PASSIVE CURRENCY HEDGING

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For and on behalf of Hymans Robertson LLP
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1. INTRODUCTION AND RECOMMENDATIONS

INTRODUCTION
This report is addressed to the Investment Committee (“the Committee”) of the Gloucestershire County Council Pension Fund (“the Fund”). It should not be released or otherwise disclosed to any third party except with our prior written consent, in which case it should be released in its entirety. We accept no liability to any other party unless we have specifically accepted such liability in writing.

We have been asked to advise the Committee on the potential benefits, and practicalities, of implementing a passive currency hedging programme. This report considers these issues alone, and in particular does not discuss active currency management.

Any pension fund that invests in overseas markets is open to movements in currency rates. This exposes the fund involved to the risk of adverse fluctuations. As a result, we believe that clients should formulate a positive stance to currency management; even if that positive judgement is to do nothing. We are strong advocates that manageable risks should be exploited or, failing that, removed, where it is practical to do so.

In our report “Review of Strategic Asset Allocation”, addressed to the Committee and dated November 2005, we stated our preference for passive currency hedging only in conjunction with active currency management. We understand that the Committee has considered and rejected the question of appointing an active currency manager but nevertheless is interested in pursuing the potential risk reduction benefits of a passive hedging programme.

In the two and a half years since our earlier report, passive hedging has become increasingly commoditised, and competition has helped to bring prices down. We have seen cases where passive hedging is offered for “free”, either by an active manager as an additional service, or by a fund’s custodian, who will generate revenue on the execution of the trades.

In this report we consider the potential benefits of passive currency hedging, in particular the risk reduction benefits. We also discuss the practical issues that must be dealt with when passive currency mandates are being considered.

RECOMMENDATIONS
The Fund is currently exposed to currency markets via its overseas equity exposure, which has an allocation of 31.4% of the Fund’s assets (as at 31 March 2007, source: Gloucestershire Local Government Pension Fund – Annual Report 2006 - 2007). This indirect currency exposure is unmanaged, leaving the Fund exposed to currency risk, i.e. the risk that movements in currency markets may be detrimental to the Fund’s overall return.

We believe that currency hedging provides a more efficient means of reducing risk than by making a switch from equities to bonds (which might be considered as an alternative means of reducing risk). However, the benefit is relatively small and we would conclude that hedging the currency risk provides only a marginal reduction in risk at a total fund level.

Implementing a passive hedging programme introduces a number of practical difficulties. We recommend that the Committee ensures they are comfortable with these practical issues before proceeding.

There is often little to differentiate the approaches of passive managers. We recommend that the Committee engages with the Fund’s custodian, ABN Amro Mellon, to determine if it would be able to fulfil this role.
Finally, we recommend that the Committee consider carefully the potential downside risk of implementing a passive currency hedge, i.e. the potential losses if Sterling continues to depreciate against other major currencies. One potential way to mitigate this risk is to have an “active hedging” approach, where the hedge is effectively switched on or off depending on the manager’s view as to whether Sterling is likely to appreciate (switch hedge on) or depreciate (switch hedge off).
2. Passive Hedging

The Case for Passive Management

Passive currency management is most commonly proposed as a method of risk reduction. Over recent years, due to the strength of Sterling and high UK interest rates, passively hedging back to Sterling has generally resulted in higher returns than would otherwise be the case. However, in an environment when Sterling is depreciating, hedging overseas currencies might reduce returns (depending on interest rate differentials).

As the above chart shows, currency markets can show considerable volatility that, if left unmanaged, can have a meaningful impact on the Fund’s overall risk, and to short term returns. For example, a 10% move in currency markets, (which, based on the chart above, is rather conservative) would be equivalent to a loss (or gain) to the Fund of circa £30m in one year (based on an overseas equity allocation of broadly £300m). As the Fund’s overseas equity investments increase in size, or if currency volatility increases, the extent of this loss or gain will increase.

There is an argument for passive currency hedging to mitigate the “catastrophe risk” of a large depreciation in one or more overseas currencies adversely affecting portfolio returns in Sterling terms. The currencies which are most likely to suffer large falls (arguably, emerging markets) are generally the currencies which are harder, if not impossible, to hedge. In any case, they are likely to comprise only a small part of the portfolio.

