

The United Kingdom Pension System: Key Issues

David Blake

Pensions Institute
Birkbeck College
University of London
Gresse St
London W1T 1LL
United Kingdom

Tel: +44 (0)20 7631 6410
Email: d.blake@bbk.ac.uk

March 2001

This paper was prepared for an international conference hosted by the Project on Intergenerational Equity at Hitotsubashi University, Tokyo, on 17 March 2001. PIE is funded by the Japanese Ministry of Education and Science.

1. Introduction

The United Kingdom was one of the first countries in the world to develop formal private pension arrangements (beginning in the 18th Century) and was also one of the first to begin the process of reducing systematically unfunded state provision in favour of funded private provision (beginning in 1980).

This explains why the UK is one of the few countries in Europe that is not facing a serious pensions crisis. The reasons for this are straightforward: state pensions (both in terms of the replacement ratio and as a proportion of average earnings) are amongst the lowest in Europe, the UK has a long-standing funded private pension sector, its population is ageing less rapidly than elsewhere in Europe and its governments have taken measures to prevent a pension crisis developing. These measures have involved making systematic cuts in unfunded state pension provision and increasingly transferring the burden of providing pensions to the funded private sector. The UK is not entitled to be complacent, however, since there remain some serious and unresolved problems with the different types of private sector provision.

This paper examines the key issues relating to the UK pension system. It reviews the current system of pension provision, describes and analyses the reforms since 1980, examines the legal regulatory and accounting framework for occupational pension schemes, assesses the different types of risks and returns from membership of defined benefit and defined contribution pension schemes, and investigates the management and investment performance of pension fund assets. The paper ends with a discussion of the review of institutional investment in the UK conducted by Paul Myners and published in March 2001.

2. The Current System of Pension Provision

A flat-rate first-tier pension is provided by the state and is known as the Basic State Pension (BSP). Second-tier or supplementary pensions are provided by the state, employers and private sector financial institutions, the so-called three pillars of support in old age. The main choices are between: a state system that offers a pension that is low relative to average earnings but which is fully indexed to prices after retirement; an occupational system that offers a relatively high level of pension (partially indexed to prices after retirement up to a maximum of 5% p.a.), but, as a result of poor transfer values between schemes on changing jobs, only to workers who spend most of their working lives with the same company; and a personal pension system that offers fully portable (and partially indexed) pensions, but these are based on uncertain investment returns and are subject to very high set-up and administration charges, often inappropriate sales tactics, and very low paid-up values if contributions into the plans lapse prematurely.

Employees in the UK in receipt of earnings subject to National Insurance Contributions (NICs) will build up entitlement¹ both to the BSP² and, on 'band earnings' between the Lower Earnings Limit (LEL) and the Upper Earnings Limit (UEL)³, to the pension provided by the State-Earnings-Related Pension Scheme (SERPS). These pensions are paid by the Department of Social Security (DSS) from State Pension Age which is 65 for men and 60 for women⁴. The self-employed are also entitled to a BSP, but not to a SERPS pension. Employees with earnings in excess of the LEL will automatically be members of SERPS, unless they belong to an employer's occupational pension scheme or to a personal pension scheme that has been contracted-out of SERPS. In such cases both the individual and the employer contracting-out receive a rebate on their NICs (1.6% of earnings for the employee and 3.0% for the employer, unless it operates a COMPS in which case the employee rebate is 0.6%⁵) and the individual foregoes the right to receive a SERPS pension. However, there is no obligation on employers to operate their own pension scheme, nor, since 1988, is there any contractual requirement for an employee to join the employer's scheme if it has one.

There is a wide range of private sector pension schemes open to individuals. They can join their employer's occupational pension scheme (if it has one), which can be any one of the following:

- contracted-in salary-related scheme (CISRS)
- contracted-in money purchase scheme (CIMPS)
- contracted-out salary-related scheme (COSRS)
- contracted-out money-purchase scheme (COMPS)

- contracted-out mixed benefit scheme (COMBS)
- contracted-out hybrid scheme (COHS).

A CISRS is a defined benefit scheme that has not been contracted-out of SERPS and so provides a salary-related pension in addition to the SERPS pension, while CIMPS provide a defined contribution supplement to the SERPS pension. COSRS must provide 'requisite benefits' in order to contract out of SERPS, namely a salary-related pension that is at least as good as the SERPS pension replaced, while COMPS must have contributions no lower than the contracted-out rebate. COMBS can use a mixture of the requisite benefits and minimum contributions tests to contract out of SERPS, while COHS can provide pensions using a combination of salary-related and money purchase elements. Individuals can also top up their schemes with Additional Voluntary Contributions (AVCs) or Free-Standing Additional Voluntary Contributions (FSAVCs) up to limits permitted by the Inland Revenue.

As an alternative, individuals have the following personal pension choices that are independent of the employer's scheme:

- personal pension scheme (PPS) (also the only type of scheme available to the self-employed)
- group personal pension scheme (GPPS)

A PPS is divided into two components. The first is an Appropriate Personal Pension Scheme (APPS) which is contracted out of SERPS and provides 'protected rights' benefits that stand in place of SERPS benefits: they are also known as minimum contribution or rebate-only schemes since the only contributions permitted are the combined rebate on NICs with the employee's share of the rebate grossed up for basic rate tax relief (at 22%). The second is an additional scheme, also contracted out, that receives any additional contributions up to Inland Revenue limits. A GPPS is a scheme that has been arranged by a small employer with only a few employees: it is essentially a collection of individual schemes, but with lower unit costs because of the savings on up-front marketing and administration costs⁶.

In 1996, the UK workforce totalled 28.5 million people, of whom 3.3 million were self-employed⁷. The pension arrangements of these people were as follows⁸:

- 7.5 million employees in SERPS
- 1.2 million employees in 110,000 contracted-in occupational schemes
- 9.3 million employees in 40,000 contracted-out occupational schemes (85% of such schemes are salary-related, although 85% of new schemes started in 1998 were money purchase or hybrid)
- 5.5 million employees in personal pension schemes
- 1.7 million employees without a pension scheme apart from the BSP
- 1.5 million self-employed in personal pension schemes
- 1.8 million self-employed without a pension scheme apart from the BSP.

These figures indicate that 72% of supplementary pension scheme members in 1996 were in SERPS or an occupational scheme and 28% were in personal pension schemes⁹.

Table 1 shows the sources of retirement income in 1997-98. A single person had total retirement income averaging 43% of national average earnings. Nearly two-thirds of this came from state benefits and another quarter came from occupational pensions: personal pensions provided only about 5% of total retirement income for the average person¹⁰.

3. The Reforms since 1980

3.1 Thatcher-Major reforms to the pension system

The Thatcher Conservative government that came into power in 1979 became the first government in the developed world to confront head on the potential crisis in state pension provision. The reforms were continued by the succeeding Major government.

