

# **Institutional Demand For Investment Classes – Is There A Supply Problem?**

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Demand for Investment Classes*

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# Institutional Demand For Investment Classes – Is There A Supply Problem?

*The paper begins by analysing the current investment marketplace dimensions by investment class, incorporating both UK and international markets data. We then review the size of new issues in key markets before considering non-traditional assets including structured products and investment vehicles such as market neutral or absolute return funds, and how demand for these assets might change over the next few years.*

*Next we look at the current structure of UK institutional investors' holdings by asset class and review how these have evolved over the past 10 years. We then analyse recent changes in the drivers for institutions who are investing to meet future liabilities, particularly pension funds and life insurers, and consider how they might alter their asset allocations over the next few years. We conclude with an analysis of likely market impact over the next few years due to asset allocation changes, based on anticipated changes in institutional demand for investment classes.*

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# 1 Introduction

- 1.1 The purpose of the paper is to consider the factors affecting the likely demand for investment classes by UK institutions over the next few years, and consider whether asset allocation decisions are likely to be constrained by supply-side issues, via the price of assets.
- 1.2 One individual's demand for an asset is another individual's opportunity to supply it, and therefore we begin by overviewing the supply of existing assets, primarily those where deep and liquid markets exist. We also look at the supply of new assets, before reviewing recent changes in demand by UK institutions and considering how their demands might evolve over the next few years.
- 1.3 We have used data sources which quantify the size of existing sources of supply and demand, and how these have evolved in the past few years. For some asset classes, such as UK government bonds, there are published projections of future supply, although these can be subject to frequent revision. For most asset classes, however, there is little available data on future supply and our analysis is necessarily subjective.
- 1.4 Future demand for asset classes by UK life insurance companies and pension funds is subject to considerable uncertainty as it is particularly dependent on the extent and rates at which they decide to increase or decrease their exposure to both UK and overseas equities. Structured products and non-traditional investment vehicles such as market neutral or absolute return funds are also becoming more common, as is private equity, although to some extent these developments may not greatly alter the underlying asset allocations of UK institutions. We therefore overview non-traditional assets and consider how they might be utilised by institutional investors.
- 1.5 In the following sections we review recent changes in institutional investors' asset allocations over the past few years, and current trends, before attempting to forecast how these might change over the next five years. In doing so, we consider whether the size of potential changes in asset allocations is likely to lead to significant changes in the prices of assets in response to changes in the demand for investment classes.
- 1.6 A number of data sources were used to prepare this paper and these are listed in Appendix C. Any errors or omissions are our own, as are any views or opinions expressed in this paper. Thanks are due to Jan Coetzee, Susan de Rosa, Scott Eason, Norbert Fullerton, Patrick Hewlett, Nick Horsfall, Malcolm McIvor and Hetal Popat.

# 2 Market Dimensions

## Global Marketplace

- 2.1 The primary source of supply of investments to institutions is from the existing stock of investments. Whilst there is a continuing stream of new issues in virtually all of the asset classes we look at, these typically alter the volume of outstanding stocks by only a small percentage each year.
- 2.2 The figures in existence are more robust for listed equities and bonds, and there is some subjectivity about the size of the cash and commercial property markets. For venture capital and alternative assets the figures are often subject to a degree of commercial sensitivity, and the available data is less robust and subject to longer reporting delays.
- 2.3 A relatively small proportion of institutional investment occurs in residential and other non-commercial property, and this is similarly true for non-financial assets such as commodities. These assets have therefore been excluded from our analysis. It is possible that the levels of institutional investment in such assets may increase to a modest level over time via hedge funds and market neutral funds.

**Table 1. Global Marketplace**

Asset Class	World	UK	US	Europe ex-UK	Japan	Asia ex-Japan	Other
	\$bn	\$bn	\$bn	\$bn	\$bn	\$bn	\$bn
Equities	31,330	2,426	14,266	6,217	2,953	3,571	1,896
Government bonds	19,266	470	4,898	5,713	5,808	832	1,546
Non-government bonds	29,425	1,650	15,409	7,989	2,144	813	1,421
Commercial property	4,734	361	1,598	1,262	600	825	88
Venture capital (est)	807	136	453	58	10	100	50
Alternative investments	1,167	120	654	323		35	35
Cash	7,354	447	3,950				
<b>Total</b>	<b>94,083</b>	<b>5,610</b>	<b>36,625</b>	<b>19,774</b>	<b>11,505</b>	<b>6,041</b>	<b>6,386</b>

Sources:

- (i) Equities: World Federation of Exchanges, Dec 2003
  - (ii) Bonds and cash: BIS quarterly review, Sept 2003 (Domestic), Dec 2003 (International bonds)
  - (iii) Property: UBS Warburg, Swiss Re Sigma, April 2002
  - (iv) Venture capital: USA – NVCA, UK – BVCA, Europe – EVCA, Asia – Asia Venture Capital Journal (June 2003). Values estimated from annual flows and return data to Dec 2003
  - (v) Alternative investments data: AFSR/Correctnet, Dec 2003
- 2.4 Table 1 provides an indication of the relative sizes of the major asset classes in the global marketplace, by nationality of issuer. The total value of the world investment marketplace is estimated at approximately US\$94trn at the end of 2003, although the

size estimates for the property, venture capital and alternative investment classes are subject to fairly wide margins.

2.5 The US non-government bonds figure includes some \$5.0trn of mortgage-related debt and a further \$1.6trn of asset-backed securities (ABS). Similarly, the UK figure includes some \$50bn in ABS. We estimate mortgage-related debt and ABS to comprise some 10% of European non-government bond issues. The UK and European mortgage and ABS markets are growing very quickly; there was virtually no issuance prior to 1997, in contrast to the US markets which began expanding a decade earlier.

2.6 Non-government bond issuance is becoming increasingly dominated by financial institutions. This is illustrated by BIS data at December 2003 where total international bond issues were \$11.7trn of which \$8.5trn were issued by financials. Similarly there were \$38.5trn of domestic bonds at September 2003 of which \$18.1trn were issued by governments and \$15.5trn by financials. The growth of financial issues reflects the growing usage of securitisation. A side effect of this trend is an increasing concentration of risk as the number of bond issuers reduces.

2.7 For UK institutions, their primary focus for bond investments will be those which are sterling denominated. Table 2 gives a breakdown of total market values of sterling debt securities at September 2003 (*source: BIS*).

**Table 2. Sterling Debt Securities**

	End Sept 2003 \$bn
International issues	699.7
<i>Floating rate notes</i>	150.3
<i>Fixed interest bonds</i>	539.2
<i>Equity related bonds</i>	10.2
Domestic issues	1,167.8
<i>Government issues (gilts)</i>	466.3
<i>Financial companies</i>	362.9
<i>Non-financial companies</i>	338.6
<b>Total</b>	<b>1,867.5</b>

2.8 The vast majority of domestic issues are fixed interest bonds, although there is a sizeable floating rate note sector. Currently some £79bn (29%) of government bonds are index-linked and only £9bn (1%) of corporate bonds are index-linked. Inflation-linked securities are discussed further in section 4.

## Derivatives

- 2.9 Derivatives have been excluded from Table 1, since the data represents underlying investable assets rather than derived assets such as futures, options or swaps. In general, the total size of underlying derivative exposures is several times the value of underlying assets where there are deep and liquid derivative markets. Underlying equity derivative exposures are an exception to this pattern, and far smaller.
- 2.10 Table 3 shows a summary breakdown of derivative positions on a global basis, using underlying economic exposures, to demonstrate the considerable role that these instruments play in today's financial markets.

**Table 3. Global Derivatives: Underlying Economic Exposures**

	<b>Dec 2001 \$bn</b>	<b>Dec 2002 \$bn</b>	<b>June/Sep 2003 \$bn</b>
FX contracts	16,841	18,534	22,196
<i>OTC</i>	16,748	18,460	22,088
<i>Exchange traded</i>	93	74	108
Interest rate contracts	99,325	123,368	158,391
<i>OTC</i>	77,567	101,658	121,800
<i>Exchange traded</i>	21,758	21,710	36,591
Equity-linked contracts	3,790	4,334	5,629
<i>OTC</i>	1,881	2,308	2,799
<i>Exchange traded</i>	1,909	2,026	2,830
Commodity contracts	598	923	1,041
Other contracts	14,384	18,330	21,952
<b>Total</b>	<b>134,938</b>	<b>165,489</b>	<b>209,208</b>

Source: BIS Quarterly Review

- (i) OTC 2003 data at end June 2003, exchange-traded data at end September 2003.
- (ii) The above figures show the underlying economic exposure of derivative positions. The gross market value of OTC contracts was \$7,908bn (underlying exposure \$169,878bn) at end June 2003.
- 2.11 Currently, credit derivatives are not separately categorised in the BIS statistics, although they are rapidly growing in significance. The estimated economic exposure of credit derivatives at the end of 2003 was estimated to be in the region of \$3.5trn. In its 2001/2002 survey of credit derivatives, the British Bankers' Association estimated that the market size will reach \$4.8trn by the end of 2004. It is notable that the London market represents some 50% of the global total marketplace in this sector.

# 3 Supply of New Investments

- 3.1 The international data that is available about aggregate levels of capital formation in equity and bond markets is subject to a greater degree of measurement error than market capitalisation data. This reflects the difficulty in collating such information since in most markets the bulk of equity finance is raised via companies' treasury operations, placings and rights issues rather than public offerings, and similarly debt finance is generally raised through placings of stock with institutions. As such the available data is likely to understate actual issuance. In our analysis we primarily focus on UK data collated by HM Treasury and the Office for National Statistics.

## Worldwide Equity Issuance

- 3.2 The World Federation of Exchanges collates data from some 50 stock exchanges worldwide, including the key exchanges in major developed and emerging markets. As such this data provides a useful indication of global activity in the securities markets, although there are some gaps in the data. New equity formation in 2002 and 2003 for its member exchanges is shown in Table 4.