Under the Fund’s existing arrangements, any gain or loss due to currency movements is unmanaged. In order to control this, the Fund could introduce a passive currency programme, which hedges the currency exposure from overseas equities. Such an overlay would manage these risks and would avoid the potentially large swings in valuations due to currency movements.
The statistical volatility of the returns (relative to liabilities) will be marginally reduced if passive hedging is introduced; however the pattern of investment return in the short term may change significantly. Most schemes are likely to give some consideration to how their “peer group” will perform. For example, if the peer group has 50% of currency exposure hedged and one particular scheme within the peer group is not hedged, then its returns could be very different quarter by quarter and year by year from the peer group because of currency movements. When that one scheme’s returns are significantly lower than the peer group for a persistent period, the fiduciaries (i.e. trustees or similar) are likely to feel pressured to explain why. This might influence them to amend their benchmark to closer reflect the peer group. This behavioural impact needs to be considered.

RISK/COST ANALYSIS

At first sight, passive hedging of the currency risk looks like a good idea. However, currency hedging is not a trivial exercise and it incurs both time and costs. In order to determine whether the effort is worthwhile we consider the cost versus the potential reduction in risk. Our analysis, based on our proprietary asset model, indicates that fully hedging the currency exposure from equities would be broadly equivalent in terms of risk reduction to reducing equity allocation into matching bonds by approximately 3 – 4%.

Our analysis also indicates that the expected reduction is risk arising from hedging 50% of the currency exposure will broadly equate to the effect of reducing equity exposure by approximately 2%. Based on our assumptions for the expected performance of equities against bonds, this would reduce the expected return of the Fund by approximately 0.06% per annum.

This analysis is based on long term assumptions and does not take into account how the fund might behave over shorter periods, where currency volatility could result in significantly different returns to those of the relevant “peer group” of schemes.

Whether or not the reduction in risk is worthwhile depends on whether the cost of achieving it is less than or equal to the reduction in expected return as a result of the equivalent risk-reducing equity to bond switch.

COSTS

Mandates are usually defined in terms of the amount of underlying assets the managers are expected to run their mandates on. Charges are based on the amount of underlying assets.

The total costs of maintaining a currency overlay will the sum of the following:-

- Direct costs - relating to rolling the hedges as they mature (i.e. bid offer spreads) and rebalancing the hedging as the underlying markets move. These may amount to 0.05%.
- Indirect costs - arising from tracking errors (due to frequency of rebalancing, use of proxy currencies and any unhedged exposures) and the impact of cash flow.
- Fees – based on the size of the Fund’s overseas equity portfolio, we estimate that the cost of a passive overlay might be in the region of 0.05% for a passive hedge (although as mentioned earlier, where there is an ongoing relationship between the pension fund and the currency hedge provider, we have seen cases where this service was provided at no explicit additional cost).

In addition, when cash is called upon or redistributed the managers will incur transaction costs when investing/disinvesting the capital required. To avoid possible disruption, many schemes choose to set aside cash against possible cash calls. Equity futures can then be used to ensure that the bulk of this capital remains exposed to the appropriate market. Typically, this is equivalent to 4% of the hedged amount.
In total, we estimate that the annual costs would amount to around 0.1% to 0.2% of the value of the hedged portfolio. Assuming that 50% of the overseas equity is hedged, this is equivalent to 0.015% to 0.03% at the overall fund level.

Therefore, based on our best estimate assumptions we believe that currency hedging is likely to prove a more efficient means of reducing risk than by making a switch from equities to bonds.
3. PASSIVE MANAGEMENT: PRACTICAL ISSUES

If it is agreed to introduce a passive currency mandate into the Fund’s investment structure, there are a number of key issues that must be considered:

- What is an appropriate level of exposure and which currencies should be hedged?
- How will the operational issues be managed?
- Who should carry out the hedging – an investment manager (in which case, which one?) or the custodian?

We discuss each of these questions in turn.

**EXPOSURE**

The Fund’s current overseas equity allocation, of 31.4% of total assets, is equivalent to exposure of around £300m to overseas currencies. The intuitive approach to passive management would simply be to hedge this exposure in full. However, due to the fact that currency returns are typically negatively correlated to equities, hedging 100% of the Fund’s currency exposure may not be the optimal solution.

As the above chart indicates, hedging somewhere between 50% and 75% of overseas currency exposure can achieve a greater risk reduction than hedging all of the currency exposure. When applying a passive hedge it is often regarded as practical to apply some simple approximations, given that it’s likely that exposure to many minor currencies will be very low.

