Review of Rebalancing Policy

Avon Pension Fund

JLT INVESTMENT CONSULTING

Contents

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Executive Summary

This report has been prepared for the Investment Panel of the Avon Pension Fund (the "Fund") by JLT Investment Consulting ("JLT") and the Investments Officers of the Fund.

Introduction

The Fund's current rebalancing policy has been set with the objective of avoiding significant drift from the central benchmark, the aim being to have a clear policy in place that is pragmatic and efficient.

Review

This review has been conducted in response to concerns that the current policy results in a high frequency of transactions in volatile markets. These transactions can result in large costs for the Fund. The review covers the following issues.

- Whether rebalancing remains appropriate.
- Alternatives to the fact that, under the current policy, the only way to avoid a large number of transactions is to completely suspend the policy.
- In volatile markets, there is an increased chance that a mechanical policy can result in transactions at inopportune times for a particular asset class.
- Fund of hedge funds do not follow the same rebalancing policy as equity and bond assets.
- Property holdings are currently not included in the rebalancing policy.
- Analysis over the previous three years shows that using wider bandwidths would have significantly reduced the number of transactions.

Recommendations

The review recommends that a policy is maintained by the Fund, subject to the following amendments.

- For equities / bonds, introduce a "two-tiered" set of boundaries:
    - A deviation of between 2% and 5% is subject to a tactical review by the Officers.
    - A deviation of greater than 5% results in automated rebalancing back to at least +/- 2% weighting as default. An additional tactical decision is then taken by the Officers on whether this is fully rebalanced back to the central benchmark allocation or otherwise.
- For the less liquid assets, introduce a "soft" bandwidth at which the allocation should be reviewed and discussed by the Investment Panel no less than six-monthly.
    - Property: +/- 5%
    - FoHF: + 5%

Section One - Overview of rebalancing

Section Summary

- The current rebalancing policy operates with respect to the Fund's growth and bond assets only. Rebalancing occurs based on a mechanical process when both the allocation has deviated by a certain amount and the equity/gilt ratio is favourable. The policy can be suspended during times of high market volatility. The policy is operated and implemented by the Officers of the Fund.
- A rebalancing policy is important as it provides a framework for allocating investments and disinvestments; it avoids large deviation from the strategic benchmark; and potentially allocates away from asset classes that have performed relatively well and allocated to those that have performed relatively less well. However, such a policy can lead to excessive rebalancing during volatile markets; it can lead to chasing a falling market and it doesn't take account of tactical views.

Why have a rebalancing policy?

1.1 Rebalancing policies are commonly used by pension schemes for a number of reasons. Notably, by having some form of framework, it allows a pension scheme's assets to be monitored and managed within acceptable bandwidths around a central, strategic position that has been deemed appropriate for the scheme.

1.2 The pros and cons of a rebalancing strategy have been outlined in previous strategy reports and are outlined again for reference.

Advantages	Disadvantages
✓ Sale of assets that have risen in price (or fallen less than others). **Sell high**	× Chasing a falling market (buying assets that have further to fall)
✓ Purchase assets that have fallen in price (or risen less than others). **Buy low**	× Sell out of a rising market (selling assets that have further to rise)
✓ Avoids significant drift of asset allocation	× Ignores economic indicators
✓ Avoids unintended losses due to this drift	× Potentially ignores common sense
✓ Locks in gains (selling prices that have risen in price)	× Trading leads to transaction costs
✓ Clear process for cashflow management (use cashflow to rebalance)	× The time lag between calculating the rebalancing and implementation
✓ Avoids 'emotion' in assessing asset classes (mechanical process to buying and selling)	× The time taken for governance, monitoring and implementation of the strategy
	× Volatile conditions can lead to excessive trading

Current policy: overview

1.3 The Fund's current rebalancing policy has been set with the objective of avoiding significant drift from the central benchmark, the aim being to have a clear policy in place that is pragmatic and efficient.

1.4 The following table outlines the central benchmark allocation for each asset class, as well as how they are categorised for the purposes of monitoring and rebalancing.

Table 1.1

Category	Asset Class	Central strategic allocation (%)	Asset class (rebalancing)	Underlying asset class allocation (%)
Growth	UK equities	18	Equities	30
	Overseas equities	42		70
	Fund of Hedge Funds ("FoHF")	10		
	Property	10		
Bonds	Fixed interest UK Government bonds ("Gilts")	6	Bonds	30
	Index-linked UK Government bonds ("ILGs")	6		30
	UK Corporate bonds	5		25
	Overseas fixed interest bonds	3		15

Current policy: Alternative asset classes (FoHF and property)

1.5 As outlined in the previous table, the focus for the rebalancing is largely centred on the allocation between equity and bond asset classes rather than growth and bond categories. Namely, **the allocations to fund of hedge funds ("FoHF") and property are not considered in assessing whether to rebalance between the equity / bond split**.

1.6 Whilst not part of the rebalancing policy, the allocations are taken into account when determining whether to reduce the allocation to growth assets within the Fund strategy as a result of any improvement in the funding level. Any required reduction in growth assets is to be applied by reducing the allocation to equities within the Fund benchmark.