**Table 4. New Equity Formation**

Year		World	UK	US	Europe ex-UK	Japan	Asia ex-Japan	Other
		\$bn	\$bn	\$bn	\$bn	\$bn	\$bn	\$bn
2002	New issues	107.0	8.1	31.7	28.4	n/a	26.5	12.4
	Existing issues	214.6	26.3	62.2	42.2	18.0	37.9	28.0
	<b>Total</b>	<b>321.7</b>	<b>34.4</b>	<b>93.9</b>	<b>70.6</b>	<b>18.0</b>	<b>64.4</b>	<b>40.4</b>
2003	New issues	114.1	7.6	33.7	28.1	n/a	27.2	17.4
	Existing issues	247.9	22.6	57.8	62.3	33.9	51.2	20.1
	<b>Total</b>	<b>362.0</b>	<b>30.2</b>	<b>91.5</b>	<b>90.4</b>	<b>33.9</b>	<b>78.4</b>	<b>37.5</b>

- 3.3 Table 5 below summarises the data collated on gross volumes of newly listed bonds on member exchanges of the World Federation of Exchanges.

**Table 5. Gross Bond Issuance**

Year	World	UK	US	Europe ex-UK	Japan	Asia ex-Japan	Other
	\$bn	\$bn	\$bn	\$bn	\$bn	\$bn	\$bn
2001	5,002	263	2,492	1,478	n/a	244	525
2002	5,264	279	2,726	1,824	n/a	265	169
2003	8,550	446	3,000 *	4,623	n/a	312	169

\* Estimate

- 3.4 Figures for issuance net of redemptions are not available for this dataset. It is interesting to note that the total value of listed bonds reduced from \$15.5trn to \$15.3trn during 2002 but rose to \$19.6trn at the end of 2003. In 2002 there were a number of large defaults with the US markets accounting for \$110bn alone (*source: Fitch Ratings*) and significant numbers of downgrades, so although US and European yields fell the market value of existing bonds is likely to have fallen somewhat. Allowing for these factors, it would appear that in 2002 and 2003 net issuance in the bond markets was significantly higher than net equity issuance. Equity issuance was still subdued in 2003 compared to late 1990s levels, despite the equity market recovery. Figures for 2004 may show an upturn in worldwide equity issuance, although net bond issuance levels are likely to be significantly higher.

### **UK Gilt Issuance**

- 3.5 Table 6 shows the UK Government's recent net cash requirements, which approximately corresponds to net issuance of gilts. Between 1998/99 and 2000/01 net gilt issuance was negative, and it is notable that the supply of gilts has increased by some 18% in the past two years.

***Table 6. UK Government – Past Financing Requirements***

<b>Years ending 31 March</b>	<b>Central Government Net Cash Requirement £bn</b>
1999	(4.6)
2000	(9.1)
2001	(35.3)
2002	2.8
2003	21.6
2004	42.3

- 3.6 The UK Debt Management Office publishes regular updates of the UK Government's financing requirements. The March 2004 update, published at the time of the 2004 Budget statement, proposed gilt sales for 2004/05 as follows:
- £15.0bn short conventional gilts
  - £10.5bn medium conventional gilts
  - £14.5bn long conventional gilts
  - £8.0bn index-linked gilts
- 3.7 The March 2004 update from the Debt Management Office also showed illustrative financing requirements in future years as shown in Table 7. This suggests that there will be a gross supply of government debt of about £50bn per annum over the next few years or about £30bn per year after redemptions. This is a significant rise from recent



levels of issuance, and over the 5 year period shown would represent an increase in supply of some £150bn, which may be compared to the market value of gilts of £340bn at the end of 2003.

**Table 7. UK Government – Illustrative Financing Requirements**

Years ending 31 March	2005 £bn	2006 £bn	2007 £bn	2008 £bn	2009 £bn
Central Government Net Cash Requirement	35	33	31	27	23
Redemptions	15	15	24	29	15
Gross Financing Requirement	50	48	55	56	38

- 3.8 Whilst there is likely to be sufficient supply to meet the demands of investors in conventional gilts, it is unlikely that there will be sufficient supply of index-linked gilts to meet the demands of pension fund investors in particular, at least in the short term. At the start of 2004 there appeared to be a strong desire by the Debt Management Office for issuance to be biased towards long conventional and index-linked gilts, so it is possible that over a period of several years the supply issues could be resolved; the gilt yield curve has been inverted for several years.

### **UK Equity and Corporate Debt Finance**

- 3.9 Within the UK, the Bank of England collates information about the levels of new issues by UK corporations, and recent data is summarised in Tables 8 and 9.

**Table 8. Net Capital Issues by UK Companies (including non-UK issues)**

Years ending 31 December	Non-financials		Financials		Total	
	2002 £m	2003 £m	2002 £m	2003 £m	2002 £m	2003 £m
Equities (ordinary shares)	12,334	4,491	4,064	1,800	16,398	6,291
Preference shares	-	-	628	-	628	-
Loan stocks and notes	7,753	8,185	27,806	46,172	35,559	54,357
Totals	20,087	12,676	32,498	47,972	52,585	60,648

**Table 9. Net Issues (Equities and Bonds) in Sterling**

Years ending 31 December	2002 £m	2003 £m
UK companies	35,895	32,297
Non-resident entities	(2,353)	(3,293)
Totals	33,542	29,004

- 3.10 It can be seen from Table 8 that net equity capital formation in the UK in 2003 was only £6bn relative to total market capitalisation of around £1,500bn. This reflects the low levels of issuance in current equity market conditions. Whilst it would be reasonable to assume that issuance will increase to more typical historical levels if P/E multiples rise from current levels, we consider institutional demand for equities in the next few years to be weaker than demand for bonds. Therefore it is possible that equity issuance may only increase slowly from current levels.
- 3.11 New issuance in sterling bond markets in 2003 was far more significant at some £40bn by the Government (Table 6) and £54bn (Table 8) by the corporate sector, which represents some 7% of the total market capitalisation of around £1,300bn for the sterling bond markets at the end of 2003. The sterling bond markets seem likely to experience significant growth in the next few years, largely in response to investor demand and the low real cost of borrowing at the present time.
- 3.12 In the past a significant proportion of sterling bonds (over 25%) have been issued by non-residents, although it is notable from Table 9 that there were very few such issues in 2002 and 2003. This is likely to reflect the greater attractiveness of Euro denominated bonds for such issuers, particularly in view of the currently lower Euro interest rates. In fact it appears that there were greater outstanding volumes of international bond issues denominated in Euros (\$4,836bn) than dollars (\$4,491bn) at the end of 2003, although the US domestic bond sector at \$17,523bn (September 2003) dwarfs both these markets (*source: BIS*).
- 3.13 We anticipate that there will be a high level of demand for corporate index-linked bonds. Arguably, if the supply of index-linked gilts were higher, then this would lessen this demand as similar credit exposure could be obtained using a credit default swap and index-linked gilts. In the short term however there is little likelihood of the shortage of index-linked gilts, particularly at longer maturities, increasing quickly enough to satisfy demand from pension funds.
- 3.14 Whilst we anticipate the sterling corporate inflation-linked bond market is certain to expand rapidly from its current £9bn size, perhaps to 10% or more of the total corporate bond market (currently some £700bn) within the next decade, we anticipate it will still be far smaller than the index-linked gilt market. This will disappoint those pension fund investors who are seeking to match inflation-linked liabilities whilst taking on some credit risk, as a corporate bond market of this size is unlikely to create sufficient supply to reduce the cost of inflation protection significantly.

# 4

## Non-traditional Asset Classes

- 4.1 In this section we review various non-traditional asset classes that liability driven investors might invest in. We have interpreted non-traditional assets rather loosely to mean financial assets other than equity, fixed interest and cash investments. Except for inflation-linked securities, the assets below would not generally be considered to be suitable to match liability payments closely. Many of these assets have low correlations with UK equity and fixed interest investments.

### **Inflation-linked Securities**

- 4.2 Inflation-linked securities are of interest to many liability-driven investors, particularly pension funds. Subject to credit and curve risks, such securities enable inflation-linked liabilities such as pensions in payment or payable in the future to be closely matched. Currently, the largest category of inflation-linked securities is inflation-linked bonds, although the supply of inflation-linked derivatives (primarily swaps) is growing very quickly at present, especially for currencies or durations where no underlying market exists.
- 4.3 At the end of 2003 the market value of listed inflation-linked bonds was approximately US\$560bn, some 85% of which were government issues with the USA (US\$203bn), UK (US\$149bn) and France (US\$64bn) being the largest issuers. The market is growing strongly, and Australia and Italy have recently begun issuing such bonds. In the past couple of years the UK Government has resumed issuing index-linked gilts, after several years of falling supply through redemptions, and over time this should alleviate the shortage of UK supply.
- 4.4 In recent years, the US and UK governments have expressed the view that financing part of a government's borrowing through inflation-linked bonds is beneficial as this can reduce the likelihood of unanticipated tax rises as demand-side economic shocks tend to simultaneously reduce GDP growth and inflation. They would therefore appear to be in favour of increasing the supply of government inflation-linked bonds, perhaps to roughly half of total medium to long term debt. For investors, this is a welcome contrast to the view expressed in the past by some that inflation-linked securities are inflationary in effect as they enable the corporate sector to hedge inflation risks.
- 4.5 Corporate inflation-linked bonds are becoming more common, with a steady stream of new issues. At present they only form a small proportion of total inflation-linked issues by value and liquidity is low. A concern with corporate issues is that the borrowers will ultimately need to repay the outstanding capital plus inflation. To date, the largest issues have therefore been made by the utility sector, where revenue flows are closely linked to inflation and the resulting credit risks are considered smaller. We anticipate that this form of debt financing will be attractive to other companies whose earnings are correlated to inflation, subject to credit concerns by markets being satisfied. Over time, we expect that an increasing proportion of UK corporate bond issues will be inflation-linked.

- 4.6 Inflation-linked derivatives are also growing rapidly in importance, particularly inflation swaps which appear to be one of the fastest growing derivative products at present. To date nearly all such derivatives have been OTC products. This may be changing: in February 2004 the Chicago Mercantile Exchange launched the first major exchange traded product, a US Consumer Price Index future with maturities up to December 2006. If successful, exchange traded products should improve liquidity and the transparency of market pricing.
- 4.7 OTC inflation-linked derivatives generally consist of an inflation swap, exchanging a fixed interest or floating rate income stream for an inflation-linked income stream, often combined with other exposures. Whilst OTC derivatives permit accurate cashflow and duration matching of liabilities, and the ability to add credit and other exposures, this flexibility needs to be balanced against the higher levels of counterparty risk, and the potential difficulty in altering exposures at a later date, compared to exchange traded products. It is worth noting that OTC inflation-linked derivatives exist in markets, and at durations, where there are no underlying assets.