These governments introduced the following measures:

1. Linked the growth rate in state pensions to prices rather than national average earnings, thereby saving about 2% p.a. (Social Security Act 1980).
2. Raised the state pension age from 60 to 65 for women over a 10-year period beginning in 2010, thereby reducing the cost of state pensions by £3bn p.a. (Pensions Act 1995).
3. Reduced the benefits accruing under SERPS (which had only been set up in 1978) in a number of ways: (a) the pension was to be reduced (over a 10-year transitional period beginning in April 1999) from 25% of average revalued band earnings over the best 20 years to 20% of average revalued band earnings over the full career (Social Security Act 1986); (b) the spouse's pension was cut from 100% of the member's pension to 50% from October 2001 (Social Security Act 1986); (c) the revaluation factor for band earnings was reduced by about 2% p.a. (Pensions Act 1995); the combined effect of all these changes was to reduce the value of SERPS benefits by around two-thirds.
4. Provided a 'special bonus' in the form of an extra 2% National Insurance rebate for all PPSs contracting out of SERPS between April 1988 and April 1993 (Social Security Act 1986); provided an incentive from April 1993 in the form of a 1% age-related National Insurance rebate to members of contracted-out PPSs aged 30 or more to discourage them from recontracting back into SERPS (Social Security Act 1993).
5. Relaxed the restriction on PPSs that an annuity had to be purchased on the retirement date, by introducing an income drawdown facility which enabled an income (of between 35 and 100% of a single life annuity) to be drawn from the pension fund (which otherwise remains invested in earning assets) and delaying the obligation to purchase an annuity until age 75 (Finance Act 1995).
6. Enabled members of occupational pension schemes to join personal pension schemes (Social Security Act 1986).
7. Simplified the arrangements for occupational schemes to contract out of SERPS by abolishing the requirement for occupational schemes to provide Guaranteed Minimum Pensions (GMPs): since April 1997, COSRSs had to demonstrate only that they offer requisite benefits that are broadly equivalent to those obtainable from SERPS (Pensions Act 1995).
8. Ended its commitment to pay for part of the inflation indexation of occupational schemes (Pensions Act 1995). Until April 1997, COSRSs had to index the GMP up to an inflation level of 3% p.a. and any additional pension above the GMP up to an inflation level of 5% p.a. Since the GMP replaced the SERPS pension which was itself fully indexed to inflation, the government increased an individual's BSP to compensate for any inflation on the GMP above 3% p.a. But the 1995 Act abolished the GMP altogether and required COSRSs to index the whole of the pension that they pay up to a maximum of 5% p.a.
9. Improved the security of the assets in private sector schemes through the creation of the Occupational Pensions Regulatory Authority (OPRA), a compensation fund operated by the Pension Compensation Board (PCB), a Minimum Funding Requirement (MFR) and a Statement of Investment Principles (SIP) (Pensions Act 1995); OPRA, the PCB and the MFR are examined in more detail below.

3.2. Defects in the Thatcher-Major reforms

The main defects of the Thatcher-Major reforms were as follows:

1. Removing the requirement that membership of an occupational pension scheme could be made a condition of employment. Membership was made voluntary and new employees had to take the active decision of joining their employer's scheme: fewer than 50% of them did so.

2. No requirement to ensure that transferring from an occupational to a personal pension scheme was in the best interests of the employee, leading directly to the personal pensions mis-selling scandal that erupted in December 1993. Between 1988 and 1993, 500,000 members of occupational pension schemes had transferred their assets to personal pension schemes following high pressure sales tactics by agents of PPS providers. As many as 90% of those who transferred had been given inappropriate advice. Miners, teachers, nurses and police officers were amongst the main targets of the sales agents. Many of these people remained working for the same employer, but they switched from a good occupational pension scheme offering an index-linked pension into a PPS towards which the employer did not contribute and which took 25% of the transfer value in commissions and administration charges. An example reported in the press concerned a miner who transferred to a PPS in 1989 and retired in 1994 aged 60. He received a lump sum of £2,576 and a pension of £734 by his new scheme. Had he remained in his occupational scheme, he would have received a lump sum of £5,125 and a pension of £1,791. As a result of a public outcry, PPS providers have had to compensate those who had been given inappropriate advice to the tune of £11bn.

3. No restriction on the charges that could be imposed in personal pension plans, hoping that market forces alone would ensure that PPSs were competitively provided.

4. Giving personal pension scheme members the right to recontract back into SERPS. This option has turned out to be extremely expensive for the government because of the back-loading of benefits in DB pension schemes such as SERPS: benefits accrue more heavily in the later years than the earlier years¹¹. Despite the financial incentives given to contract out of SERPS into PPSs, it turned out to be advantageous for men over 42 and women over 34 to contract back into SERPS once the period of the special bonus had ended in 1993. To discourage this from happening the government has been forced to offer additional age-related rebates to PPS members over 30 since 1993. Far from saving the government money, the net cost of PPSs during the first 10 years was estimated by the National Audit Office to be about £10bn.

3.3. The Blair reforms to the pension system

The New Labour Blair government came into power in 1997 with a radical agenda for reforming the welfare state. In the event, Frank Field, appointed the first Minister for Welfare Reform at the Department of Social Security (DSS) and charged with the objective of 'thinking the unthinkable', proved to be too radical for the traditional Old Labour wing of the Labour Party and was soon replaced. The eventual DSS Green Paper proposals 'A new contract for welfare: Partnership in pensions' (December 1998) turned out to be much less radical than initially anticipated, but nevertheless continued with the Thatcher government's agenda of attempting to reduce the cost to the state of public pension provision and of transferring the burden of provision to the private sector through the introduction of Stakeholder Pension Schemes. Nevertheless, there was much greater emphasis on redistributing resources to poorer members of society than was the case with the Conservatives. Shortly after the publication of the Green Paper, the Treasury issued a consultation document on the type of investment vehicles in which stakeholder pension contributions might be invested. We will examine these proposals in turn.

3.3.1 The Department of Social Security proposals

The key objectives of the DSS Green Paper were to:

1. Reduce the complexity of the UK pension system, by abolishing SERPS.

2. Introduce a minimum income guarantee in retirement linked to increases in national average earnings on the grounds that people who work all their lives should not have to rely on means-tested benefits in retirement; the

first-tier BSP will remain indexed to prices, however, and over time will become a relatively unimportant component of most people's pensions.

3. Provide more state help for those who cannot save for retirement, eg, the low-paid (those on less than half median earnings), carers and the disabled, via the unfunded state system.

4. Encourage those who are able to save what they can for retirement, via affordable and secure second pillar pensions:

- provided by the state for those on modest incomes (via a new unfunded state second pension), and
- provided by the private sector for middle- and high-income earners, with the option of new low-cost defined contribution stakeholder pensions which are likely to replace high-cost personal pensions. But there will be no extra compulsion to save for retirement at the second pillar and no additional incentives over those already existing at the second pillar.

The Green Paper proposals formed the basis of the Welfare Reform and Pensions Act which received the Royal Assent in November 1999. The Act deals with following issues.

3.3.1.1 State pensions

1. A Minimum Income Guarantee (MIG) of £75 per week was introduced for pensioners in April 1999: it is means-tested and indexed to earnings.