1.7 The allocation to FoHF is expected to be monitored on a quarterly basis and if the allocation rises to above 15% of the Fund then the Investment Panel consider if, and how much, it is appropriate to disinvest from the asset class.

Current policy: general rebalancing

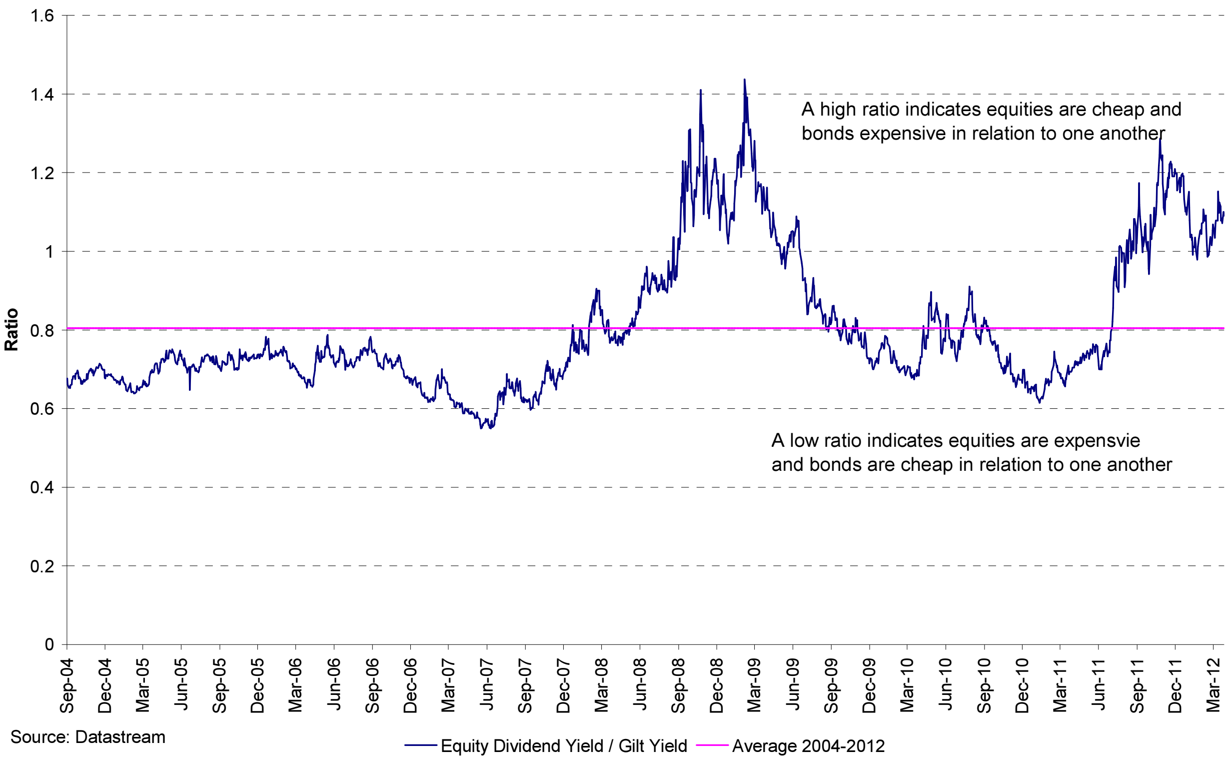
1.8 The asset allocation and subsequent decision as to whether or not to rebalance between equities and bonds is **monitored on a weekly basis by the Officers of the Fund and rebalancing occurs as necessary within quarters.**

1.9 A **deviation of + / - 2% is permitted** after the application of any natural liquidity (i.e. net investments into or disinvestments out of the Fund) between equity and bond assets before rebalancing between the two.

1.10 Furthermore, rebalancing only occurs if the ratio of the equity dividend yield to the bond yield is favourable. That is, if the allocation between bonds and equities implies a switch into bonds, the ratio must be below the long term average for the switch to take place as this implies equities are relatively expensive.

1.11 Similarly, if the allocation implies a switch into equities, the ratio must be above the long term average, as this implies equities are relatively cheap compared to bonds. The following chart demonstrates this.

Chart 1.1



1.12 In the event that a rebalancing transaction is required, assets are moved to correct the asset allocation to the central benchmark allocation.

1.13 **Cashflows applied to / from the bond portfolio are used to rebalance the bond portfolio back to its constituent benchmark weights**.

- If, following this rebalancing, the allocation to the different types of bonds falls outside the strategic benchmark ranges as detailed in Table 1.1, then the bond portfolio could potentially be rebalanced back to its benchmark weights by selling the overweight bonds and purchasing the underweight bonds. This could be monitored quarterly but is not expected to occur outside of the normal rebalancing using cashflows and may also incur unnecessary trading costs.

- Any tactical allocation, for example between corporate bonds and gilts, overrides the long term strategic benchmark allocation until such time as it is reversed.

1.14 **Rebalancing within the equity portfolio is done back to the strategic benchmark, taking into account performance of active managers**. If there are concerns with specific managers or if there is a preference to increase the allocations elsewhere, this can be taken into account at the point of rebalancing. In the absence of such views, it is sensible to continue using the passive portfolio for rebalancing as transaction costs are expected to be lower.

