in' a portion of the recent gains made from the weakness in sterling whilst retaining scope to benefit to some degree from any further decline in sterling.

How much currency hedging is optimal from a strategic perspective?

Figure 4 overleaf shows (based on historic data) the relative risk experience of different currency hedged positions (versus being unhedged) over a number of time period.

Figure 4: Impact on volatility and returns



Source: Thomson Reuters and Mercer

The 'smile' shape of the charts indicates holding less than 100% of foreign currency exposure has historically achieved a greater level of volatility reduction than either being 100% hedged or completely unhedged. Over most time periods, the greatest level of risk ***(as defined by volatility) reduction is achieved by hedging c.50% - 70% of currency risk.***

There is a spectrum of options available to Committee if they want to crystallise some of the recent currency gains and reduce the Fund's foreign currency exposure. However, we show 3 for illustrative purposes in the following table:

LEVEL OF HEDGING	PROS	CONS
0% **(Current)**	• Adds value when sterling **depreciates** (overseas assets are worth more in sterling terms). • No additional cost of hedging	• Loses value when sterling **appreciates** (overseas assets are worth less in sterling terms) • Greater level of expected volatility of returns

LEVEL OF HEDGING	PROS	CONS
50%	• Removes volatility of exchange rates (to the extent hedged) • Locks in recent gains from sterling depreciation (to the extent hedged) - sterling is well below long term averages against other major currencies • Gives access to some upside from further sterling weakness	• Additional costs – hedged funds tend to be slightly more expensive. • When sterling **depreciates** overseas assets are worth more sterling terms. The Fund will not benefit from these gains (to the extent hedged).
100%	• Removes risk of losses when sterling **appreciates** - sterling is well below long term averages against other major currencies	• Opportunity cost - should sterling **depreciate** further), the Fund would not participate in these returns. • Additional costs and fees for greater levels of hedging • Lower level of expected volatility reduction at 100% hedging.

Options to hedge currency risk

There are broadly two options available to the Committee if they want to crystallise some of the recent gains and reduce the Fund's foreign currency exposure:

A. Introduce a currency hedging manager to implement an overlay strategy

B. Ask the Fund's existing managers to hedge their foreign currency exposures

Option A. is a relatively expensive and time consuming (including ongoing governance and lead time to set-up) route to take. As such, we would only advocate this route as part of a deep dive currency hedging review and/or a wider risk management strategy project (including strategies such as LDI and equity protection). We can look into these options with Committee as part of the upcoming investment strategy review.

Option B. is a quicker, cheaper and more pragmatic solution.

To that end we have been discussing the options to currency hedge the LGIM exposure with the manager. LGIM have confirmed they are able to set up a currency hedged version of the FTSE World Developed Ex Tobacco fund and based on our request have initiated the process so that the currency hedged fund is available for the Fund to invest in should the Committee agree to proceed.

There would be a number of costs associated with switching into the hedged version of the fund, as follows:

- **One off cost** - LGIM have confirmed that **transaction costs** for switching assets from the existing unhedged fund to the currency hedged fund are expected to be c.0.026% of assets transferred. This equates to c.£54,000 for a 50% currency hedged solution and c.£109,000 if all assets were switched to the currency hedged fund.

- **Ongoing costs** - LGIM charge an additional 0.025% p.a. **management fee** on assets invested in the currency hedged fund (equal to c.£52,000 p.a. for a 50% hedge or £104,000 p.a. for a 100% hedge).

  In order to roll the hedges each month there is an additional on-fund cost passed through the fund. This may vary depending on the size of the fund and the market environment. The approximate cost of the on-fund cost is 3bps p.a. this equates to c£63,000 p.a. for 50% hedge or c.£125,000p.a. for a 100% hedge.

- There may also be additional transaction costs of rebalancing between the currency hedged and non-currency hedged funds so as to maintain the target currency hedge ratio. However, these can be mitigated to an extent by not having tight rebalancing ranges in place.

We feel these costs are appropriate in an absolute sense and relative to the gains that have been made from running an un-hedged position.

Summary and next steps

In our view as a cost-effective, pragmatic approach to reduce risk and lock in gains coming from sterling depreciation over recent years we suggest switching between 50-70% of the assets held within the existing LGIM FTSE World Developed Ex Tobacco Equity fund to the currency hedged version at the earliest available opportunity.

The 50-70% range is supported by the strategic argument set-out previously, where the Committee lands within this range will depend on the appetite for future risk versus the certainty of locking in the gains that have been made thus far.

If the Committee want to lock-in more gains and/or envisage an appreciation of sterling, then a 70% hedge position on the LGIM exposure would be more appropriate. However, if the Committee are concerned about the regret risk of losing out on gains from further sterling weakness (but still want reduce the amount of risk) then they may wish to consider a 50% position.

Depending on how you agree to proceed, we will liaise with LGIM to confirm the Committee’s decision and the expected value of assets to be transferred and to request LGIM provide the documentation required to implement the switch.

I look forward to discussing this paper with the Committee.

Peter Gent FIA
Mercer Ltd
February 2019

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