### **Structured Finance**

- 4.8 To date, the USA has developed the largest market for structured finance securities. The UK and Euro markets are relatively small, but there is potential for very rapid growth. The main types of security in the USA are residential mortgage backed securities (RMBS), commercial mortgage backed securities (CMBS), and asset backed securities (ABS).
- 4.9 Conceptually, RMBS, CMBS and ABS are straightforward, packaging an income stream in return for an initial payment by the purchaser of the security. RMBS and CMBS are based on mortgage loans, as their names suggest, whereas the bulk of ABS issues have tended to be based on revenues from credit card, car, home equity and mobile home loans. In the past few years, however, many sub investment grade corporate borrowers have successfully made ABS issues which have securitised revenues from their business activities, including aircraft leasing and manufacture and the manufacture of prebuilt homes.
- 4.10 ABS and mortgage issues are usually issued in different tranches with different credit ratings. The issuer will be aiming to maximise the proportion of securities issued with higher credit ratings, to minimise the cost of financing. Purchasers of these securities need to be particularly alert to declining credit quality in lower tranches, as these can cause their own tranche to be downgraded. It is possible for a “senior” or “super senior” tranche in an ABS issue to have a significantly higher downgrade risk than a diversified portfolio of AAA or AA corporate bonds; careful credit analysis is vital, including “looking through” to the underlying revenue stream.

- 4.11 ABS and mortgage issues have appealed to liability driven investors in the USA and Europe, since the underlying revenues and the corporate bond markets often have relatively low correlations. As such these issues provide useful diversification of credit risk for bond investors. A number of investors have made significant losses on these issues through a lack of appreciation of the underlying risk exposures although this should reduce as these markets mature and investors become more familiar with the credit risks of these products.
- 4.12 Many structured finance securities are issued within a collateralised debt obligation (CDO). A traditional ‘cash’ CDO consists of a special purpose vehicle which has purchased the underlying income stream and is repackaging it into one or more of the above structured finance securities, plus CDO equities and often other securities such as CDO high yield bonds. ‘Synthetic’ CDOs are becoming increasingly common where the underlying income stream has been acquired by selling protection rather than purchased using cash. Synthetic CDOs are quicker and less expensive to set up than cash CDOs as the cost of acquiring the income stream is typically lower and cash requirements at the issuance stage are lower. The economic rationale for CDOs is that issuers of CDOs are able to repackage credit risk in a way which improves transparency and therefore reduces the risk premium demanded by the markets for uncertainty. Liquidity may also be improved, reducing spreads further.
- 4.13 To enhance the credit quality, and hence the rating, of an issue, financial guarantee insurance is common for ABS issues. Insurance will typically cover up to 100% of interest and capital payments due under an ABS on an unconditional and irrevocable basis. This insurance is typically provided by “monoline” financial guarantee insurance companies, who do not engage in other insurance activities. Monoline insurers are selective in the issues they will cover, and historically their losses have been covered by the premiums charged.
- 4.14 In 2001, the claims-paying resources (statutory capital and unearned premiums) of the 10 largest companies who are members of the Association of Financial Guaranty Insurers reached \$20bn (*source: AFGI*). If there are significant ABS defaults it is possible that one or more insurers may default on their policies, reducing insurance capacity and resulting in loss of protection for previously protected ABS issues. However, insurance guarantees tend to cover interest and capital payments when scheduled, so it is relatively unlikely that a particular insurer’s difficulties would create a short-term liquidity crisis in the wider economy.
- 4.15 We anticipate that over time a greater proportion of the UK and European bond markets will consist of ABS and mortgage issues. UK pension funds and life insurers are likely to increase their allocations to these securities over time. It is vital that they understand the credit risks attached to these securities, or delegate these functions to suitable asset managers. An alternative course of action would be to restrict mandates

to exclude these assets, although this may mean that institutional investors miss out on the diversification opportunities that these assets provide.

### **Credit Derivatives**

- 4.16 Credit derivatives are growing rapidly in significance for investors. Like inflation-linked derivatives, they are generally OTC products. Single-name credit default swaps have been in existence for a number of years and by volume these make up the bulk of contracts in force. They are primarily used by banks in their risk management operations to manage their credit exposures to counterparties, and as such they are unlikely to be of great interest to liability driven investors. Their single-name status also creates concentration risks for an investor who does not have a corresponding exposure to the counterparty to “net off”.
- 4.17 Portfolio credit default swaps are a rapidly growing segment of the credit derivative market. These are of far greater interest to liability driven investors as they enable net long credit exposures to be taken on by investors in a diversified manner. A typical portfolio credit default swap will enable an investor to receive the excess income and capital payments paid by a portfolio of corporate bonds or asset backed securities, reduced to allow for defaults on a prescribed basis.
- 4.18 Portfolio credit default swaps can be combined with a portfolio of government bonds to allow cashflow and duration matching of anticipated liability outgo, whereas this is unlikely to be possible using corporate bonds alone due to a lack of issues at all durations. Even with a portfolio of government bonds, the cashflow match may not be ideal, in which case it would be possible to combine the credit exposure with inflation swaps or interest rate swaps to improve the cashflow match. Care is needed with regard to the potential exposure in the event of a swap failure by the investment bank or other counterparty.
- 4.19 We anticipate that usage of portfolio credit default swaps by institutional investors will increase significantly, particularly by those with very mature liability profiles and high bond allocations who wish to cashflow match their liabilities. Provided transaction costs are modest, and the credit risks being acquired are well understood, we see this as a positive development.

## **Project Finance**

- 4.20 A growing trend is for the revenue streams from public sector services or infrastructure projects such as toll-roads to be packaged into marketable securities. The UK Government's policy of increasing private sector involvement in public sector projects through its Private Finance Initiative (PFI) is expected to result in a larger supply of such securities over time, although the potential size of this market is unlikely to ever be more than a small fraction of the size of the UK gilts market. Finance for such projects could be raised in the form of traditional equity or debt finance, or asset backed securities.
- 4.21 The resulting assets will in some cases carry considerable credit risk to investors, as a special purpose vehicle will typically be created for the purposes of the project and there may not be any guarantors. The recent experience of equity investors in EuroTunnel illustrates the potential risks of infrastructure projects. It is however worth noting that the UK PFI encompasses projects covering contracts for the long-term provision of services to the public sector as well as infrastructure projects, and most projects are a combination of the two. These securities are likely to become increasingly common, with institutional investors holding some PFI bonds and equities.

## **Property**

- 4.22 For some years, commercial property has been a declining feature of UK institutional investment, although there has been an increase in asset allocations in the past couple of years as property has performed strongly over recent 5 and 10 year periods relative to worldwide equity markets. A key disadvantage of property is its illiquidity and the relatively high costs of buying, selling and managing property – “round trip” costs in the UK can exceed 7% due to stamp duty and agency commissions.
- 4.23 Recent proposals for several new office towers in London indicate the robust level of UK commercial property markets currently, following low levels of investment in office space during the late 1990s. Pension funds and life insurance companies have recently been finding property more attractive due to its low correlation with equity and bond prices, and the scope for property investments to incorporate elements of both equity and bond investments, depending on the financing structure.
- 4.24 Property funds do not suffer from the illiquidity of direct property investment, although there are often some liquidity constraints and expenses are typically higher than equity and bond funds. For a longer term investor such as a pension fund, even though holdings cannot always be realised quickly at valuation prices, it is likely to be desirable for risk/return reasons to make a modest allocation to property. We consider it unlikely that property would form more than 15% of an institution's holdings.

### Private Equity

- 4.25 Historically, private equity funds have required long term investments of 3 to 7 years, with infrequent valuations. Returns to investors in the early years are likely to be poor until investment opportunities come to fruition. These features, coupled with relatively high management and performance fees, have led to relatively little institutional investment in private equity. This can be seen from the £8.9bn raised by UK venture capital companies in 2003, of which UK pension funds subscribed £0.8bn and UK insurers £0.2bn (*source: BVCA*). The bulk of financing therefore came from individuals and overseas investors.
- 4.26 In the last few years UK institutional investors appear to have become more willing to consider private equity investments, although it seems that only a minority have invested funds in private equity to date. This interest reflects the diversification private equity can achieve relative to listed equities, and the high returns achieved recently. Arguably part of this is an illiquidity premium, which long-term investors would be able to take advantage of.
- 4.27 Funds of private equity funds are also becoming more common, enabling institutional investors to invest in private equity in a diversified and efficient manner, with a potentially lower due diligence requirement. We anticipate that private equity will in time form perhaps 10% or so of institutional investors' total equity holdings.

### Emerging Market and High Yield Debt

- 4.28 Emerging market and high yield debt provide investors with higher yields than investment grade bonds. This higher yield, and potentially higher return, comes at the price of increased default risk and generally lower liquidity, particularly if downgrades are being anticipated by the markets. To date, these assets have tended to be overlooked by UK pension funds and insurers, who have obtained the bulk of their return above 'risk free' government bond levels by investing in global equities. Both these asset types have low correlations with other asset classes, including investment grade bonds.

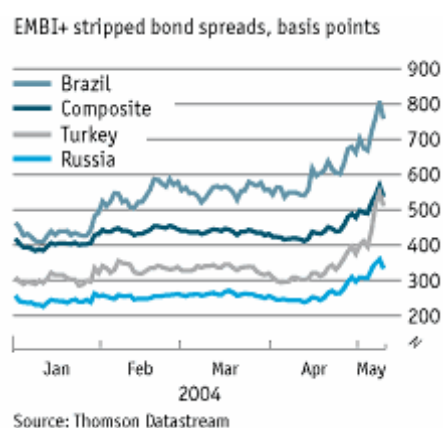
**Table 10. Emerging Market Debt Issues (JP Morgan EMBI+)**

End April 2003	Market value \$bn	Weights %
Latin America	95.6	58.3
Europe	50.3	30.7
Asia	11.3	6.9
Africa & Middle East	6.7	4.1
Total	163.9	100.0



- 4.29 Table 10 shows the size of the emerging market debt market, based on the JP Morgan EMBI+ index, although this excludes over \$1trn in debt issued in domestic markets. Issues are largely denominated in US dollars although a few are denominated in Euros or local currencies. Bonds are typically issued by overseas governments or large corporates, although as noted above not all countries are well represented in this index. For example, China and India form less than 2% and 1% respectively of this class, but had domestic bond market sizes of \$480bn and \$193bn respectively at September 2003 (*source: BIS*).
- 4.30 Credit ratings tend to be lower than BBB, reflecting a mixture of currency, domestic economy and political risks. An example of political risk is the forced ‘pesification’ of Argentinean government and corporate bonds denominated in dollars which resulted in defaults on \$95bn of bonds in December 2001. Litigation is likely to continue for several years in an attempt to improve recoveries.
- 4.31 It is worth noting that the yield spread of emerging market debt over US Treasury bonds can vary significantly over short periods, and therefore these are highly volatile assets at longer durations. An example of this is the Brazil 2040 11% benchmark bond whose price rose from 43 cents per dollar of face value in late 2002 to 120 cents in early 2004, with yields falling from 26.7% to 9.5% in the process. In late April the bond price had fallen to 83 cents. Chart 1 shows the yield spreads on EMBI+ index constituents (*source: The Economist*).