1.15 If the 35% limit on life fund investment restricts the amount that can be invested with BGI then the investment should be applied to either the Fund's UK equity or overseas equity managers, depending on which area is most underweight.

Potential issues with the current policy

1.16 The current policy has a number of potential issues that have become apparent given the market experience over recent years.

1.17 One issue is that, with a fully mechanical process, the **frequency of rebalancing** can become high in volatile markets. Trading physical assets (both purchases and sales) incurs trading costs; commission, stamp duty, administration charges etc.

1.18 Furthermore, as the physical settlement of trades is not instantaneous (e.g. equity typically has a 3 day settlement period), there is a risk from potential "out of market" exposure over the settlement period. Some analysis of the rebalancing frequency under the current policy is included in the analysis section of the report (Section Four).

1.19 At present, the only way to avoid frequent trading triggered by market movements is to completely suspend the rebalancing policy (although use of the equity dividend yield / gilt yield ratio also avoids, to some extent, very frequent trading). However, this is not ideal as it leaves the Fund open to significant deviations from the central benchmark allocation over time.

1.20 There are broadly two ways that this can be dealt with.

- The rebalancing bandwidths are widened such that they are not breached as frequently.
- A process could be derived which allows some form of tactical overlay from the Officers of the Fund. This is explored in the following section (Section Two).

1.21 A further potential downside of the current policy is that it **does not include FoHF or property** within the standard rebalancing, instead relying on a periodic review by the Officers. Given the nature of these investments (i.e. long term investment horizon and typically less liquid than the other growth assets used by the Fund), even relatively infrequent transactions could be detrimental or impractical for the Fund.

1.22 The risk with completely omitting this from the process is that the strategic allocations could potentially deviate significantly, either at the total Fund level or within the growth portfolio. The treatment of alternative assets is discussed in more detail later in the report (Section Three).

Section Two - Incorporating tactical views

Section Summary

- Whilst simple to follow and implement, a mechanical rebalancing process may lead to trading at inopportune times for particular asset classes. As such, it may be desirable to incorporate tactical views.
- The recommendation is for a layered rebalancing policy with "soft" rebalancing points at which the Officers reflect their tactical views (having taken advice from the Investment Consultant) in their implementation of any rebalancing, and wider "hard" rebalancing points at which the Officers undertake compulsory rebalancing.
- The Officers should set and implement the tactical views within the agreed framework to overcome the practical difficulties that would otherwise arise such as the Committee's ability to make tactical decisions on rebalancing relatively quickly and also quantifying these views. To assist the Officers with the latter, JLT's and the investment managers' tactical views on various markets could be referenced.

2.1 As outlined in the previous section, the current policy is a mechanical, rules-based process. This has the advantage of being easy to follow but has a number of weaknesses, notably the increased frequency of rebalancing transactions required in more volatile markets.

2.2 In addition to the various transaction costs, there are other disadvantages of mechanical rebalancing triggers.

2.3 The timing of a triggered rebalancing transaction may be inopportune. For example, pricing spreads on corporate bonds are currently fairly wide which may suggest that, given the choice, switching regularly into or out of corporate bonds would not be preferable.

2.4 Another example would relate to the short-term outlook for a particular asset class. Over recent months, the yield on gilts has fallen to historically low levels. If the Officers held the view that these were going to rise imminently (and the value fall), it may not be preferable for an automated rebalancing policy to invest cash flows into gilts.

2.5 Aside from timing, the extent of the rebalancing should also be considered. The current mechanical process is that any rebalancing transactions that take place are conducted so as to rebalance to the central strategic allocation. This is overridden by other tactical decisions, for example the current decision to switch gilts into corporate bonds.

How to incorporate tactical views

2.6 One way to avoid these issues is to allow some flexibility in the process for the Officers (with advice from the Investment Consultant) to input their tactical views as an "overlay" to the mechanical process. This would go some way to avoiding some of the issues outlined above.

2.7 However, in taking tactical positions, we need to ensure that this does not undermine the overall aim of avoiding significant deviations from the strategic benchmark.

2.8 In order to balance this, we propose that a layered structure could be a beneficial approach to take at each point the rebalancing of assets is monitored. An example of how this could be structured is outlined below.

- **< 2% deviation: no action required**
- ("soft" rebalancing point) **2% - 5% deviation: tactical review and decision**
- ("hard" rebalancing point) **> 5% deviation: automated rebalancing back to at least the +/- 2% weighting as default** with additional tactical decision on whether this is fully rebalanced back to the central benchmark allocation or otherwise.

2.9 As well as tackling a number of the issues outlined above, this structure has the advantage of widening the automated trigger points to avoid overtrading but including more frequent monitoring of smaller deviations.

2.10 At the hard rebalancing point of 5%, caution should be applied in taking a default position of just rebalancing to the outer band of +/- 5%. This is because, if only rebalancing to the outer limit, it is quite likely that the position could again deviate more than 5% by the following review point and, therefore, need to be considered again.

2.11 Instead, our suggestion is that when the hard rebalancing point of >5% is hit, the default approach should be to rebalance to the soft rebalancing point of +/-2%.