2. SERPS was replaced by a new State Second Pension (S2P) in April 2002: the S2P was initially earnings-related but from April 2007 becomes a flat-rate benefit, even though contributions are earnings-related, a feature that is intended to provide strong incentives for middle- and high-income earners to contract out. The S2P:

- ensures that everyone with a complete work record receives combined pensions above the MIG
- gives the low paid earning below £9,500 p.a. twice the SERPS pension at £9,500 p.a. (implying that the accrual rate is 40% of £9,500 rather than the 20% under SERPS)
- gives a higher benefit than SERPS between £9,500 and £21,600 p.a. (average earnings)
- leaves those earning over £21,600 p.a. unaffected (with an accrual rate of 20%)
- uprates these thresholds in line with national average earnings
- provides credits for carers (including parents with children under 5) and the disabled.

3.3.1.2 Stakeholder pensions

1. New Stakeholder Pension Schemes (SPSs) were introduced in April 2001, but are principally intended for middle-income earners (£9,500-£21,600) with no existing private pension provision. They can be used to contract out of S2P.

2. They are collective arrangements, provided by:

- an employer
- a representative or membership or affinity organisation, or
- a financial services company.

3. They are defined contribution schemes, with the same restrictions as for personal pensions, namely that on the retirement date up to 25% of the accumulated fund may be taken as a tax-free lump sum, the remaining fund may be used to buy an annuity or to provide a pension income by way of a drawdown facility until age 75 when an annuity must be purchased with the remaining assets.

4. They have to meet minimum standards, known as CAT marks (for charges-access-terms) concerning:

- the charging structure and level of charges (1% of fund value)
- levels of contractual minimum contributions (£20)
- contribution flexibility and transferability (no penalties if contributions cease temporarily (up to 5 years) or if the fund is transferred to another provider).

5. The main provisions of the Pensions Act 1995 apply to SPS, covering the annual report and accounts, the appointment of professional advisers and the Statement of Investment Principles.

6. They are regulated principally by the OPRA, with the Pensions Ombudsman for redress and the selling of schemes and supervision of their investment managers by the Financial Services Authority (FSA).

7. Employers without an occupational scheme and with at least five staff must offer access to one 'nominated' SPS and to provide a payroll deduction facility.

8. There is a new integrated tax regime for all defined contribution pension plans. SPS, personal pension plans and occupational DC plans will attract tax relief on contributions up to a maximum of 17.5% of earnings (below age 36), rising to 40% (above age 61). But contributions up to £3,600 pa can be made into any DC plan regardless of the size of net relevant earnings. Contributions in excess of £3,600 pa may continue for up to 5 years after relevant earnings have ceased. Thereafter, contributions may not exceed £3,600 pa. All contributions into DC plans will be made net of basic rate tax, with providers recovering the tax from the Inland Revenue and with higher rate tax, if any, being recovered in the self-assessment tax return.

3.3.1.3 Occupational pensions

1. Occupational schemes can contract out of the S2P.

2. Employers can again make membership of an occupational scheme a condition of employment, and employees are only allowed to opt out if they have signed a statement of rights being given up, certified that they have adequate alternative provision, and have taken advice that confirms that the alternative is at least as good as the S2P.

3. The compensation scheme established by the 1995 Pensions Act was extended to cover 100% of the liabilities of pensioners and those within 10 years of normal pension age (NPA).

3.3.1.4 Personal pensions

1. PPS can contract out of the S2P.

2. They receive protection in cases of the bankruptcy of the member.

3.3.2 HM Treasury proposals

The Treasury proposals were contained in 'Helping to Deliver Stakeholder Pensions: Flexibility in Pension Investment' (February 1999). They called for the introduction of more flexible investment vehicles for managing pension contributions, not only those in the new stakeholder pension schemes, but also those in

occupational and personal pension schemes. These investment vehicles were given the name Pooled Pension Investments (PPIs). The main PPIs are authorised unit trusts (AUTs or open-ended mutual funds), investment trust companies (ITCs or closed-ended mutual funds), and open-ended investment companies (OEICs).

In comparison with the individual arrangements of existing personal pension schemes and the poor transferability of occupational pension schemes, PPIs offer:

- lower charges: since collective investment vehicles have much lower overheads than individual investments;
- greater flexibility: since PPIs are easy to value and transfer between different stakeholder, personal and occupational pension schemes, allowing employees to move jobs without having to change pension schemes, thereby encouraging greater labour market flexibility.

3.4 Assessment of the Blair reforms

The Welfare Reform and Pensions Act, while containing some significant improvements on the existing system, does not fully meet the Green Paper's own objectives.

3.4.1 Reforms to state pensions

While the abolition of SERPS helped to simplify the UK's extremely complex pension system, the proposal to have a MIG (of £75 per week) that differed from the BSP (£67.50 per week) reintroduced substantial complexity at the starting point for state pension provision, especially when the difference between the two amounts (£7.50 per week) was initially so small. It would have been far simpler to set the MIG equal to the BSP and to link the latter to earnings. Now the government explicitly rejected this on the grounds of both cost¹² and the fact that it would benefit the high paid as well as the low paid, whereas the government's emphasis was on helping the low paid. But the problem with keeping the BSP linked to prices rather than to earnings is that it will continue to fall relentlessly as a proportion of national average earnings (NAE): it is currently just 16% of NAE and will fall to well below 10% by 2025. While the government admits that this will save substantial sums of money, it implies the government is effectively abandoning the first pillar of support in old age and obliging everyone to rely on the second and third pillars. The Green Paper talked about building on the BSP, but this implies building on a sinking ship.

If the government is genuinely concerned about security at the minimum level for all, it should consider funding the first pillar appropriately by establishing an explicit fund (like the Social Security Trust Fund in the US) into which it places the NICs of those who are in work, while the government itself funds the contributions of the low-paid, carers and the disabled¹³. The contribution rate could be actuarially set to deliver the MIG for all when they retire. It could be a hypothecated part of NICs. In other words, the contributions would accrue 'interest' equal to the growth rate in NAE. The state could explicitly issue NAE-indexed bonds which the SSTF would buy. This is the only honest way both of preserving the value of and honouring the promises under the first pillar. The second and third pillars could then be formally integrated with the first pillar, i.e., the second pillar is used to deliver the tranche of pension between the MIG and the Inland Revenue limits, while the third pillar is used for voluntary arrangements above the IR limits. If the first pillar remains unfunded, there is nothing to prevent future generations renegeing on an agreement which they are expected to keep but did not voluntarily enter into.

The fact that membership of pension schemes at the second pillar remains voluntary, is highly worrying for reasons of myopia and moral hazard. Compulsory contributions are seen as one way of dealing with individual myopia and the problem of moral hazard. Myopia arises because individuals do not recognise the need to make adequate provision for retirement when they are young, but regret this when they are old, by which time it is too late to do anything about it. Moral hazard arises when individuals deliberately avoid saving for retirement when they are young because they calculate that the state will feel obliged not to let them live in dire poverty in retirement. Inevitably, this will lead to substantial means testing in retirement.