**Chart 1. Emerging Market Yield Spreads (JP Morgan EMBI+)**



- 4.32 Table 11 shows the size of the high yield debt market, based on the Lehman Brothers High Yield Index. The USA has the world’s largest high yield bond market, with issues primarily by domestic corporates. It is likely that the UK and European high yield bond markets will increase in size, although it is unlikely they will grow to the same size as the USA due to differences in bankruptcy laws. A significant proportion of high yield bonds are ‘fallen angels’ with some of the more recent arrivals including

a number of telecom companies. In the USA, in 2002, only 57% of CCC to C issues maintained the same or higher credit rating compared to 83% for BBB to B and 91% for AAA to A rated bonds (*source: Fitch Ratings*). This may be compared to historical one-year default rates of 5% of so for US high yield debt (*source: Lehman Brothers*). Therefore while there may be opportunities for long-term investors to profit by holding such bonds, there is a significant risk of short-term losses through downgrades.

**Table 11. High Yield Debt Market (Lehman Brothers High Yield Index)**

End April 2003	Market value \$bn	Weights %
Europe ex-Euro	15.1	3.0
Euro	42.8	8.4
US	449.6	88.6
Total	507.5	100.0

- 4.33 High yield debt has been an established feature of institutional investment for many years in some other countries, particularly the USA. In part, this reflects the fact that high yield bonds are a way of enhancing portfolio returns when equity investments are not permitted. The recent interest by UK investors has different causes, as it is not based on regulatory arbitrage, and is a genuine attempt to increase the level of portfolio diversification. Some early movers amongst UK institutional investors have begun to make small allocations to high yield debt, and this trend is likely to increase over time, although we do not anticipate that UK institutions are likely to invest more than 5% of their bond portfolios in these assets.

### **Hedge Funds**

- 4.34 The global hedge fund industry has expanded very quickly and is now estimated to manage over \$1trn in assets (*source: HedgeWorld*), although to date institutional investors have not committed significant funds to these managers.
- 4.35 Hedge fund strategies can include various forms of arbitrage (merger, convertible, fixed income, relative value), a variety of equity strategies (long-short, hedged, market neutral) or more diverse strategies such as macro or market timing. The bulk of hedge fund assets are invested in traditional financial assets. Whilst an increased proportion of institutional assets managed by hedge fund managers would not necessarily alter underlying asset holdings significantly, the asset allocation within hedge fund holdings may vary considerably over short periods of time.
- 4.36 Hedge funds have benefited from a growing awareness that traditional long-only investment strategies may not be an optimal way of enhancing investment returns and that long-short strategies can work successfully in diverse market conditions. Arguably, a portfolio of hedge fund returns should be naturally diversified, provided that fund manager styles have been adequately diversified within the portfolio.

- 4.37 Hedge funds have also benefited from the trend of attempting to isolate ‘alpha’, or active manager return, from ‘beta’, or market returns. Under a traditional investment manager mandate, the manager is not able to separate the return in this way using derivatives or short sales. It is not clear that total investor returns can necessarily be enhanced by attempting to separate alpha from beta in this way as there is an argument that there is only a finite amount of alpha in existence. It is important to be aware that part of the alpha may simply be beta which has been transferred from another asset class. Risk adjusted analyses can help in identifying exactly how a manager is achieving their return, and how closely they are following their stated style.
- 4.38 Hedge funds have also been becoming friendlier towards institutional investment in the last few years, partly due to the number of new hedge funds which may be run by established asset managers from traditional investment management backgrounds. Funds are providing their investors with more detailed and timely information on performance, although fees remain high and the extent of leverage within a fund is not always obvious. Hedge fund indices are also becoming more reliable, with a better understanding of survivor bias, although as some of the longer established hedge funds are closed to new funds it is not possible for investors to ‘track’ a hedge fund index.
- 4.39 Funds of hedge funds are becoming increasingly common, enabling institutions to invest smaller sums, achieve manager diversification and reduce the amount of due diligence required to invest in hedge funds. However, this convenience and diversification may come at the price of an added layer of fees.
- 4.40 In our view it is likely that institutional investors will distinguish between equity-based strategies, with medium to high correlations to global equity returns, and arbitrage and economic strategies which would be expected to have a low correlation to both equity and bond returns.
- 4.41 We anticipate that in time perhaps 10% to 20% of pension funds’ equity mandates will be managed on a long-short basis, with specified limits on the levels of leverage and short sales. Pension funds with longer time horizons may also commit up to 10% of their assets to hedge funds following arbitrage, economic and trading strategies in the aim of achieving a potentially high return with a low correlation to index returns on underlying asset classes. Life insurers appear relatively unlikely to invest in hedge funds to such an extent, partly due to regulatory constraints.

# 5

## Global Institutional Investment

- 5.1 We now briefly review the global distribution of funds under management by institutional investors. It can be seen from Table 12 that the UK has a high level of institutional savings compared to other economies of a similar size.

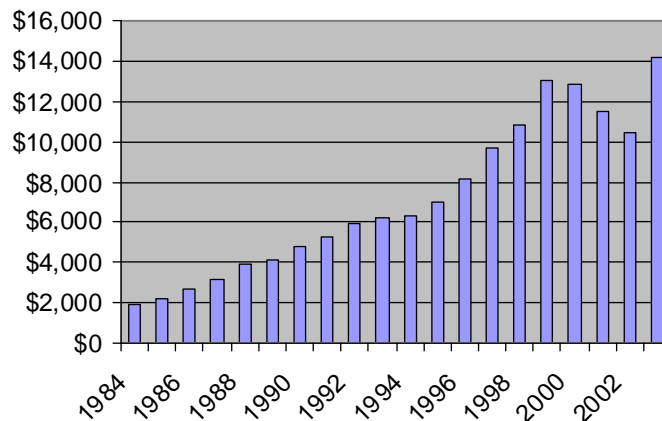
**Table 12. Global Distribution of Funds under Management**

At 31 Dec 2001	Pensions \$bn	Insurance \$bn	Mutual Funds \$bn	Total \$bn
US	7,010	3,947	6,970	17,927
Japan	1,235	1,635	466	3,336
UK	1,200	1,428	363	2,991
France	65	783	705	1,553
Germany	125	838	211	1,174
Netherlands	384	231	83	698
Italy	65	248	356	669
Switzerland	316	205	75	596
Other	1,084	2,185	2,503	5,772
Total	11,484	11,500	11,732	34,716

Source: Merrill Lynch, ING, OECD, Swiss Re, IFSL, InterSec

- 5.2 The financial assets of high net worth individuals were estimated to be \$27.2trn as at December 2002 (*source: Merrill Lynch, Cap Gemini Ernst & Young*). Whilst part of these assets will be invested in the Insurance and Mutual Funds sectors and are therefore included within the figures above, the bulk of these assets consist of direct holdings or assets managed by the private banking sector.
- 5.3 Chart 2 shows the dramatic growth in global pension assets over the past 20 years (*source: World Bank, Watson Wyatt*), particularly between 1995 and 2000. The worldwide decline in equity markets between 2001 and 2003 caused a significant fall in the total value of pension assets, although this has now reversed as positive market returns in 2003 and significant contributions by plan sponsors increased total assets.

**Chart 2. Global Pension Assets (\$bn)**



# 6 UK Institutional Investment – The Last 10 Years

- 6.1 In this section we review changes in UK institutional investors' asset allocation over the past 10 years. This, together with evidence on the supply of assets from preceding sections, is then used in the next section to forecast how existing asset allocations might evolve over the next few years.
- 6.2 The Office for National Statistics compiles the annual SRS series which details the beneficial ownership of UK equities (Table 13).

*Table 13. Beneficial Ownership of UK Equities*

31 Dec													
£bn	Individuals	Charities	Insurers	Pension funds	Investment trusts	Unit trusts	Banks	Other financials	Non-financial companies	Central government	Public sector	Rest of world	Total
1989	104	12	94	155	8	30	3	6	19	10	10	65	516
1990	91	8	91	140	7	27	3	3	13	9	9	53	454
1991	105	13	110	166	8	30	1	4	18	7	7	68	537
1992	125	11	120	200	13	38	3	3	11	11	11	81	627
1993	141	13	160	252	20	53	5	5	12	10	10	130	809
1994	155	10	167	212	15	52	3	10	9	6	6	124	768
1995	No data collated												
1996	No data collated												
1997	209	24	299	280	24	85	1	26	15	1	1	304	1,269
1998	251	20	326	326	29	46	8	61	21	1	1	415	1,505
1999	276	24	390	354	35	48	18	91	40	2	2	530	1,809
2000	290	25	381	321	39	31	26	83	27	1	1	587	1,811
2001	230	16	311	250	35	28	20	153	15	1	1	496	1,555
2002	166	13	230	180	21	19	24	121	9	1	1	370	1,155

- 6.3 It is interesting to note that between 1990 and 1997, overseas ownership of UK equities doubled from 12% to 24%, and was over 32% at the end of 2002. At the same time, individuals' ownership has reduced from 20% to 14%, pension funds' ownership reduced from 30% to 16% and life insurers' ownership increased from 18% to 20%, having reached 24% in 1997. These trends are explored further below.
- 6.4 The Office for National Statistics collates detailed data on UK institutional investment in its MQ5 series. This series is published quarterly, with statistics showing the market value of assets held class, for different categories of institutional investor. Statistics on cash inflows and outflows are also included.