Practicalities

2.12 There are a number of practical issues to be considered if including a tactical element to the rebalancing process.

2.13 One fundamental issue is that it is relatively **difficult to assess and quantify these tactical views**. There is no particularly quick fix to this issue given its subjective nature but there are a number of things which can be used to help.

2.14 JLT Investment Consulting and JLT's dedicated asset management arm, JLT Investment Management, regularly discuss and outline short term, tactical views on different markets. These discussions are monthly and give a "rating" for the outlook for different equity regions, bond assets etc. An example of this output is included below.

TAG views – April 2012

Asset type	Strongly Negative	Negative Outlook	Neutral	Positive Outlook	Strongly Positive
Equity					
UK			●		
US			● ←		
Europe (ex UK)		●			
Japan				● ←	
Asia Pacific (ex Japan)			●		
Emerging			●		
Frontier					●
Bond					
UK Government (long)			●		
UK Corporate (Investment Grade)				●	
Overseas Bonds (Sovereign)		●			
High Yield					●
Emerging Market (US$)				●	
Emerging Market (Local)					●
Index Linked					
Property			●		
Cash		●			

Strongly positive

- **Frontier markets** - there is the likelihood of continuing above average growth in economic activity. Valuations have been knocked by political events during 2011, and now look attractive for more growth oriented clients (but beware liquidity)
- **High yield bonds (largely US)** - with no prospect of interest rates rising significantly, if at all, in the next year and the reduced likelihood of default given the pick up in economic activity, the returns available look worth the extra risk, but be selective on credit quality.
- **Emerging market (local currency) bonds** - despite some interest rate concerns, given the rapid growth being seen in some emerging economies (with associated inflationary concerns) as with high yield bonds, we believe the returns available are worth the additional risk.

Positive outlook

- **Japan** - the rapid recovery in corporate activity and profits from the lows seen after last March's earthquake and tsunami, valuations look cheap relative to the rest of the region. However, recent good performance has meant a reduction to our view.
- **UK corporate bonds (investment grade)** - with the interest rate outlook stable, and inflation likely to fall, the returns available make the sector a preferable alternative to cash.
- **Emerging Market bonds (US$ denominated)** - similar arguments to UK corporate bonds above.

Neutral outlook

- **UK equity** - reduced from a 'Positive Outlook' to neutral. The recent rally has left the market waiting for 'new news' which seems unlikely to materialise in the near-term. Equities currently seem range-bound in the high 5000s – a decline to the lower end of the range would provide another buying point
- **Emerging Market equity** - Reduced from a 'Positive Outlook' to neutral. As in the UK the rapid bounce-back in share prices needs more positive news to continue, which seems unlikely in the short-term given, inter alia, the mixed signals coming out of China.
- **US equity** - valuations do not look expensive but we have reduced to a neutral view until there are clearer indications on the economy. In the short term markets look to be up with events.
- **Property** – there are some concerns in the short-term but too late to sell and yields still attractive relative to cash.

Negative outlook

- **Europe (ex UK) equity** - we are still negative on the outlook for economic activity, and therefore corporate earnings over this timescale.
- **Overseas sovereign bonds** - risks on the downside if their "safe haven" status comes under threat
- **Cash** - no possibility of receiving any type of return, let alone a real return, although perhaps a safe haven.

Other Comments

- **Commodities** – At present, the TAG believes that both Oil and Gold prices will trend higher as 2012 progresses, with possible implications for other assets.

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2.15 This could be shared with the Officers on a monthly basis to assist in forming their own tactical views on what extent of rebalancing should take place.

2.16 Additionally, a key source of information would be the Fund's investment managers who will regularly form short term views on markets as part of their ongoing portfolio management.

2.17 In the new proposed process, the equity dividend / gilt yield ratio should no longer be applied mechanically as its original purpose is being now being addressed by the tactical views. The Officers and Investment Consultant may of course still choose to make reference to the ratio in helping to determine the tactical view.

2.18 The frequency of rebalancing monitoring is a crucial point. At present, the asset allocation is monitored weekly for rebalancing purposes.

2.19 In introducing a tactical overlay to the process, another key consideration is the **timeliness of decisions**. In order for the process to work effectively, the Officers would need to form their views on any required rebalancing transactions soon after the effective rebalancing point. Any significant lag undermines the aims of the policy as it leaves the asset allocation open to drift.

2.20 For information, whilst JLT's tactical views are constructed on a monthly basis, they are not usually published until around mid-month. At present, we have not discussed with the Fund's investment managers what information they could provide and in what format this would be. Whilst these are not a necessity for a tactical overlay process to work, we do believe it would be a useful resource to be factored in to the decision making.

Practicalities

2.21 The right to suspend the policy until the Committee can be consulted should be retained although this is not expected to occur as often given the proposed wider bandwidths.

2.22 However, given the wider ranges, it is important that deviation from the hard rebalancing range does not persist for an extended period of time otherwise the experience of the fund could be significantly different to that of the strategic benchmark.