In short, while the Welfare Reform and Pensions Act has some good points, it fails three of Frank Field's tests for a good state pension system: it is not mandatory, it is not funded and it remains means-tested (Field (1996a,b)).

3.4.2 Reforms to private pensions

The government's proposal to have a maximum charge of 1% of fund value on SPSs will have two dramatic effects on private sector pension provision, especially PPSs.

The first is that it will help to force economies of scale in DC pension provision. This is because stakeholder pensions will be a retail product with wholesale charges. To deliver this product effectively providers will need to exploit massive economies of scale. The current charges for personal pension schemes which average 1.4% and rise to as much as 2.2% of fund value for 25-year policies¹⁴ are much higher than the 1% CAT-marked limit on SPS. There may be a range of providers of SPS to begin with, but the only way for a provider to survive in the long run will be if it operates at low unit cost on a large scale. This will inevitably lead to mergers amongst providers and a final equilibrium with a small number of very large providers.

Existing personal pension providers and distribution channels face these challenges:

- APPSs face massive competition from SPSs for future NIC rebates;
- SPSs could be better than PPSs for middle-income groups, leaving PPSs as a choice only for those on high incomes who require and are willing to pay for a bespoke product;
- new affinity-based SPSs with gateway organisations linking up with pension providers (e.g. Amalgamated Engineering & Electrical Union with 720,000 members and Friends Provident);
- the Treasury's proposed PPIs provide a low-cost alternative investment vehicle to the high-cost managed funds of most PPSs;
- Individual Savings Accounts (ISAs), introduced by the Treasury in April 1999 to encourage greater personal sector savings, also provide an important alternative to PPSs. Contributions into ISAs of up to £5,000 per annum are permitted and the investment returns are free from income and capital gains tax. While not intended as pension savings vehicles (they do not attract tax relief on contributions, for example, unlike standard pension savings products), ISAs can be used in retirement income planning, since they enjoy the big advantage that they can be cashed in tax free at any time, thereby avoiding the need to purchase a pension annuity on the retirement date.

The second benefit is that it will effectively force stakeholder pension funds to be passively managed, since active management would result in a charge higher than 1%. As demonstrated below, active fund managers have not demonstrated that they can systematically deliver the superior investment performance that justifies their higher charges. Further passively-managed mutual funds in the US, such as Vanguard (which are similar investment vehicles to PPIs), have charges below 0.3%.

3.5. The political economy of pension reform

How has it been possible for UK governments to reduce the size of state pension provision without significant political protest when similar attempts to do so on the Continent have led to street protests and strikes (e.g. in Italy in November 1994 and France in November 1995)?

Consider the SERPS pension. When it was first introduced in 1978, it offered a pension of 25% of the best 20 years of band earnings revalued to the retirement date by increases in national average earnings, with a 100% spouse's pension. Within a quarter of a century, the value of these benefits had been reduced by two thirds before the scheme was abandoned altogether. How has this been achieved so peaceably? There are three main explanations. First, SERPS had only been established a few years before changes to it started being made, so

very few people were drawing the pension and little loyalty for the scheme had accumulated. Second, SERPS was an incredibly complex pension system that very few pensions professionals fully understood, let alone members of the general public. While there was comment in the media at the time of these changes to SERPS, very little of this seems to have permeated the consciousness of the mass of the population and the extent of the changes was little understood. Third, the changes were introduced with a lag of 15 to 20 years, so it was easy for everyone to forget about them.

Even when changes were introduced immediately, such as the switch in the uprating of the state pension from earnings to prices, the immediate difference was relatively small and most people failed to realise how over time small differences can compound into large amounts¹⁵.

A final explanation lies in the fact that state pension provision is much less important for most people in the UK than on the Continent, and those for whom it is important, namely the low paid, have little political influence.

The situation on the Continent is rather different. State pensions provide a much higher replacement ratio than in the UK and social solidarity appears to be a more important objective than it is in the UK. As a consequence, it is much harder to alter pension arrangements on the Continent, even if the political will to do so is strong, which it clearly is not.

4. The Legal Structure of and Regulatory Framework for Occupational Pension Schemes

4.1 The trust fund

Most occupational pension schemes in the UK have been set up as *pension trust funds*. A *trust* is a legal relationship between individuals and assets, by which assets provided by one individual (the *settlor*) are held by another group of individuals (*trustees*) for the benefit of a third group of individuals (the *beneficiaries*). The interests of the beneficiaries are set out in the trust deed. If the trust is a *discretionary trust*, the trustees have the freedom of action to dispose the income and capital of the trust as they see fit. The trust serves three functions: it is the primary source of payment of pension entitlements; it is a security for payment; and it is a vehicle for the collective protection and enforcement of the rights of individual scheme members. The first scheme to adopt this legal vehicle was that of Colmans, the mustard manufacturer, in 1900.

There are several reasons why a *trust fund* came to be preferred to a *statutory fund*, its main alternative. A trust fund was much cheaper to set up than a statutory fund. It was also much more flexible: the trust deed could be drawn up in virtually any way that suited the employer, and the employer could ensure effective control of the fund through his appointment of the trustees. Nevertheless, a trust is also a useful vehicle for protecting pension benefits. This is because a trust is a means of attaching to assets the interests of a wide class of beneficiaries, including those not yet born. The presence of a trust also separates the assets of the trust from those of the employer, a valuable feature in the case of default.

Since trust law had not originally been established to validate pension schemes, it soon became necessary to put the arrangements on a formal basis. This was done in the Superannuation and Other Trust Funds (Validation) Act of 1927, which permitted the formal validation of trust funds.

In order to receive *exempt approved* status from the Inland Revenue, a pension scheme must be established under *irrevocable trust*, with the employee being a beneficiary under the trust, and the employer being a contributor. However, the word 'irrevocable' is not crucial, since the trust deed can provide for the alteration and winding-up of the scheme. But the sole purpose of the scheme must be to provide 'relevant benefits' in respect of service as an employee, where benefits are defined as pensions and lump sums payable on or in anticipation of retirement or on death. The benefits must be made available to the member or widow/er, children, or dependants. Most trusts have limitations on their durations under the 1963 Perpetuities and Accumulations Act. However, occupational pension schemes are exempted from these limitations where they have received exempt approval from the Inland Revenue (under section 163 of the 1993 Pensions Schemes Act).

The pension scheme must also appoint an *administrator* to manage the scheme. Under the 1970 Finance Act, the

administrator must be a resident of the United Kingdom. Typically the trustees, so long as they are resident in the UK, are appointed as administrator to the scheme.

4.2 The Occupational Pensions Regulatory Authority

The 1995 Pensions Act established the *Occupational Pensions Regulatory Authority* (OPRA) as the regulatory authority for the pensions industry. It is financed by an annual levy on pension schemes. OPRA took over most of the responsibilities of the Occupational Pensions Board (OPB) which had been set up under the 1973 Social Security Act to monitor scheme rules on the preservation of benefits for early leavers, equal access and contracting-out requirements. The 1995 Act transferred the contracting-out arrangements to the Contributions Agency of the Inland Revenue and disbanded the OPB.