- 6.5 The MQ5 series has been subject to criticism in the recent past due to flaws in its sampling methodology, and there was a significant restatement of net investment figures in 2001. This serves to illustrate the difficulties in creating a definitive dataset at a national level.
- 6.6 Table 14 shows that life insurers' holdings of UK equities have been steadily increasing over time, from just over half the level of pension funds in 1990 to a level which is now higher than pension funds'. This reflects the increasing importance of unit-linked funds, as with-profit funds have significantly reduced their equity holdings following equity market falls between 2001 and 2003.
- 6.7 It is interesting to note that a significant proportion of life insurers' equity holdings represent defined contribution pension savings. It is unlikely that equities are used to back other types of pension saving in the insurance sector, such as annuities in payment or deferred annuities.

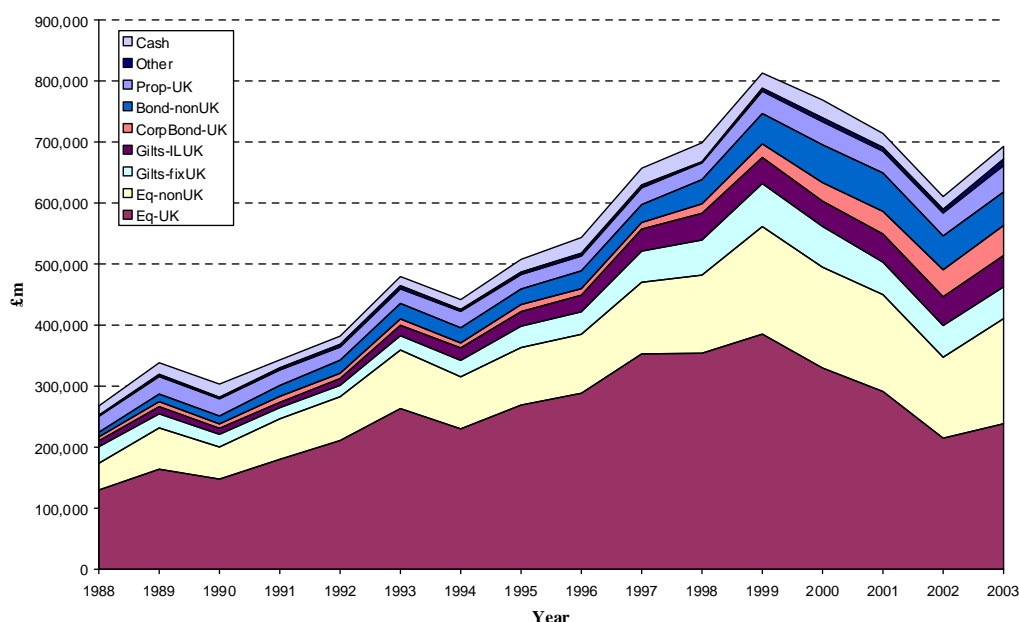
***Table 14. Institutional Holdings of UK Equities***

At 31 December	Unit Trusts £bn	Investment Trusts £bn	Pension Funds £bn	General Insurers £bn	Life Insurers £bn	Total £bn
1990	25.5	9.9	147.7	7.9	81.0	272.0
1991	29.5	10.6	180.1	7.4	101.9	329.5
1992	33.4	12.8	211.0	7.4	122.1	386.6
1993	49.7	14.9	263.2	10.3	166.5	504.6
1994	43.3	15.9	229.8	10.1	159.4	458.7
1995	59.1	19.4	269.1	12.8	199.2	559.6
1996	67.5	25.0	288.4	13.4	223.2	617.6
1997	85.7	27.9	352.7	15.0	283.2	764.6
1998	93.3	24.6	354.0	13.2	305.0	790.1
1999	119.5	28.0	385.2	13.1	369.9	915.6
2000	116.8	33.5	329.6	11.1	358.3	849.3
2001	103.7	30.3	291.3	10.1	312.1	747.6
2002	82.9	19.5	214.6	6.8	230.8	554.4
2003	n/a	25.1	238.5	8.6	267.3	n/a

## Pension Funds

- 6.8 Chart 3 below shows how the holdings of UK self-administered pension funds evolved between December 1988 and December 2003. It should be noted that this excludes a significant proportion of UK pension assets which are held by insurance companies, as noted in 6.7 above. Currently some 10% of pension fund holdings are estimated to be in respect of defined contribution benefits, with virtually all of the remaining assets backing defined benefit liabilities (hybrid benefits only form a small proportion of total liabilities).

**Chart 3. UK Pension Fund Holdings Dec 1988 – Dec 2003**



- 6.9 Pension fund assets have increased from £268bn to £693bn over this 15 year period, having reached a peak of £813bn at the end of 1999. UK equity holdings have increased considerably from £130bn to £238bn, but it is interesting that pension funds have been significant sellers of UK equities since 1999, since holdings reached £385bn at the end of 1999 and are now some £238bn lower, with only part of this reduction accounted for by market falls. Whilst equity values have fallen significantly from 1999 levels, holdings of overseas equities by value are now very close to their 1999 peak.
- 6.10 Tables 20 and 21 in Appendix A show the asset allocations for funds who participated in the Russell Mellon CAPS and WM Company surveys of UK pension fund investment. These surveys show slightly higher levels of equity investment currently than ONS data, due to sample differences. These two surveys have a bias towards smaller and medium sized funds.

**Table 15. UK Pension Fund Holdings (ONS)**

At 31 December	Total assets £bn	UK equities %	Total equities %	UK gilts %	UK corp bonds %	UK IL gilts %	Total bonds %	Other %
1993	479.5	54.9	74.9	4.9	2.2	3.5	15.9	9.2
...								
1997	656.9	53.7	71.6	7.8	1.6	5.5	19.4	9.0
1998	698.7	50.7	69.0	8.2	2.2	6.3	22.4	8.7
1999	813.1	47.4	69.0	8.7	2.7	5.3	22.8	8.2
2000	768.9	42.9	64.4	8.7	4.0	5.4	26.1	9.6
2001	713.9	40.8	63.0	7.5	5.2	6.5	27.9	9.0
2002	610.4	35.2	56.9	8.5	7.2	7.7	32.6	10.5
2003	692.8	34.4	59.2	7.5	7.1	7.4	30.0	10.8

- 6.11 Based on the above, it is reasonably likely that UK pension funds' aggregate holdings of UK and overseas equities will reach parity within the next few years, as UK equities already form only 58% of total equity holdings. This is a significant change from the 70/30 or 2/3:1/3 allocation between UK and overseas equities which many UK pension funds have historically followed. It should be noted that defined contribution assets will have a much higher UK bias.
- 6.12 Further international diversification of equities is likely to continue due to increased concentration in the UK equity market, although this is perhaps more of an issue for passive than active strategies. Also, there is now a general acceptance within the UK actuarial profession that neither UK nor international equities are a closer match for future inflation or salary growth than other financial assets, except over long periods (and with significant volatility). This implies that, in the main, equities are held by pension funds for their prospective risk/reward profile, and international diversification is helpful in this respect.
- 6.13 Overseas equities expose UK investors to currency risk however, and the most significant risks of these are the \$/£ and €/£ risks, which can be hedged at relatively low cost (0.05% per annum is a typical figure for the frictional cost). Arguably, once these two currency risks have been hedged, there is little to gain by hedging exposures to other currencies, particularly as the costs of doing so can be significantly higher than 0.05% pa.
- 6.14 One counterargument to hedging is that appreciating (and depreciating) exchange rates tend to dampen (or increase) domestic stock market levels, and therefore a hedged overseas equity position behaves somewhat differently in its risk/return characteristics compared to a domestic equity or unhedged overseas equity position. Nevertheless, the



hedging of currency exposures by liability driven investors to reduce the volatility of overseas equity returns relative to domestic liabilities is increasing.

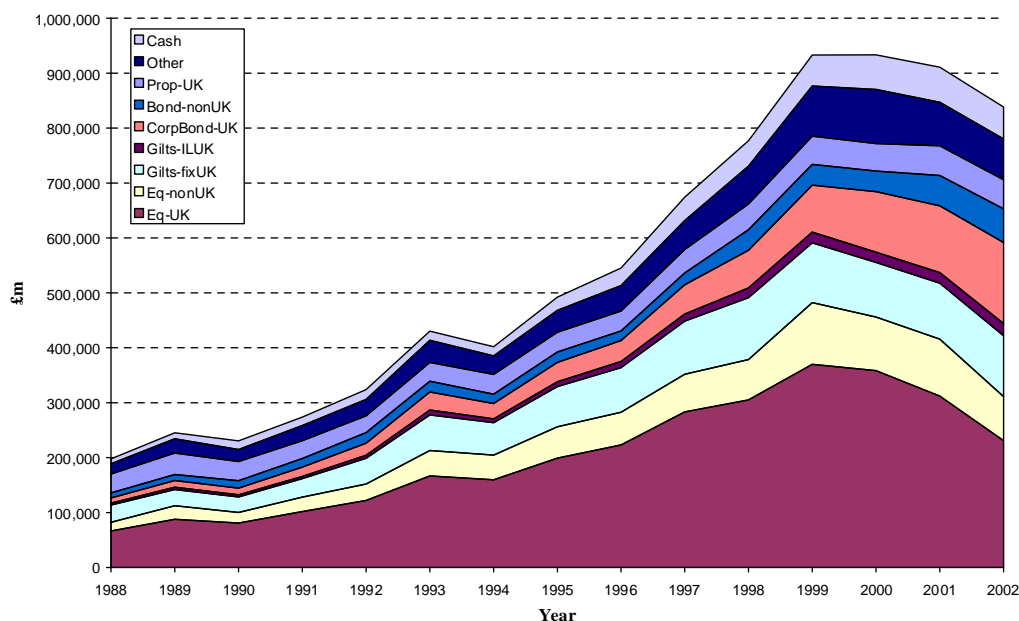
- 6.15 The NAPF represents the largest self-administered pension funds in the UK, and has some 460 member funds with some £600bn of assets. At the end of 2003, only some 200 of these were defined benefit schemes that were open to new members although historically the vast majority have been open defined benefit schemes. Similarly, the JPMorgan Fleming 2004 Defined Contribution survey found that of the top 350 UK pension funds which provided some defined benefit pensions, 61% were closed to new members or had restricted availability.
- 6.16 Therefore it is clear that many large UK pension funds, which historically were open defined benefit schemes, are now closed defined benefit schemes with sponsors offering defined contribution pensions to new employees. Some sponsors have taken the further step of stopping defined benefit accrual, with all future accrual on a defined contribution or hybrid basis.
- 6.17 In the short to medium term we anticipate the trend from equity to bond investment shown in Table 15 above to continue as defined benefit funds become cashflow negative and their liability durations reduce. In the longer term this may be mitigated by growth in defined contribution funds within the pension funds sector. However, this will depend very much on the proportion of future defined contribution pension provision which is made within the pension funds sector as opposed to the life insurance sector. We expect the bulk of future defined contribution pension saving to take place in the insurance sector through “contract-based” pension plans rather than traditional “trustee-based” pension funds.
- 6.18 There is a growing interest by defined benefit pension funds in matching their liabilities by duration and cashflow. This is particularly true for larger, closed funds which are maturing and becoming cashflow negative, although the trend is not restricted to these funds. A number of pension funds are considering using derivative-based strategies to improve liability matching. In effect a pension fund would match all or part of its liabilities using bonds plus interest rate or inflation-linked swaps, with credit or other risks being taken on to increase expected returns either using bonds or embedded within the swap.
- 6.19 Whilst swap-based strategies do not necessarily alter underlying asset allocations, it is reasonable to assume that bond allocations will increase slightly as a result of implementing such strategies, most likely at the expense of equity investment. Significant equity disinvestment is unlikely, as most of the pension funds seriously looking at matching are relatively well-funded, with high bond allocations already. Less well-funded pension funds are likely to be more concerned about funding levels than matching liabilities, at least in the short term.