Section Three - Less liquid assets

Section Summary

- At present, property is not covered by the rebalancing policy and the FoHF has a different policy to the equities and bonds; namely that this is monitored rather than being included in a mechanical process. This is due to the illiquid nature of the assets which means that regular transactions are either difficult, costly or inappropriate.
- To avoid the risk of significant drift to the underlying allocation to growth funds, the recommendation is that the allocations are regularly reviewed by the Officers and rebalancing conducted at their discretion (in consultation with the Investment Consultant and Chair).

3.1 At present, the allocations to property and FoHF are not included in the ongoing rebalancing.

3.2 With highly liquid assets, trading costs are relatively low (with the exception of where stamp duty applies) and the volumes traded mean that any rebalancing can be undertaken:

- quickly;
- cheaply; and,
- in a manner that is unlikely to “move the market”.

3.3 In the case of property and FoHF, this is not typically the case. With both of these assets, redemptions from the funds are slow to realise and pricing spreads can make this costly. In terms of new money, whilst it is relatively simple to allocate to FoHF, the drawdown period for new money to be invested in physical property can be slow.

3.4 The current policy for these asset classes is outlined below.

- **Property**: The nature of the property investment is such that its allocation is not rebalanced. Investment income received from the underlying properties may be allocated elsewhere if appropriate.
- **Fund of Hedge Funds ("FoHF")**: Rebalancing of the FoHF element of the investment strategy is only considered, at a quarter end, if market movements have led to the weighting to be greater than 15% of the total Fund assets (i.e. central benchmark + 5%). The higher deviation from the benchmark (relative to other measures in place) reflects the lower liquidity of the asset class compared with bonds and equities.

3.5 One crucial point to note with the FoHF rebalancing policy is that this is not necessarily mechanical. Instead, rebalancing is only considered when the guideline is breached.

Review of policy for illiquid assets

3.6 If held in isolation, it would not normally be advisable to have a large number of transactions either into or out of either of these asset classes. However, as outlined previously, the potential risk of having no rebalancing policy across a broader investment strategy is allocation drift over the long term. This is also the case if implementing particularly large rebalancing bandwidths.

3.7 In this case, the potential downside of the drift has the specific effect of reducing the liquidity profile of the growth assets relative to what is expected or needed. More generally, this could result in underperformance due to unintended over or underweight allocations to different asset classes.

3.8 Therefore, we believe there is value in maintaining or adopting some form of rebalancing policy for the FoHF and property holdings respectively. That said, recognising the difficulties for frequent transactions on these asset classes, we need to accept that these bandwidths will need to be widened or that monitoring of these elements is less frequent to avoid excessive trading. As such, a policy for rebalancing these assets should be seen as maintaining the strategic allocation over the medium term whilst avoiding frequent small transactions in the short term.

Recommendation for rebalancing policy for illiquid assets

3.9 It appears sensible to adopt a pragmatic approach to the rebalancing of these assets with a discretionary element on timing that can take into account tactical views.

3.10 Our proposal is therefore that triggers for review are set for both property and FoHF investments and that any breaches are brought to the Investment Panel no less than six-monthly.

- **Property: +/- 5%**
- **FoHF: + 5%**

3.11 Consistent with previous advice given, we are not recommending a lower bound to the FoHF investment as we are seeking to take profits from increased investment values, i.e. investment growth. In addition, FoHF are expected to provide regular positive returns, unlike equities where values can be more volatile, as demonstrated by recent markets.

3.12 At present, JLT does not publish short term views on hedge funds. This is primarily because these are very much long-term investments given their absolute return nature which means that regular movements into and out of the asset class are not typically advisable.

3.13 However, the information produced by JLT does cover the other asset classes used by the Fund and, therefore, this can still be a useful input to the Officers' decisions as for every rebalancing disinvestment, there is a counterbalancing investment into another asset class.

3.14 Whether or not JLT's tactical views are incorporated, this highlights an important point in that the relative attractiveness of asset classes should be borne in mind with all tactical decisions taken. For example, if the default approach dictates that the required corrective trade is to sell equities and subsequently buy property but the Officers are bullish on equities, the tactical view may override the automated approach.

Rebalancing of the illiquid asset classes should be separate to the equity / bond rebalancing process

3.15 One of the key aspects of the strategy is the allocation between bond and growth type assets. This allocation is set based on the structure of the Fund's liabilities and is, therefore, fundamental to the investment strategy. That is, should the rebalancing decision be based on the total growth assets actual allocation versus the total growth assets strategic asset allocation?

3.16 Our view is very much that this should not be the case. That is, the decision to rebalance between bonds and equities as discussed in the previous section should be kept separate from the rebalancing process for the illiquid asset classes.

3.17 Whilst a policy to rebalance the overall bonds / growth allocation just using the equity and bond assets would avoid the trading difficulties and costs of property and FoHF, the downside of this is that it leaves the underlying allocations open to substantial drift over time. For example, if the policy dictated that the growth allocation needed to be reduced over a number of consecutive quarters, this would mean disinvesting from equities over and over again. This could substantially increase the weighting to property and FoHF within the growth assets, thus changing the structure of this part of the portfolio.

3.18 In recognition that the greatest downside risk comes when asset values are at their highest (and therefore most overweight relative to the investment strategy), we do believe that it is appropriate to periodically review the allocation to the less liquid asset classes.