OPRA has extensive powers, including the power to:

- remove or suspend a trustee where there has been a ‘serious or persistent breach’ of his/her duties, where proceedings have been commenced against him/her for an offence involving dishonesty or deception, where a bankruptcy petition has been presented against him/her, or where an application has been made to disqualify him/her as a company director;
- appoint a new trustee if an existing trustee has been removed or disqualified under the Pensions Act, or in order to secure ‘the proper administration of the scheme’ or ‘the proper use or application of the assets of the scheme’;
- wind-up schemes if it is satisfied that the scheme ought to be replaced by a different scheme, that the scheme is no longer required, or that a winding-up is necessary to protect the interests of the generality of the scheme members;
- modify schemes to enable a scheme to reduce or eliminate a statutory surplus, to enable surplus assets to be distributed to the employer in the case where a scheme is being wound-up, or to enable a scheme to be contracted-out during a prescribed period;
- impose civil penalties for misconduct, e.g., making a payment to the employer from the scheme assets contrary to s.37, or failure to obtain an actuarial valuation and certificate in accordance with s.57, or failure to maintain a payment schedule or make a statement of investment principles.
- apply for a court injunction to prevent the misuse or misappropriation of scheme assets;
- apply for a court order requiring the restitution of scheme assets where it is satisfied that they have been misappropriated, e.g., where scheme assets have been loaned to the employer in contravention of legal requirements;
- direct trustees to pay members’ benefits, e.g., where an employer deducts pension contributions from earnings but does not pass them on to the scheme;
- require the production of any document relating to a particular pension scheme from a trustee, manager, professional adviser or employer;
- enter premises where scheme members are employed, or where documents relating to scheme members are kept, or where the administration of a pension scheme is carried out, and to question any person on those premises who may be able to provide relevant information.

The Pensions Act requires every pension scheme to appoint an auditor and an actuary. The Act imposes a specific obligation on the auditor and actuary to report to OPRA if they have ‘reasonable cause’ to believe that there has been a breach of duty relevant to the scheme’s administration by the employer, trustees, administrator or a professional adviser. The auditor and actuary are protected from any claim of breach of privilege if they ‘blow the whistle’ but face civil penalties or even disqualification if they fail to meet these requirements. The Act also requires the appointment of a professional fund manager where a scheme has investments regulated by the 1986 Financial Services Act. The auditor, actuary and fund manager are classified as ‘professional advisers’ under the Pensions Act and will have to members of a *recognized professional body*. There is no requirement under the Act to appoint a legal adviser. However, legal advisers to a pension scheme are exempt from the requirement to blow the whistle on the traditional grounds of legal professional privilege, except where there is reason to believe that the pension scheme is being used for money laundering purposes.

The Act also established the *Pension Compensation Board* (PCB) to administer a compensation scheme.

Certain conditions will need to be met before the compensation provisions apply:

- the scheme must be established under trust
- the employer must be insolvent
- the value of the scheme assets must have been reduced as a result of an illegal act and, in the case of a salary-related scheme, to less than 90 per cent of the value of the liabilities.

The amount of any compensation is determined by regulations, but will not exceed 90 per cent of the loss at the application date and, in the case of a salary-related scheme, will be limited to whatever is necessary to restore the scheme to a 90 per cent solvency level. The PCB has power to make drip-feed payments to a defrauded scheme in an emergency situation where it accepts that there are grounds for compensation and where the trustees would not otherwise be able to make pension payments. The scheme will be financed by a special levy on occupational pension schemes imposed after the compensatable event has taken place.

4.3 Trustees

The role of the trustees is to operate the pension scheme in the best interests of its beneficiaries and to act impartially between the interests of different classes of beneficiaries. They have to act in accordance with the trust deed and rules of the scheme, within the framework of trust law and the statutory regulations of OPRA. They also have to act prudently, conscientiously, honestly, and with the utmost good faith. But there are no specific rules on the number of trustees or for the scheme to have an independent trustee. There is also no requirement for a trustee to have any special training or to meet any professional standard. It is possible for the trustee to be a limited company: indeed more than half of existing pension schemes have *corporate trustees* (although most of these are not independent of the employer).

Trustees have a fiduciary duty under the 1961 Trustee Investments Act to preserve the trust capital and to apply the capital and its income according to the trust deed. This means that trustees are ultimately responsible for the safe custody of scheme assets and for ensuring that the benefits provided under scheme rules are duly delivered to scheme members. Trustees generally have wide investment powers, including powers to borrow. Indeed, the failure to invest, or at least place funds on deposit, might make trustees liable to make up the lost income. Scheme members can sue for compensation if they suffer loss as a result of negligence by trustees under the 1925 Trustee Act.

Trustees (and their investment advisers) also have to abide by the Financial Services Act 1986. It is a criminal offence to carry on investment business in the UK unless either *authorized* to do so or *exempted* from the provisions of the Act. Pension-fund managers are regulated by the Financial Services Authority (FSA) (formerly IMRO - the Investment Managers Regulatory Organization). Under section 19 of the Act, trustees who are not involved in daily investment decision-taking for their schemes do not have to be regulated under the Act. However, the FSA makes regular inspection visits to occupational pension schemes. In general, it finds that most schemes are well-run, although some schemes have been criticized for inadequate record-keeping and failing to ensure that administrative staff are properly trained.

Trustees have substantial discretion over who benefits in the event of a member dying, especially if the member was unmarried or had no one who was financially dependent on him or her. If, for example, a man was married (even if the wife was financially independent) or had parents, or children up to the age of 18 who were financially dependent on him, the case would be clear-cut: they would receive a widow's or dependant's pension. If the man had a financially independent common-law wife, the case is also clear-cut: the common-law wife would not receive a widow's pension. If, however, the common-law wife was financially dependent, she might receive a pension at the trustees' discretion.

There is no restriction on who receives the tax-free lump sum in the event of death in service. It can go to whoever is nominated by the member. If no one is nominated and there are no dependent relatives, it will go into the member's estate and be taxed.

Since trustees can find themselves liable to being sued, they tend to take out *liability insurance* to indemnify them against this possibility. For example, when section 32 buy-out policies (pension policies provided by life companies) first became available in 1986 for those changing jobs, many trustees refused to grant transfer values to the job-changers. This was because the trustees found it difficult to determine whether the buy-out

policies 'corresponded' with Inland Revenue requirements. Many insurance companies offering buy-out policies were forced to indemnify trustees before they would release an ex-employee's transfer value. Alternatively, trustees obliged the employee and his or her spouse to sign a disclaimer.