We would recommend the proportion of hedging to take place, and the currencies to be hedged, are defined during the implementation of the passive hedge. In our experience, it is generally helpful to seek the views of the party that will be carrying out the hedging on these issues. A “hedge ratio” of between 50% and 75% is fairly typical. Which currencies should be hedged depends upon a number of factors: given that some currencies are less liquid than others, does the Committee wish to hedge only the “main” currencies (US Dollar, Euro and Japanese Yen, say) or to extend the hedge to use major currencies as a proxy for less liquid currencies, which tend to be tied closely to their movements?
OPERATIONAL ISSUES
Since a passive currency mandate relates directly to the Fund’s overseas currency exposure, a passive mandate will have to be managed on a segregated basis that is client specific to the assets being hedged.

A passive manager will implement the currency hedge by trading currency forwards, effectively fixing the future terms on which the overseas currency can be sold and Sterling repurchased. More detail on currency forwards is given in Appendix 1.

Depending on how currency moves, the passive mandate may generate a positive return (if Sterling strengthens) or generate a negative return (if Sterling weakens). Any positive return would lead to a positive cashflow being provided to the Fund. It is anticipated that this money would then be invested with the Fund’s existing investment managers. However, any negative return from the passive mandate would lead to the Fund having to provide cash to the passive manager. If the Fund has insufficient cash available at the specific time, a decision would be required (or a policy established) as to which manager(s) would be used as a source of funds. Investing/disinvesting assets will incur transaction costs. This is one of the major practical issues.

As the chart in Section 2 showed, currency markets can show considerable volatility. As a result, the extent of the required cashflows could be significant e.g. a 5% fall in Sterling over the quarter, relative to the other currencies, would require the Fund to provide approximately £15m to the manager (based on an overseas allocation of £300m). The frequency that cashflows would be required, or received, will vary from manager to manager; however, it is anticipated they will take place at least quarterly, and potentially monthly.

The Committee must ensure the Fund has sufficient operational support in place to ensure all cashflows are treated appropriately and on a timely basis.

CHOICE OF PASSIVE MANAGER
There is often little to differentiate between different passive managers’ approaches. Assuming the manager’s approach has no fundamental flaws, the choice of passive manager is often driven on a cost basis. We do not believe there is any need to diversify manager risk; therefore, a single manager appointment would be appropriate for a passive currency mandate.

The fees for passive hedging are considerably lower than for active management. We would anticipate that managers would be willing to manage such a mandate for no more than 0.05% p.a. Indeed, some providers may be willing to provide this service at zero cost, assuming they had other responsibilities for the Fund (for example if the Committee was to appoint an active currency manager, or, as custodian in the case of ABN Amro Mellon).

SUMMARY
Based on our best estimate assumptions, we believe that currency hedging will over the long term provide a marginal reduction in risk. Given the practical difficulties of managing such a mandate on an ongoing basis, we recommend that the Committee carefully consider these aspects of the implementation of a passive hedge.
4. **TIMING OF IMPLEMENTATION**

The introduction of a passive currency hedging programme would be a significant change in the Fund’s investment arrangements. As with any such change, we recommend that the Committee consider carefully the timing of the implementation of the hedge.

For a Sterling investor, holding overseas investments denominated in local currency, a passive currency hedge seeks to “fix” the rate at which the investor can sell the overseas currency and buy Sterling in return at the prevailing rate.

A hedged investor will therefore benefit if Sterling appreciates relative to the currency of the underlying investment – they have fixed the rate at which they can exchange the underlying investment for Sterling, and hence can effectively repurchase Sterling at below the market rate\(^1\). Of course, the opposite is true for a hedged investor if Sterling depreciates.

The charts below and overleaf illustrate the evolution of the value of Sterling relative to the US Dollar, the Euro and the Japanese Yen, on a quarterly basis, over the last 3 years.

![Graph of Dollar-£](image)

Sterling strengthened steadily against the dollar over much of this period, in fact reaching a high point in excess of $2.10. At the time of writing, the Sterling to Dollar exchange rate is $1.98. A Sterling investor hedging their dollar exposure in late 2005 will have benefitted strongly from the transaction. Whether or not now is a good time to hedge dollar exposure is a moot point, depending on where the exchange rate moves from here. The Committee should consider carefully the balance between reducing investment risk and achieving “good value”.

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\(^1\) In fact, the investor would make a profit on the currency forward traded to hedge their exposure.
The evolution of the Sterling to Euro exchange rate is quite different. Having “range traded” for a couple of years or more, the Euro has strengthened considerably over the last 6 months.