- 6.20 Other pension funds are increasingly exploring their ability to gain exposure to investment risk whilst reducing their equity market risk, via market-neutral or hedge funds, and to a lesser extent, through private equity investment. There is some evidence to suggest that market-neutral strategies exhibit lower volatility relative to pension liabilities (or the RPI) than long-only equity strategies. Whilst proponents claim higher returns over the long term than long-only equity strategies, evidence of this is inconclusive.
- 6.21 Where pension funds invest in market-neutral or hedge funds, and private equity investments, in our view these investments will be financed through disinvestment of equity holdings, primarily UK equities. However, there are limits on the ability of these investment classes to accept new funds and assets invested with the managers of these investments are typically held in cash until suitable investment opportunities arise. Therefore the pace of disinvestment from equities may be relatively slow, unlike equity/bond switches which can take place within a matter of days (although some market impact may be inevitable if this is part of a wider trend).
- 6.22 Offsetting the above trends from UK into overseas equities, and equities into bonds and alternative assets, is the growth in defined contribution provision in the UK. Defined contribution assets are typically invested in a high proportion of equities in the pre-retirement phase, and members of these plans tend to allocate a much higher proportion of their equity holdings to UK equities than overseas equities.
- 6.23 In time, these defined contribution plans will begin to pay out benefits so they will no longer be net purchasers of equities as they approach maturity and contributions are offset by outflows due to retiring members purchasing annuities, although this is perhaps ten or more years away. The statistics for pension funds are unlikely to clearly show these effects as members of defined contribution plans typically purchase annuities with insurance companies. Also, we anticipate the bulk of future defined contribution pension saving in the UK will take place within the insurance sector.
- 6.24 If the UK requirement to purchase annuities at retirement is removed or scaled back, then we may anticipate that individuals with defined contribution savings will maintain a degree of equity investment in retirement.

## Life Insurance Companies

- 6.25 Chart 4 below shows how the holdings of UK life insurance companies evolved between December 1988 and December 2002. The chart covers non-profit, with-profit and unit-linked business combined, and is summarised in Table 22 in Appendix A.

**Chart 4. UK Life Insurance Holdings Dec 1988 – Dec 2002**



- 6.26 The ONS data does not separate the asset holdings of linked and non-linked life office funds, although the ABI collates this information. Table 16 sets out how the asset allocations of linked and non-linked funds differ. It is worth noting that of the £800bn of life insurance assets at the end of 2002, some £477bn was estimated to be defined contribution pension savings (59%), whilst £246bn was in respect of life insurance savings products (31%) (*source: Watson Wyatt*). We estimate £60bn of the remaining assets to back annuities in payment, after allowing for reinsurance, with the balance largely representing reserves for protection products.
- 6.27 It can be seen from Table 16 that some 48% of non-linked funds were invested in bonds at the end of 2002, compared to 22% of linked funds. Although a number of with-profit funds were forced sellers of equities during the equity market falls in early 2003, the December 2003 figures are likely to show a small reduction in bond allocations due to equity markets rising some 20% during 2003.
- 6.28 A Watson Wyatt survey of life insurers' asset allocations as at December 2003 suggested that with-profit funds (total size £269bn) and long-term funds (total size £58bn, excluding with-profit funds) had bond allocations of 40% and 56%

respectively. This would imply an overall bond allocation of some 43% for non-linked funds.

**Table 16. UK Life Insurance Holdings Dec 1999 – Dec 2002**

At 31 Dec	Total assets £bn	UK equity %	Non-UK equity %	UK fixed gilts %	UK IL gilts %	UK corp bonds %	Non-UK bonds %	Property %	Cash/ other %
<b>Total funds</b>									
1999	886.3	47.4	14.2	11.9	2.3	9.0	2.5	6.1	6.5
2000	924.3	44.7	14.1	11.4	2.6	10.8	2.6	6.5	7.3
2001	861.0	39.3	13.2	12.3	2.6	12.4	3.6	7.2	9.4
2002	804.1	33.4	11.4	14.0	3.2	14.4	6.3	8.2	9.1
<b>Linked funds</b>									
1999	335.3	53.1	19.3	7.8	3.8	2.4	1.6	2.1	9.8
2000	363.8	50.7	21.4	8.1	4.7	2.8	2.0	2.2	8.1
2001	341.2	48.6	21.3	8.1	5.2	4.1	2.0	2.5	8.1
2002	318.8	45.9	19.9	9.2	6.2	4.9	2.0	3.2	8.8
<b>Non-linked funds</b>									
1999	551.0	43.7	11.4	14.4	1.4	13.0	2.9	8.6	4.5
2000	560.6	40.4	9.8	13.6	1.2	15.9	3.0	9.3	6.7
2001	519.9	32.9	8.1	15.1	0.9	17.7	4.6	10.3	10.3
2002	485.4	24.9	6.1	17.2	1.2	20.6	9.1	11.5	9.4

- 6.29 As noted above, several with-profit funds were sellers of equities during early 2003. The bulk of these proceeds were used to purchase investment grade corporate bonds as this switch reduced the size of their statutory liabilities, and hence improved their statutory solvency. There are two reasons for this: firstly the maximum discount rate under valuation regulations is based on the yield on the underlying assets, less adjustments for credit risk and liquidity risk (unless the assets are deemed to be held until maturity), and secondly the stochastic methods used to reserve for maturity guarantees penalise equity investment. As such these sales were not carried out for purely investment reasons, and almost certainly exaggerated equity market falls for short periods until the excess supply had been absorbed by markets.
- 6.30 The UK Financial Services Authority is in the process of supplementing the historical statutory reserving regime for with-profit funds with a realistic reserve measure. The new “twin peaks” regime is likely to be in place later in 2004 and will be mandatory for with-profit funds with liabilities over £500m. It is anticipated that the realistic measure will include some allowance for credit defaults and liquidity risks in asset holdings, reducing incentives for insurers to invest in higher yielding corporate bonds.

- 6.31 Chart 5 below shows how credit spreads on long dated AA rated bonds have reduced in the past few years as life insurers have increased their corporate bond and non-gilt holdings significantly. Interestingly, spreads have widened since the start of 2004, and this appears to have been by other investors anticipating changes in life insurers' holdings of higher yielding bonds. As the new regulations are not finalised, it is unlikely that life insurers have yet begun to alter their asset holdings in response to the regulations.

**Chart 5. Sterling AA Bond Yield Spreads (Dec 2000 to April 2004)**



- 6.32 Many with-profit funds are finding that new business increasingly consists of short to medium term single premium policies with onerous maturity guarantees, rather than traditional long term regular premium policies where the policies supplied capital for other activities until close to maturity. With-profit endowment and pension savings products are also in long-term decline relative to unit-linked products. This reflects a combination of consumer preferences for increased transparency, the relative tax inefficiency of with-profit savings compared to Individual Savings Accounts, and the declining returns on with-profit policies in the past few years. This last factor reflects the lower levels of free assets in with-profit funds, lower bond yields and falls in equity values since the late 1990s.
- 6.33 The above issues are a major source of concern to mutual life insurance offices who have historically “borrowed” virtually all of their working capital from their with-profit policyholders. As this supply of capital diminishes, due to changes in new business composition and changes in regulatory requirements, it is likely that new sources of capital will need to be found by mutual insurers.

# 7

## UK Institutional Investment - The Next 6 Years

- 7.1 To simplify the analysis in this section we have assumed that the UK will not have joined the Euro by the end of 2009. If the UK joins the Euro then it is likely that portfolios will be adjusted over a period of time so that the UK proportion of “domestic” Euro stocks in life insurers’ and pension funds’ assets reduces. Perhaps more significant than the realignment of portfolios is the extent of any strategic change in overall Euro allocations relative to current combined Euro and sterling allocations, as it would be reasonable to assume that reduced demand for UK based stocks by UK investors would be broadly offset by increased demand from existing Euro markets once UK stocks became Euro stocks.

### **Future Demand for Asset Classes**

- 7.2 We have estimated the future levels of demand over the next 6 years for asset classes under two scenarios. Clearly there is significant uncertainty here, and therefore we have shown two scenarios in this section, with a further four scenarios included in Appendix B, all of which are in our view plausible outcomes. Our scenarios assume the following trends over the next 6 years to the end of 2009:

- Defined benefit pension provision continues to decline, with defined contribution pension provision becoming the norm (except in the public sector, which is largely unfunded).
- Modest real growth in defined benefit assets within the pension fund sector, due to benefit accrual and deficit contributions from plan sponsors to improve funding.
- Significant reduction in equity investment by the pension fund sector, with a decline in UK equity allocations to 50% or less of total equity, and some allocation to private equity. Bond allocations are assumed to be broadly 75% fixed interest, and 25% index-linked, due to a continuing shortage of index-linked bonds.
- Modest real growth in defined contribution assets within the pension fund sector and strong growth in the insured sector (primarily linked life funds).
- Modest decline in total life funds, largely due to run-off of with-profit funds. By early 2010 non-profit business, particularly annuity business, dominates the non-linked life sector as with-profit business levels have reduced from 2003 levels.
- Non-linked life funds increase their bond allocations further, particularly to UK corporate bonds, as with-profit policies mature. Linked life funds retain their current high equity bias.