The 1995 Pensions Act had a major impact on trustees. First, it placed all trustees under the supervision of OPRA. Second, it specified who could not serve as a trustee. For example, a scheme auditor or actuary cannot serve as a trustee. Neither can 'unsuitable persons' such as anyone who has been convicted of an offence involving dishonesty or deception, an undischarged bankrupt, or any person disqualified from acting as a company director. The assets of the scheme cannot be used to pay a fine imposed on a trustee; previously scheme assets could be used to indemnify a trustee who inadvertently committed a breach of trust.

Third, the Act allows for the appointment of *member-nominated trustees* (MNTs) unless scheme members have specifically voted against this. Once appointed, MNTs can only be removed with the agreement of all other trustees; previously, the employer had the exclusive power to appoint and remove trustees. Where the appointment of MNTs has been approved, the scheme's membership is entitled to elect one-third of the total number of trustees, with a minimum of two MNTs for large schemes and one in schemes with fewer than 100 members. The MNT does not have to be a scheme member, although the employer has the power to block the appointment of a non-scheme member of whom he does not approve; however, the employer cannot block the appointment of a scheme member who has been elected. A scheme member includes any 'active, deferred, or pensioner member' of the scheme. MNTs have the same fiduciary responsibilities as other trustees to act in the best interests of all members.

Fourth, the Act imposes on trustees a duty of care to invest the assets of the fund in an orderly and correct manner. Section 33 prohibits the trust deed or rules from restricting a trustee's liability where that duty of care is not properly observed. Section 34 gives pension trustees a general power to make investments 'of any kind as if they were absolutely entitled to the assets of the scheme'. Trustees are however permitted to delegate authority to a fund manager. In the case of a discretionary fund manager, with powers to make day-to-day investment decisions, the trustees will not normally be held responsible for any act or default of the fund manager so long as they have taken all reasonable steps to satisfy themselves that the manager 'has the appropriate knowledge and experience for managing the investments of the scheme'. In the case of other types of fund manager, the trustees will normally be held responsible for any act or default by them.

Fifth, the Act requires trustees to prepare and maintain a *Statement of Investment Principles* (SIP). The SIP specifies the strategic objectives of the pension fund and must cover the following issues:

- the kinds of investments held
- the balance between different kinds of investments
- risk and the need for the diversification of investments
- expected return on investments
- the realisation of investments

In preparing the SIP, the trustees are required to take written advice from 'a person who is reasonably believed by the trustees to be qualified by his ability in and practical experience of financial matters and to have the appropriate knowledge and experience of the management of the investment of such schemes'.

Finally, trustees are required to introduce arrangements for resolving internal disputes between scheme administrators and scheme members.

4.4 The Minimum Funding Requirement and Scheme-Specific Funding Standard

The Minimum Funding Requirement was introduced by the 1995 Pensions Act in response to the Maxwell scandal¹⁶. However, there was almost immediate criticism of its inflexible, one-size-fits-all structure and in March 2001, the government announced that it would replace the MFR with a funding standard that was scheme-specific. We will consider each of these funding standards in turn.

4.4.1 The current MFR

One of the most important sections of the 1995 Pensions Act is Section 56 which deals with the *Minimum Funding Requirement* (MFR). Prior to the Act, it was possible for an employer with a final salary scheme to freeze his liabilities by deciding to wind up his pension scheme, so long as the scheme rules permitted this. If the assets in the scheme were insufficient to meet accrued liabilities, the benefits could be reduced under the *order of priorities* set out in the scheme rules. Section 75 of the Act introduces a set of ‘debt on the employer’ regulations which prevent a solvent employer from failing to fulfil his promised commitments to scheme members. In other words, any shortfall in assets becomes a legally enforceable debt on the employer. However, such a debt on the employer has no priority if the employer is insolvent. Since prospective insolvency is the most likely reason for scheme termination, Section 75 does not appear to give a great deal of effective protection to scheme members when they need it most.

The MFR came into effect in April 1997, but was not fully in force until April 2007. It applies to all occupational schemes except occupational money purchase schemes, public service schemes established by statute, local government schemes, schemes with a government guarantee and unapproved schemes. It obliges schemes subject to MFR to ensure that ‘the value of the assets of the scheme are not less than the amount of the liabilities of the scheme’. The procedure for doing this is set out in the Occupational Pension Schemes (Minimum Funding Requirement and Actuarial Valuations Regulations) 1996 (SI 1996/1536) and Guidance Note 27 from the Institute and Faculty of Actuaries (see Appendix).

Actuaries must produce an actuarial valuation every 3 years and must provide an annual actuarial certificate concerning the security of accrued benefits in the scheme’s annual report. They have to assess whether a scheme will meet its commitments to make pension payments, both on an ongoing basis (where members continue to accrue benefits) and on a discontinuance basis (that is, if the scheme is wound up and no further benefits accrue to members). In particular, they have to determine the degree to which the MFR is met on the valuation date, with a figure of 100 per cent indicating that the MFR is fully met and a figure of less than 100 per cent indicating that the MFR is met only partially. A signed valuation statement has to be submitted to trustees within 12 months of the effective date of the valuation.

Trustees subject to MFR are obliged to prepare and maintain a *schedule of contributions* indicating the rate of both employer and member contributions and the dates on which the contributions are to be paid into the fund. The actuary will have to give an opinion on whether the contributions ‘are adequate for the purpose of securing that the minimum funding requirement will continue to be met throughout the prescribed period [the next five years] or, if it appears to him that it is not met, will be met by the end of that period’. In order to do this, the actuary would have to make assumptions on relevant factors such as salary growth rate and staff turnover during the period of the schedule. If the actuary certifies that the existing schedule of contributions will not ensure the MFR is either maintained or reached within the five year period, an emergency valuation will have to be undertaken within six months, unless the solvency level had not dropped below 90 per cent and the necessary adjustment to the contribution rate had been agreed by the trustees and employer and incorporated into the formal schedule of contributions. The schedule of contributions must be revised after every valuation, including any emergency valuation.

Where contributions are not paid as stipulated in the schedule, the trustees are obliged to inform both OPRA and the scheme members. Any unpaid contributions constitute a debt on the employer, and the trustees must attempt to recover this debt. If the trustees fail to do this, then again OPRA must be informed.

A ‘serious underprovision’ arises in the case where the scheme’s assets are less than 90 per cent of its liabilities. The employer is required to make up the difference to 90 per cent through a cash injection or other means such as a bank letter of credit for the amount of shortfall and for the life of the schedule of contributions; if the employer becomes insolvent during this period, the bank would pay the full amount to the trustees. The employer has to restore the scheme’s solvency level to 90 per cent within one year of the serious underprovision being discovered. Where the solvency level is between 90 and 100 per cent, it must be restored to 100 per cent and so satisfy the MFR by the end of the current schedule of payments, namely 5 years.

4.4.2 Problems with the current MFR

There are five key problems with the current MFR as has been recognised by the Faculty and Institute of Actuaries in their Review of the MFR (Faculty and Institute of Actuaries (2000)).