At the time of writing, the Sterling to Euro exchange rate is Eur 1.25. Many commentators remain bearish on Sterling, believing it will continue to depreciate for some time (note: currencies often extend trends for long periods.) Over the same time period, Sterling has strengthened and then weakened once again relative to the Japanese Yen. The Sterling to Yen exchange rate today stands at JPY 2.05. As above, this recent trend of depreciation might continue.

CONCLUSION
We are unable to give the Committee tactical advice on the timing of implementation of a passive currency hedge. The Committee may seek the views of its Independent Advisor and / or the parties who are considered as candidates to implement the hedging programme on these points.
However, we would recommend that if the Committee determines to implement a passive hedging approach, they should phase the implementation in order to obtain several price comparators of Sterling and other currencies. This approach would spread the “regret risk” of hedging at what later transpires to have been an inopportune time.
5. RECOMMENDATIONS

In this paper, we have discussed various aspects relating to currency markets, including their volatility and how this risks arising from this volatility may be mitigated. We draw the conclusions given below, although we do so without having had the opportunity to discuss with the Committee and hence to assess the Committee’s views on these issues.

It is important that the Committee considers whether the Fund has the necessary operational support in place to operate these mandates.

PASSIVE MANAGEMENT

- Passive currency management can provide a modest benefit in terms of risk reduction at the overall Fund level.

- For many years, pension schemes which have hedged foreign currency exposure have benefited due to the strength of Sterling and high UK interest rates - in a similar way in which active managers have benefited from the carry based approach. However this benefit has began to unwind over the last 6 to 9 months and this trend of Sterling depreciation might continue for some time.

- The practical issues relating to a passive mandate, such as hedge ratios and currencies to be hedged, need to be determined.

- A single manager should be appointed to manage this mandate. The Fund’s custodian might also be investigated to determine its appropriateness for this role.

- The Committee should consider carefully the timing of implementation of a passive hedge. We recommend that “regret risk” is reduced by implementing in several tranches, perhaps over several quarters.

- The Committee might also consider whether an active approach to passive hedging i.e. a manager who switches the hedge on and off according to the likelihood of Sterling appreciation (hedge on) or depreciation (hedge off) can be taken into account.
APPENDIX 1: THE CURRENCY UNIVERSE

In the main, the eligible universe for currency managers will be the liquid currencies. Currently the pool of major currencies examined (often referred to as the FX11) comprises the following rates:

US$, Euro, Yen, Sterling, Swiss Franc, Australian $, New Zealand $, Canadian $, Norwegian Krone, Swedish Krona, Danish Krone.

Although the FX11 falls far short of the global currency market, it does capture more than 90% of currency market turnover and thus represents a reasonable proxy for the market. Whilst certain active managers may carry out a small proportion of trades involving currencies not shown in this table, the vast majority of manager trades will involve these currencies.

FORWARD CONTRACTS

A forward is a deferred deal, where the associated physical movements of cash are deferred to some “forward” date. The alternative, where the associated physical movement of cash is immediate is known as a spot deal. In most financial futures contracts, on expiry, there is usually a settlement on difference, i.e. the investor simply receives or pays the change in capital value. On expiry of the contract both parties to the trade – since a forward is a bilateral contract between two entities – are committed to exchange the currency amounts agreed at outset.

The forward is priced to reflect the period of deferral and to ensure that no party to the transaction is economically disadvantaged simply because physical settlement is delayed. For example, if an investor is selling a currency, but on deferred settlement, the sale price will be increased to create the same economics as had the deal settled immediately. That increase will generate, for the seller, the effect of earning interest had the sale proceeds been on deposit in the bank.

As an example assume than an investor wishes to buy Sterling and sell Japanese Yen, deferred for three months. The (forward) price at which the forward would be struck would be a function of the following (example shown in diagram below):

- the prevailing spot price (200 Yen:£1 in our example),
- the interest rate the buyer of Yen would expect to receive, were the cash in a Yen bank account (0.25% in our example), and
- the interest rate the buyer of £ would expect to receive, were the cash in a Sterling bank account (5.25% in our example).
The forward rate is effectively the spot rate plus interest earned on Yen accounts less interest earned on Sterling accounts.

In practice, the two interest rates are netted off so forward price = spot price + net interest rate differential.

Forwards are the primary instrument for trading in currency markets.