- 7.3 Whilst not modelled in our scenarios, we anticipate the unit trust and investment trust sectors will continue to grow rapidly, at a similar rate to the linked life sector. The unit trust and investment trust sectors had total assets of £240bn at the end of 2002 and annual net investment rates over the 10 years to December 2002 were in the region of 6% pa of assets at the start of each year (*source: ONS*).

- 7.4 Table 17 below summarises current UK institutional holdings, split into pension funds, linked life funds and non-linked life funds. This is our starting point for modelling.

**Table 17. UK Institutional Holdings – Current Position**

	Assets		Asset allocation		
	Pension funds £bn	Life funds £bn	Pension funds	Non-linked life funds	Linked life funds
UK equity	238.5	230.8	34.4%	24.9%	45.9%
Non-UK equity	172.0	80.2	24.8%	6.1%	19.9%
UK fix int gilts	52.0	110.7	7.5%	17.2%	9.2%
UK IL gilts	51.6	22.4	7.4%	1.2%	6.2%
UK corp bonds	48.9	147.5	7.1%	20.6%	4.9%
Non-UK bonds	55.1	61.3	8.0%	9.1%	2.0%
Property	43.2	53.0	6.2%	11.5%	3.2%
Cash	20.6	58.1	3.0%	3.0%	3.0%
Private equity/other	10.8	74.3	1.6%	6.4%	5.8%
Total	692.8	838.2	100.0%	100.0%	100.0%
Total assets (£bn)			692.8	503.0	335.2

Note: Pension assets Dec 2003, Insurance assets Dec 2002 (ONS). Insurance allocations Dec 2002 (ABI)

- 7.5 Based on the above initial position, we have constructed two scenarios under the following possible rates of growth in the three institutional sectors above (relative to GDP growth).
- GDP growth in the UK of nominal 4% pa (inflation 2.5% pa)
  - UK pension fund assets grow by 1% pa relative to GDP between 2003 and 2009
  - UK non-linked life assets fall by 8% pa relative to GDP between 2002 and 2009
  - UK linked life assets grow by 6% pa relative to GDP between 2002 and 2009
- 7.6 Scenario 1 has been constructed to give an outer bound to the likely extent of any changes, whereas Scenario 2 can be considered to be our best estimate of likely changes over the next 5 years. Table 18 shows the estimated asset allocations at the end of 2009 under the two scenarios. Appendix B shows the impact of the same two scenarios, but with different rates of growth in the underlying three institutional sectors.
- 7.7 To allow for investment income and capital growth, we have assumed that property and equity assets achieve a total nominal return of 7% pa and other assets a return of 5% pa. Income and redemption payments are assumed to be reinvested.

**Table 18. UK Institutional Holdings in 2009 – Scenarios 1 and 2**

Asset allocation	Scenario 1 – Large change			Scenario 2 – Moderate change		
	Pension funds	Non-linked life funds	Linked life funds	Pension funds	Non-linked life funds	Linked life funds
UK equity	16.0%	10.0%	46.0%	24.0%	10.0%	46.0%
Non-UK equity	22.0%	4.0%	20.0%	24.0%	4.0%	20.0%
UK fix int gilts	11.75%	22.0%	9.0%	9.75%	22.0%	9.0%
UK IL gilts	11.75%	4.0%	6.0%	9.75%	4.0%	6.0%
UK corp bonds	11.75%	28.0%	5.0%	9.75%	28.0%	5.0%
Non-UK bonds	11.75%	12.0%	2.0%	9.75%	12.0%	2.0%
Property	10.0%	12.0%	3.0%	8.0%	12.0%	3.0%
Cash	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Private equity/other	2.0%	5.0%	6.0%	2.0%	5.0%	6.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

7.8 Under the above two scenarios, we find that net inflows and outflows from the various asset classes are as follows over the next 6 years:

**Table 19. Estimated Institutional Cashflows 2004 to 2009 – Scenarios 1 and 2**

Institutional cashflows over 6 year period £bn	Scenario 1 – Large change				Scenario 2 – Moderate change			
	Pension funds	Non-linked life funds	Linked life funds	Total	Pension funds	Non-linked life funds	Linked life funds	Total
UK equity	-143	-122	110	-155	-69	-122	110	-80
Non-UK equity	-6	-24	48	18	13	-24	48	37
UK fix int gilts	49	-21	23	51	31	-21	23	32
UK IL gilts	50	8	15	72	31	8	15	54
UK corp bonds	53	-20	14	47	34	-20	14	28
Non-UK bonds	46	-10	6	41	27	-10	6	22
Property	40	-29	6	17	21	-29	6	-1
Cash	4	-7	8	6	4	-7	8	6
Private equity/other	5	-22	15	-2	5	-22	15	-2
Total	97	-247	246	96	97	-247	246	96

7.9 The cashflows above may be compared to the sizes of the various asset classes in the UK and overseas. There is clearly little likelihood of UK institutional cashflows



impacting on overseas markets to any material extent, although price movements may occur over short periods if outflows or inflows are large.

- 7.10 The cashflows in Table 19 are far more likely to impact on domestic markets, particularly under Scenario 1 where there are significant sales of UK equities (some 11% of current supply) and purchases of UK index-linked bonds (some 90% of current supply) over a 6 year period. In practice, if there is insufficient supply of index-linked bonds, then it is likely that inflation-linked swaps will be used to meet some of the demand, and that investors will invest in other type of bond, as the market price of index-linked bonds will rise to compensate for the shortage of supply. Given the volumes of issuance described in section 3, we do not anticipate any market impact on fixed interest bond prices as a result of these allocation changes.
- 7.11 In our view, UK equity sales of 11% of current supply over a 6 year period by the institutional sector should not materially depress equity prices for any significant length of time, assuming a gradual change. This assumes that the UK investment and unit trust sectors will remain net purchasers of UK equities, particularly as with-profit savings declines, as well as continuing interest in UK equities by overseas investors.
- 7.12 Depending on the pace of sales, it is quite possible that if experience is similar to Scenario 1 then there will be periods over the next 6 years when the prices of UK equities fall due to institutional sales, or more likely that price rises are halted due to institutional sales. If experience is closer to Scenario 2, then we would not anticipate institutional sales to materially affect UK equity prices.
- 7.13 It should be noted that our scenarios assume a fairly rapid decline in non-linked life funds due to decline of with-profit savings. We have also assumed that the adjustment of with-profit funds to lower equity allocations as a result of the new regulatory regime is largely complete, with only gradual change likely as funds begin to run-off. If this is not the case, then it is possible that there may be periods of price adjustment in the UK equity markets. Our modelling indicates that the growth in defined contribution pension savings is likely to lead to defined contribution pension plans purchasing the UK equities sold by defined benefit pension funds and non-linked life funds over the next few years.

#### **Other Changes**

- 7.14 In addition to the asset allocation changes outlined in the scenarios above, we anticipate that the trends outlined below will be seen in the pension fund and insurance sectors.
- 7.15 Larger, more mature pension funds are likely to use inflation-linked swaps together with fixed interest and index-linked bonds to match their inflation-linked liabilities

accurately by duration and cashflow. Smaller funds will tend to purchase annuities for retired members to discharge these liabilities.

- 7.16 Similarly, we anticipate that many pension funds will seek to match their pension payments closely using a combination of government bonds and swaps, but then obtain further credit exposure through credit default swaps. It is important that pension funds understand any credit risks that remain after these transactions, and the shape of their asset holdings in the event of the investment bank counterparty defaulting on the swap. Furthermore pension funds should be aware that their eventual return may be lower than if they had invested only in investment grade or government bonds.
- 7.17 We do not anticipate significant usage of swaps by insurance companies to match their liabilities, except for financial reinsurance. This reflects the difficulties in simultaneously satisfying the “twin peaks” of the regulatory regime, and the large reinsurance markets which serve their needs already. Also, as life insurers already have greater holdings of corporate bonds than government bonds, it is unlikely that they would seek to obtain further credit exposure through credit default swaps.
- 7.18 An increased awareness of currency risk is likely to lead to a greater usage of currency hedging, with some investors seeking additional return through currency overlays. This can be seen to be a natural consequence of the increasing levels of overseas equity investment, and a turning point is likely to be when an investor’s allocation to domestic equities falls below 50% of their total equity holdings.
- 7.19 Funds of hedge funds and private equity funds are likely to become more common, with pension funds using these vehicles to gain exposures of up to 5% of total assets to each of these sectors, in the aim of achieving above risk-free returns with low correlations to their core equity holdings. The largest pension funds may invest in individual hedge funds or private equity funds directly. These investments are likely to be financed by sales of core equity holdings.
- 7.20 Given the interest in hedge fund strategies, we might see new types of mandate appearing for pension fund clients, with asset managers being given greater flexibility over asset allocation than under current mandates. This may lead to more pension funds investing assets under “customised balanced” mandates. Rather than peer group return targets, performance targets would need to be set by reference to index returns and risk adjusted returns on a “neutral” asset allocation, perhaps supplemented by long term liability based return and risk adjusted return targets.
- 7.21 We anticipate that most life insurers will wish to provide access to externally managed funds of hedge funds and funds of private equity. Although it is unlikely that these would attract significant volumes of assets, we believe they will be considered necessary for insurers to be able to claim they are offering a full range of linked funds.