4.4.2.1 The MFR does not guarantee that the pension will be paid in full

Despite the requirement in section 56 (1) of the 1995 Pensions Act that ‘assets not be less than the liabilities’, the MFR does not guarantee absolute security for pensions: in short, it is not a solvency test. Mike Pomery, Chairman of the Pensions Board of the FIA, speaking at the 2000 NAPF annual conference, stated that the MFR gave scheme members only a ‘reasonable expectation’ that they would get their full pension, not ‘absolute security’. The FIA has estimated that full funding for UK pension funds would cost an additional £100bn on top of assets valued at £830bn (Faculty and Institute of Actuaries (2000)).

A pension fund that fully meets the MFR might only have funds sufficient to purchase around 70 per cent of the pensions due to active members if the sponsor becomes insolvent. There are a number of reasons for this:

- The claims of retired members are met first.
- The insurance companies that provide both immediate and deferred pension annuities for members when a sponsoring company is wound up are likely to use lighter mortality assumptions than allowed for in the MFR regulations and hence offer lower annuities for a given purchase price.
- Long-term interest rates have fallen since 1997, raising the present value of scheme liabilities; even though the assets held by DB schemes, mainly equities, have in the past delivered very high returns, they have still failed to keep up with the growth in scheme liabilities.
- It values liabilities using the current unit method with LPI revaluation (a discontinuance method, suitable in the event of a scheme wind up), so does not take into account future earnings growth.

As many as one in six pension funds are currently either at, or below, the MFR borderline of 90% funding. The weakness of the MFR was exposed in 2000 by the case of Blagden, a chemicals company whose pension fund fully satisfied the MFR, but which went into insolvency with funds sufficient only to meet two-thirds of its obligations to active members.

Even without the insolvency of the sponsor, a low MFR funding level reduces the transfer values of members who leave the scheme when changing jobs.

4.4.2.2 The MFR is highly sensitive to changes in Market Value Adjustments

Since the introduction of the MFR in 1997, the equity MVA (the adjustment factor to the valuation of liabilities corresponding to the equity component of matching pension assets – see Appendix) has been subject to three major distortions as a result of extraneous changes in the level of equity dividend yields:

- The change to advance corporation tax (ACT) in July 1997.
- The consequential change in dividend pay-out policies by companies.
- The takeover in 2000 of Mannesmann by Vodafone.

The abolition of the dividend tax credit on UK equities for pension funds in July 1997 reduced the equity MVA by 20% and meant that the actuarial value of UK equities for MFR purposes fell by the same percentage. The FIA responded to the abolition by reducing the numerator in the equity MVA from 4.25% to 3.25%. So although the income of pension funds from their equity investments fell by 20%, the MFR test was weakened: the value of pension scheme liabilities backed by equities was reduced by 20%.

Companies responded to the abolition by changing their dividend policy: they reduced dividends and instead rewarded shareholders through share buy-backs, the capital gains on which remain tax free to pension funds. The outcome was that actual share prices rose significantly, rather than fall as actuarial valuations predicted.

Following the Mannesmann takeover, the average dividend yield (measured by the FT-SE Actuaries All-Share Index) fell from 2.3% to 2.2%: Vodafone’s dividend yield after taking on Mannesmann (which was not paying

dividends) was just 0.4%. This meant that equity-related MFR liabilities (relating to younger active members, including their transfer values) immediately increased by 4.5% without any corresponding increase in asset values, with the result that schemes' MFR funding levels fell by up to 4.5% depending on their liability structure.

Despite there being no change in the long-term solvency of pension schemes or in the costs of delivering pension benefits, the sponsor of any scheme falling into an MFR funding deficit has a legal obligation to raise contributions to eliminate the 'deficit'.

4.4.2.3 The MFR and statutory valuations are not consistent with each other

In the past, actuaries had considerable discretion over how they valued the assets and liabilities in pension schemes. Guidance Note 9 of the FIA (*Retirement Benefit Schemes – Actuarial Reports*) states that the objective of an actuarial report is 'to enable the expected future course of the scheme contribution rates and funding levels to be understood' but that this is 'not intended to restrict the actuary's freedom of judgement in choosing the method of valuation and the underlying assumptions'. The actuary had the freedom to choose from a range of valuation methods as well as whether to value on an on-going, discontinuance or past-service basis. The Pension Research Accountants Group has shown that depending on the valuation method and basis used, the value of a liability created by a given benefit can vary between £5,758 and £42,667. This can lead to substantial differences in the measures of actuarial surpluses and deficits.

However, the actuary has virtually no discretion when it comes to the calculation of statutory surpluses and deficits. Statutory surpluses must be calculated on the basis of assumptions and methods prescribed by the Government Actuary's Department (GAD) and specified in sections 601-603 of and schedule 22 of the Income and Corporation Taxes Act 1988 and the Pension Scheme Surpluses (Valuation) Regulations 1987 (SI 1987/412). Schedule 22 valuations rely on conservative assumptions which tend to generate low asset values and high liability values, thereby providing a lower-bound estimate for the surplus. If a statutory surplus of more than 5% of liabilities arises, action to reduce it must be taken within six months or partial tax relief is lost.

The actuary also has almost no discretion when performing an MFR valuation, but the assumptions now tend to underestimate the liabilities in comparison with the statutory formula. To illustrate, in February 2001, the British Airways Pension Scheme had an MFR surplus of 20% (£1.2bn) and a statutory surplus of less than 5% (£250m). The fact that MFR and statutory valuation bases differ, sometimes by very wide margins, is somewhat surprising.

4.4.2.4 The MFR restricts pension funds from investing in an optimal mix of assets

The flexibility that actuaries previously enjoyed has enabled UK pension funds to employ a very high weighting in equities, currently around 70%, the highest in the world, peaking at 83% in the early 1990s. Pension fund sponsors have benefited from very high returns over the last two decades (averaging 18% per annum since 1980) and yet still been able to absorb the short-term volatility in equity values. US and continental European pension funds, many of which have been restricted to invest in government bonds, have looked enviously at the performance of their UK counterparts and only recently have been permitted to invest in equities.

In addition, the true volatility was disguised since equities were reported using smoothed actuarial values (based on the dividend discount model or similar) rather than market values, in an attempt to pacify scheme trustees and corporate sponsors.

The MFR has encouraged pension fund managers to lower their weighting in equities and other 'volatile' assets. The obligation of pension funds, even young immature funds, to satisfy the MFR test every 3 years makes it more difficult for them to invest in more volatile asset categories, such as equities, that usually generate higher returns over long investment horizons. Although the MFR regulations allow the accruing liabilities of younger members to be matched against equities, it makes no allowance for the additional short-term volatility of equities.

Investment in other key asset categories, such as venture capital and technology stocks, is also discouraged. This is mainly because these categories pay little or no dividends (at least during their early phases) and, as a consequence, are subject to volatile price movements. Even investment in staple asset categories, such as foreign securities and property is discouraged, since the yields on these are not explicitly used in MFR calculations.