Rejecting a mechanical approach

3.19 A mechanical approach similar to the existing policy used for equities and bonds is not appropriate for these asset classes, even if using wider bandwidths.

3.20 Whilst the frequency or rebalancing transactions would be reduced, the risk of dealing at inopportune times in the market is still present.

3.21 Also, depending on the extent of the rebalancing required, it may be inappropriate for the less liquid assets. For example, if the transaction required is to disinvest a small amount from property, the benefit to the Fund may be outweighed (or naturally dissipated) by the length of time required to realise the assets.

Section Four - Analysis

Section Summary

- This section includes a back-test of the proposed rebalancing policy based on market data for the three years to 31 March 2012. The examples generated demonstrate the potential benefits of widening the bandwidth for automated transfers as well as incorporating a tactical overlay. However, it is recognised that it is not possible to perfectly back-test the subjective element of this process.

4.1 In this section we provide analysis to demonstrate how the proposed rebalancing policy would have operated over the past three years, compared to the current policy.

4.2 Given the proposed flexibility and introduction of tactical decisions as an overlay to the mechanical process, the results of this analysis may be different to the action that may have been taken. Namely, it is impossible to definitively say what course of action would have been decided on at each historic point when a tactical decision rebalancing point (or "soft trigger") was breached. These decisions may have affected the subsequent asset allocation and, therefore, the analysis.

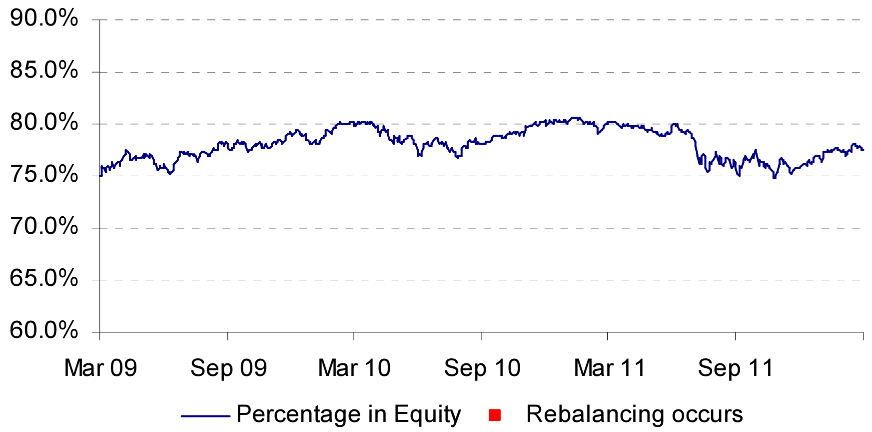
4.3 In back-testing the proposed policy, there are a number of different metrics that can be assessed:

- The number of events at which either the soft or hard trigger was breached.
- The asset allocation / return from the proposed strategy relative to no rebalancing.
- The impact of different ranges on the previous two points.
- The impact of different frequencies of monitoring (quarterly, monthly etc).

No rebalancing

4.4 For comparative purposes, the chart below shows how the allocation to equities would have changed over time had the scheme not had a rebalancing policy in place. [Starting portfolio value is £100]

Chart 4.1 - No rebalancing



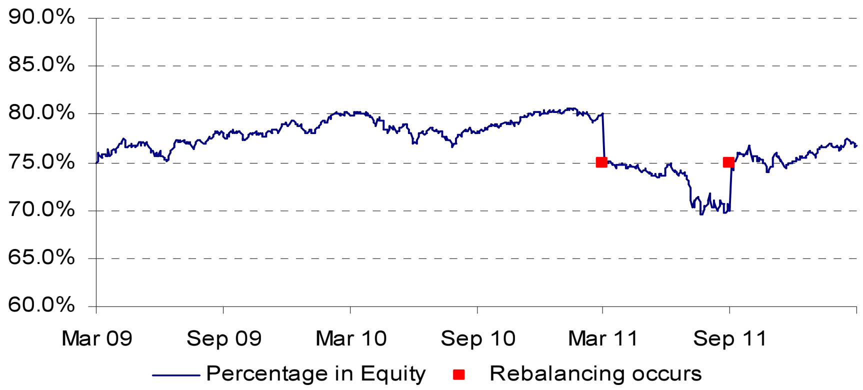
Final portfolio value	£157.37

Mechanical-only transactions: back to central allocation

4.5 The following charts show the change in value of a notional portfolio over the last three years with the starting allocation set as the Fund's central benchmark allocation, excluding the illiquid asset classes. That is (as in chart 4.1 also), the starting portfolio is £75 invested in equities and £25 invested in bonds. The rebalancing policy is centred around the equity / bonds split and ignores FoHF and property allocations. A number of assumptions are made:

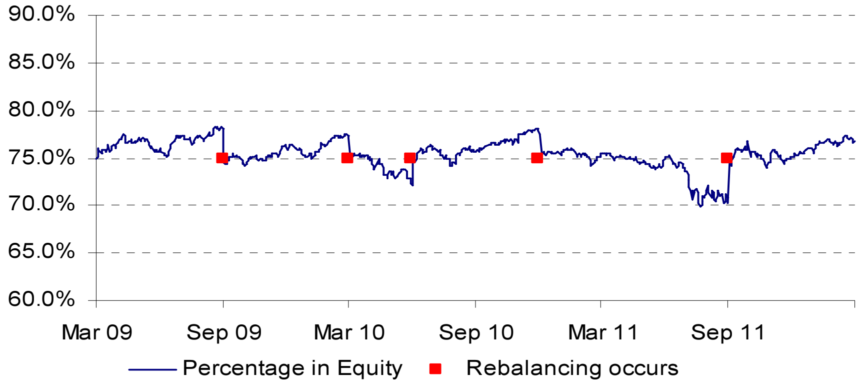
- The frequency of rebalancing is quarterly.
- Transaction costs are included within the rebalancing transactions.
- No discretionary or tactical decisions are allowed for in the analysis at this stage and the portfolio is rebalanced to the central benchmark allocation when triggered.

Chart 4.2 - Hard rebalancing trigger at 5%; rebalanced to central benchmark allocation



# rebalancing transactions	2
Final portfolio value	£159.43

Chart 4.3 - Hard rebalancing trigger at 2%; rebalanced to central benchmark allocation



# rebalancing transactions	5
Final portfolio value	£159.09

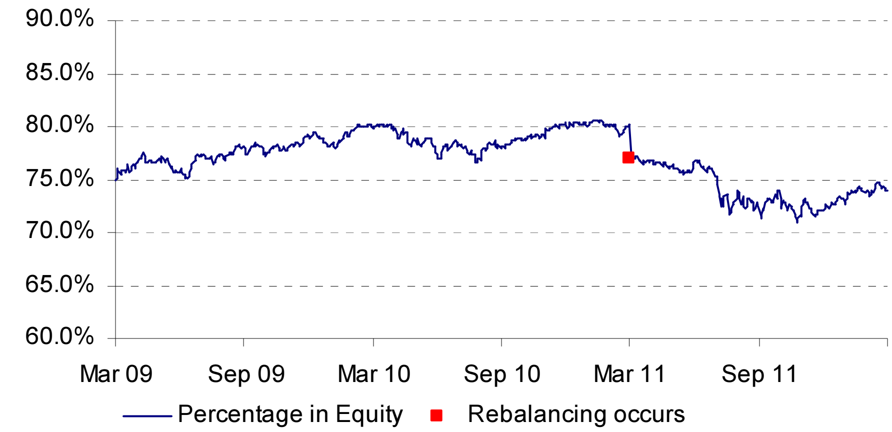
4.6 As expected, the tighter rebalancing trigger of 2% results in more frequent rebalancing transactions. Based on the market experience of the past three years, the resulting portfolio value would have been marginally higher had a 5% trigger point been in place.

4.7 Chart 4.3 gives an indication of the frequency of tactical trigger points that may have been hit. However, is difficult to assess how the tactical views would have been implemented in the short term and it should be noted that this is skewed by the fact that the portfolio is rebalanced at every trigger point.

Mechanical-only transactions: back to soft rebalancing point

4.8 The following chart shows the impact of a mechanical process where the hard rebalancing point is set at +/- 5% but, when triggered, the allocation is only moved back to the +/-2% soft rebalancing trigger point.

Chart 4.4 - Hard rebalancing trigger at 5%; rebalanced to soft rebalancing trigger of 2%



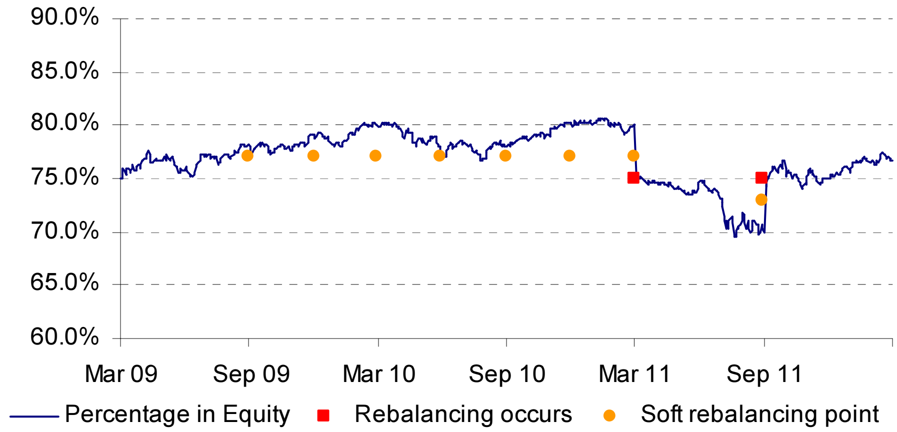
# rebalancing transactions	1
Final portfolio value	£158.27

4.9 In this example, as the allocation to equities is only reduced to the soft rebalancing point of +2% when triggered rather than to the central allocation, there are no further hard rebalancing triggers (i.e. compared to chart 4.2). Whilst very specific to the historic data used, this does demonstrate one of the potential benefits of a layered policy in that it can potentially reduce the number of transactions required to manage the policy. However, it does lead to a lower end portfolio value than if just rebalancing to the central allocation.