# 8

## Conclusion

- 8.1 In our view the non-linked life sector is likely to experience a material reduction in with-profit funds under management in the next few years, relative to GDP, although non-profit funds are likely to grow as a result of growing annuity and protection markets. The growth in defined contribution pension savings and the reduction in defined benefit provision are likely to lead to a slowly declining pension fund sector and a significantly larger linked life sector in the medium term.
- 8.2 As in the past few years, the unit trust and investment trust sectors are likely to experience strong growth. The UK Government has recently announced changes to the tax regime for pension savings, with the introduction of an Annual Allowance of £215,000, and a Lifetime Allowance of £1.5m (2006/07 figures). We expect these changes will benefit unit trusts and investment trusts as many individuals will defer pension contributions until they approach retirement, when they will be able to make tax-deductible contributions of 100% of earnings below the Annual Allowance.
- 8.3 We consider it unlikely that changes in institutional demand of asset classes will lead to a significant level of market impact in the next few years, except for short periods. Our analysis shows that only in the more extreme scenarios are sales of UK equities likely to depress market prices. For other asset classes, other than index-linked bonds, the markets are sufficiently large relative to likely allocation changes to ensure that prices should not move significantly. Nevertheless, there may be periods when simultaneous asset allocation changes by several large institutional investors could cause temporary price fluctuations.
- 8.4 The continued shortage of index-linked bonds is unlikely to ease over the next few years, although supply issues may reduce in the longer term due to new government and corporate issues. The growth of the corporate market will lead to increased default risks and increase the importance of analysing credit risks.
- 8.5 Pension funds are likely to increase their usage of bespoke swaps to improve liability matching, whilst obtaining their desired level of credit risk. This will create opportunities for issuers of swaps, and pension funds will need to ensure that they fully understand the risks they are taking on, and how their investment profile might change if one or more of their swaps defaulted.
- 8.6 Pension funds and life insurers are likely to increase their allocations to property, private equity and hedge funds, most likely by selling core equity holdings. The proportion of UK equities held by pension funds is likely to reduce, in favour of bonds and to a smaller extent overseas equities. Linked life funds will continue to have a high UK equity weighting. Non-linked life funds may reduce their UK equity holdings, but almost certainly at a more gradual pace than in the past two years.

# A Additional Tables

**Table 20. UK Pension Fund Holdings (Russell Mellon CAPS)**

At 31 December	UK equity	Total equity	UK fixed interest	Global IL bonds	Total bonds	Other
	%	%	%	%	%	%
1993	55.9	79.0	3.5	4.1	12.4	8.6
1997	53.6	72.3	8.5	5.2	17.7	10.0
1998	50.6	69.6	11.1	5.8	21.2	9.2
1999	51.6	74.2	10.2	6.1	20	5.8
2000	48.0	70.2	13.2	7.7	24	5.8
2001	43.2	67.9	15.4	8.8	26.5	5.6
2002	36.9	60.7	20.1	11.3	33.3	6.0
2003	36.8	62.9	19.9	10.6	32.2	4.9

**Table 21. UK Pension Fund Holdings (WM Company)**

At 31 December	UK equity	Total equity	UK fixed interest	UK IL gilts	Total bonds	Other
	%	%	%	%	%	%
1993	56.1	80.1	4.0	3.0	10.8	9.1
...						
1997	52.8	72.4	7.3	5.5	16.2	11.4
1998	50.6	71.2	9.0	5.8	18.7	10.1
1999	51.0	75.4	8.1	4.9	16.7	7.9
2000	48.3	71.7	9.8	6.0	19.3	9.0
2001	45.9	71.1	9.9	6.9	20.1	8.8
2002	39.4	64.4	12.5	9.3	25.8	9.8
2003	39.2	67.1	12.1	8.8	23.5	9.4

**Table 22. UK Life Insurance Holdings (ONS)**

At 31 December	Total assets £bn	UK equity %	Total equity %	UK fixed gilts %	UK corp bonds %	UK IL gilts %	Total bonds %	Other %
1993	430.3	38.7	49.5	15.1	7.7	2.1	29.3	21.2
...								
1997	674.2	42.0	52.2	14.3	7.9	1.9	27.3	20.5
1998	776.9	39.3	48.7	14.5	8.8	2.3	30.4	20.9
1999	932.9	39.7	51.7	11.7	9.2	2.1	27.0	21.3
2000	933.3	38.4	48.8	10.6	11.8	2.0	28.5	22.7
2001	910.7	34.3	45.6	11.2	13.4	2.1	32.7	21.6
2002	838.2	27.5	37.1	13.2	17.6	2.7	40.8	22.1

## B Further Scenarios

This section contains further scenarios to those shown in section 7. Table 17 sets out the current structure of UK institutional holdings, our starting point for modelling. We illustrate here the effect of alternate growth rates on pension funds, non-linked life funds and linked life funds (relative to GDP growth).

As with the analysis in section 7 we have retained scenarios 1 and 2 as illustrative of ‘large change’ and ‘moderate change’ in institutional asset allocations over the next five years. These scenarios are detailed in Table 18. Similarly, we have assumed that property and equity assets achieve a total nominal return of 7% pa and other assets a return of 5% pa, with income and redemption payments reinvested.

The growth rates we have used are shown in Table 23 and correspond to three development scenarios for the institutional sector:

- *Best estimate.* This scenario is described in section 7.
- *Alternative A.* This scenario assumes that there is little switch from defined benefit to defined contribution saving within pension funds, and that with-profit business volumes reduce only slowly. Linked funds therefore grow at a slower rate.
- *Alternative B.* This scenario assumes an acceleration of the trend from defined benefit to defined contribution savings, with with-profit business volumes declining rapidly. Linked funds are assumed to grow rapidly in response.

**Table 23. UK Institutional Sector Growth Rates**

	<b>Best estimate</b>	<b>Alternative A</b>	<b>Alternative B</b>
GDP growth	4% pa	4% pa	4% pa
Pension fund growth 2003-09	1% pa	2% pa	-1% pa
Non-linked life fund growth 2002-09	-8% pa	1% pa	-15% pa
Linked life fund growth 2002-09	6% pa	3% pa	10% pa

Note: Growth rates are relative to GDP.

Table 24 shows the net cashflows to the various asset classes under the six growth and asset allocation change scenarios.

**Table 24. Estimated Institutional Cashflows 2004 to 2009**

<b>Institutional growth scenario</b>	<b>Best estimate</b>		<b>Alternative A</b>		<b>Alternative B</b>	
<b>Asset allocation change over 6 year period</b>	<b>Large</b>	<b>Moderate</b>	<b>Large</b>	<b>Moderate</b>	<b>Large</b>	<b>Moderate</b>
	<b>Scenario 1</b>	<b>Scenario 2</b>	<b>Scenario 3</b>	<b>Scenario 4</b>	<b>Scenario 5</b>	<b>Scenario 6</b>
	<b>£bn</b>	<b>£bn</b>	<b>£bn</b>	<b>£bn</b>	<b>£bn</b>	<b>£bn</b>
UK equity	-155	-80	-167	-88	-97	-31
Non-UK equity	18	37	20	40	28	44
UK fix int gilts	51	32	122	102	22	5
UK IL gilts	72	54	85	66	66	49
UK corp bonds	47	28	143	123	0	-16
Non-UK bonds	41	22	86	66	14	-3
Property	17	-1	60	41	-6	-23
Cash	6	6	14	14	4	4
Private equity/other	-2	-2	9	9	0	0
<b>Total</b>	<b>96</b>	<b>96</b>	<b>372</b>	<b>372</b>	<b>30</b>	<b>30</b>

It can be seen that under the Alternative A growth scenarios (Scenarios 3 and 4 above) there is potentially a very high demand for bonds. Almost certainly this level of demand would lead to increasing sterling bond prices, although equity price movements are far more likely in Scenario 3 than Scenario 4.

Under the Alternative B growth scenarios (Scenarios 5 and 6 above) there are relatively small net flows to any of the asset classes in general. However, under the large asset allocation change Scenario 5, UK equity prices might be depressed at various points in the five year period.

# C Data Sources

Alternative Financial Services Review	<a href="http://www.afsrmagazine.com/">http://www.afsrmagazine.com/</a>
Association of British Insurers	<a href="http://www.abi.org.uk/">http://www.abi.org.uk/</a>
Association of Financial Guaranty Insurers	<a href="http://www.afgi.org/">http://www.afgi.org/</a>
Bank for International Settlements	<a href="http://www.bis.org/">http://www.bis.org/</a>
British Bankers' Association	<a href="http://www.bba.org.uk/">http://www.bba.org.uk/</a>
British Venture Capital Association	<a href="http://www.bvca.co.uk/">http://www.bvca.co.uk/</a>
Chicago Mercantile Exchange	<a href="http://www.cme.com/">http://www.cme.com/</a>
CorrectNet	<a href="http://www.correctnet.com/">http://www.correctnet.com/</a>
European Private Equity and Venture Capital Association (EVCA)	<a href="http://www.evca.com/">http://www.evca.com/</a>
Fitch Ratings	<a href="http://www.fitchratings.com/">http://www.fitchratings.com/</a>
HedgeWorld	<a href="http://www.hedgeworld.com/">http://www.hedgeworld.com/</a>
HM Treasury	<a href="http://www.hm-treasury.gov.uk/">http://www.hm-treasury.gov.uk/</a>
ING	<a href="http://www.ing.com/">http://www.ing.com/</a>
International Financial Services London	<a href="http://www.ifsl.org.uk/">http://www.ifsl.org.uk/</a>
InterSec Research	<a href="http://www.intsec.com/">http://www.intsec.com/</a>
J.P. Morgan	<a href="http://www.jpmorgan.com/">http://www.jpmorgan.com/</a>
Lehman Brothers	<a href="http://www.lehman.com/">http://www.lehman.com/</a>
National Association of Pension Funds	<a href="http://www.napf.co.uk/">http://www.napf.co.uk/</a>
National Venture Capital Association	<a href="http://www.nvca.org/">http://www.nvca.org/</a>
OECD	<a href="http://www.oecdwash.org/">http://www.oecdwash.org/</a>
Office for National Statistics	<a href="http://www.statistics.gov.uk/">http://www.statistics.gov.uk/</a>
Russell Mellon CAPS	<a href="http://russellmelloncaps.com/">http://russellmelloncaps.com/</a>
Swiss Re	<a href="http://www.swissre.com/">http://www.swissre.com/</a>
The Bond Market Association	<a href="http://www.bondmarkets.com/">http://www.bondmarkets.com/</a>
The Economist	<a href="http://www.economist.com/">http://www.economist.com/</a>
UBS Global Asset Management	<a href="http://www.ubs.com/">http://www.ubs.com/</a>
UK Debt Management Office	<a href="http://www.dmo.gov.uk/">http://www.dmo.gov.uk/</a>
Watson Wyatt	<a href="http://www.watsonwyatt.com/">http://www.watsonwyatt.com/</a>
WM Company	<a href="http://www.wmcompany.com/">http://www.wmcompany.com/</a>
World Federation of Exchanges	<a href="http://www.world-exchanges.org/">http://www.world-exchanges.org/</a>