Tactical review points

4.10 For comparative purposes, the following chart assumes that automated rebalancing only takes place at +/- 5% and also that the asset allocation is allowed to drift at every tactical review.

Chart 4.5 - Hard rebalancing trigger at 5%; rebalanced to central benchmark allocation



# rebalancing transactions	2
# soft rebalancing points hit	8
Final portfolio value	£159.43

4.11 Comparison of Chart 4.4 and Chart 4.5 demonstrates that a tactical view may or may not be beneficial. For example, rebalancing at March 2011 to the central allocation (as in chart 4.5) was beneficial to the portfolio value relative to rebalancing back to the 2% target (as in chart 4.4). However, the orange points show that not rebalancing when the soft rebalancing point was reached is beneficial (i.e. comparison to chart 4.3).

Illiquid asset classes

4.12 Using the same starting point and market data as above, there were no breaches of either illiquid asset class rebalancing limit at any of the rebalancing points. Moreover, neither of the allocations breached their respective review boundary at any point in the analysis over the past three years.

Allocations 31 March 2009 - 31 March 2012	Permitted Range	Minimum allocation	Maximum allocation
Property	5% - 15%	8.1%	10.0%
Fund of Hedge Funds	0% - 15%	8.5%	10.2%

Summary & key results

4.13 As with any back-testing using historical data, it should be borne in mind that past performance and market movements are not necessarily a guide to the future.

4.14 However, the analysis in this section demonstrates a number of potential benefits, particularly that the proposed +/-5% hard rebalancing bandwidth should reduce the number of automated transactions over time and also that a tactical overlay could potentially be used to benefit the portfolio value. It also provides flexibility to deal with different types of market conditions, which is not shown in only using a 3 year period.

4.15 Some of the key results from the analysis are as follows.

- The final portfolio value with no rebalancing was lower than any of the rebalancing policies above.
- Widening the hard rebalancing point from +/-2% to +/-5% reduced the frequency of automated transactions.
- In the above example (between charts 4.4 to 4.5), rebalancing to the soft rebalancing point rather than to the central allocation detracted from value. This shows the potential for tactical decisions to both add and detract value. Whilst this is a very short period over which to assess strategies, it highlights that it is appropriate that the range over which tactical decisions can be taken is small.
- Assuming a starting allocation of the central benchmark, there were no breaches of the proposed "review" trigger points for the illiquid assets. These allocations stayed relatively close to their benchmark weighting throughout the three year period.

Section Five - Summary of Rebalancing Policy

Equities / Bonds

5.1 For equities / bonds, the proposed structure is a two-tiered rebalancing policy, incorporating tactical views.

- A deviation of between 2% and 5% is subject to a tactical review by the Officers.
- A deviation of greater than 5% results in automated rebalancing back to at least +/- 2% weighting as default. An additional tactical decision is then taken by the Officers on whether this is fully rebalanced back to the central benchmark allocation or otherwise.

5.2 These positions will be reviewed as required based on market events and on at least a quarterly basis.

5.3 After consultation with the Fund's Investment Advisors, Officers will be required to collate tactical views. Depending on availability, information available from the Fund's investment managers and JLT's short-term, tactical views may be taken into consideration to assist with this.

Illiquid assets

5.4 For the less liquid assets, introduce a "soft" bandwidth at which the allocation should be reviewed and discussed by the Investment Panel no less than six-monthly.

- Property: +/- 5%
- FoHF: + 5%

Appendix

A.1 We have used index data rather than actual manager returns, as this report does not look at the case of rebalancing between investment managers of the same brief. We have used the following indices, with the data being provided by Thomson Reuters (total return index simply means that the indices take account of dividends, coupons and other income being reinvested).

- UK Equity – FTSE ALL Share Total Return Index
- Overseas Equity – FSTE AW All World ex UK Total Return Index
- Gilts – FT Actuaries Over 15 Year Gilt Index Total Return Index
- Index Linked Gilts – FT Actuaries Over 5 Year Index Linked Gilts Index Total Return Index
- UK Corporate Bonds – iBoxx Non-Gilts Over 15 Year Index Total Return Index
- Overseas Fixed Interest Bonds – JP Morgan Emerging Market Bond Global Composite Total Return Index
- FoHFs – Credit Suisse / Tremont Hedge Fund – Net Asset Value – Index
- Property – UK Investment Property Databank (Time Weighted) Index

A.2 Further information on these indices is available upon request. However, we consider them to be a fair proxy to typical benchmark returns for these asset classes, albeit with the obvious caveat that actual investment manager performance can significantly differ to the benchmark.

A.3 Within our analysis, we have taken account of the transaction costs of rebalancing. These costs will depend on the market conditions and the investment managers involved. However, we consider the following a reasonable proxy:

- UK Equity – 0.8%
- Overseas Equity – 1.0%
- Gilts – 0.2%
- Index Linked Gilts – 0.2%
- UK Corporate Bonds – 1.0%
- Overseas Fixed Interest Bonds – 1.0%
- FoHFs – 1.0%
- Property – 4.0%

A.4 We have also assumed that the cost of selling each asset class is the same as the cost of purchasing. This is a simplistic assumption though one that will still give results reflective of the actual costs of rebalancing.

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