The MFR has encouraged pension fund managers to invest in bonds. While the MFR does not prescribe pension funds to invest in particular asset categories, such as gilts, some key discount rates used in calculating MFR

liabilities are based on gilt yields, so pension fund managers have been drawn towards gilts as the natural matching asset for MFR liabilities, on the grounds that 'there is a reduced risk of failing the test if the asset portfolio reflects the discount rates required to value plan liabilities' (Faculty and Institute of Actuaries (2000)).

This has increased the demand for gilts at a time when the government has been repaying the national debt and the stock of gilts has been falling. Gilt yields have fallen sharply, making them more expensive to purchase, with the result that MFR liabilities have risen further, thereby exacerbating the problem.

4.4.2.5 Many of the assumptions underlying the MFR are either out of date or inaccurate

Improvements in life expectancy and increasing early retirement and redundancy mean that the MFR assumptions relating to mortality and normal retirement are now out of date.

Just as important, the MFR liabilities are not discounted using the theoretically correct approach of discounting each future cash flow by the appropriate spot yield of equivalent term. The MFR approach of using the same fixed discount rate for all future cash flows is only valid if the yield curve is flat and unchanging. The MFR approach will overestimate liabilities if the yield curve is rising and underestimate them if the yield curve is falling as it has been since 1997:Q2.

4.4.3 The MFR Review

Dissatisfaction with the way in which the MFR was operating led the Department of Social Security to commission the Pensions Board of the FIA to conduct a review of the MFR. This review was published in September 2000 (although it was completed in May) together with a consultation paper published jointly by the DSS and HM Treasury.

The FIA report (Faculty and Institute of Actuaries (2000)) acknowledged that the current MFR 'cannot be made to work as a statutory standard'. It accepts that there is an 'inherent conflict between the MFR which imposes a risk of short-term fluctuations in funding requirements and the long-term asset allocation to produce the best financial results for pension fund members'. However, it also accepts that if assets are valued at market prices, then liabilities have to be valued consistently, using 'market yields on appropriate investments' (i.e., matching assets).

4.4.3.1 Key recommendations

It addresses these issues by recommending that:

1. Scheme members are told what benefits could be delivered if the scheme is wound up. Pensioners would have a 'very high chance' of continuing to receive their pensions in full and active members have a 'reasonable expectation' of eventually receiving their pensions.
2. The maximum time to remove a serious deficiency is increased from 1 to 3 years, while that to meet the MFR in full is extended from 5 to 10 years; annual recertification is also abolished.
3. The liabilities for pensions in payment should be discounted using the yield on the valuation date of:
 - A composite index of gilts and corporate bonds 'covering the whole of the fixed interest gilt and investment grade corporate bond markets combined',
 - Weighted by market capitalisation,
 - Covering all maturities, except short-term bonds on the grounds that they are too volatile and too poor a match for pension liabilities.

The resulting yield was 50bp above gilts on 31 December 1999.

4. The liabilities for index-linked pensions in payment should be discounted using the yield on an index-linked gilts index plus the credit spread on the composite index (necessary in the absence of a suitable range of indexed corporate bonds).
5. Liabilities for active members should be discounted at a rate equal to a fixed premium of 1% per annum above the composite index (i.e., a gross premium of 2% per annum over the composite index less 1% per annum for costs). On 31 December 1999 this implied a real return on equities of 4.5% before expenses.
6. The FIA wants to be able to change these assumptions on a regular basis.

The result would be a more 'consistent level of security' for plan members, although funds that retained current equity weightings would find that the new MFR test was more volatile and would need a higher level of funding to reduce the probability of failing the MFR. Funds might still be encouraged to become more risk averse by switching into gilts and corporate bonds.

4.4.3.2 Interim changes

The FIA also proposed some interim changes to the current MFR:

1. Reducing mortality rates by downrating PA90 (the mortality table for pension annuitants based on data for 1980) by an additional 2 years (to PA90 downrated 4 years):
 - Raises scheme costs by 6.5% or by £2.75bn up to April 2007 (the latest date for meeting the MFR).
2. Lowering the nominal yield to discount pension in payment liabilities in order to take account of the possibility that while the price level might fall in the future, pensions in payment cannot be reduced:
 - Raises costs by 3.5% or by £0.75bn up to April 2007.
3. Reducing the equity MVA numerator from 3.25% to 3% (see Appendix):
 - Reduces MFR liabilities by 7.7% or by £1bn up to April 2007.

Total additional costs of £2.5bn between the end of 2001 and April 2007.

4.4.3.3 Government consultation

The MFR Review was part of a 'wide ranging' consultation process that lasted until 31 January 2001. The government was prepared to consider the following options:

1. Amending the MFR as recommended by the FIA.
2. Further amending the MFR by:
 - Allowing the equity discount rate to be determined by the average over a period prior to the valuation date.
 - Changing the valuation basis from discontinuance to on-going (although this would change the nature of the underlying test away from that of minimum funding).
3. Abolishing the MFR and replacing it with:
 - Prudential supervision by a regulator which might reduce the impact of volatility but not eliminate the need for a funding requirement.

4.4.4 A Scheme Specific Funding Standard

In March 2001, the government announced the outcome of its consultation process. It decided that it would replace the one-size-fits-all MFR with a long-term, scheme-specific funding standard combined with a regime of transparency and disclosure and a range of additional measures to enhance the security of pension scheme members: (i) a statutory duty of care on the scheme actuary; (ii) stricter conditions about voluntary wind-up; and (iii) an extension to the fraud compensation scheme¹⁷. These proposals were recommended by the 2001 Myners review of institutional investment¹⁸. The government rejected the idea of either amending the MFR as proposed by the FIA or of replacing it with prudential supervision. One consequence of abolishing the MFR is that a new rule will be needed to determine the size of cash-equivalent transfer values which are currently linked to the MFR.

The key proposal is the introduction of a *long-term scheme-specific funding standard*. Trustees and their advisers will be required to take a view on the appropriate funding and investment of the scheme in the light of the scheme's specific circumstances and those of the sponsoring employer. Associated with this will be a *strong regime of transparency and disclosure*. The trustees and advisors of each scheme will be required to publish a *scheme-specific funding statement* which 'sets out in a clear and straightforward way how it sees its liabilities growing over time and how, through contributions to the fund and growth in the value of the assets through investment returns, it proposes to meet its liabilities'. The funding statement will specify:

- the funding objectives for the scheme;
- the fund's investment policy and projected returns on its assets;
- assumptions for projecting its liabilities, including the range of economic scenarios considered;
- a contribution schedule agreed by the trustees and the employer.

The statement will be drawn up assuming that the employer will continue in existence, that is, on a long-term or ongoing basis and the trustees will be required to assess and report on the strength of the employer's covenant. The employer is therefore expected to be fully involved in discussions about funding and investment plans, and in agreeing the required contribution rates. Interested parties, such as scheme members, their representatives (such as trade unions and pensioner support groups), and the company's shareholders, can scrutinise the scheme's funding and investment plans and assess whether they are realistic and appropriate.

Each scheme will have to compare itself against the funding statement on a regular basis. If the scheme finds that it is not adequately funded then it will have to produce a *recovery plan* for returning the fund to full funding within three years. The key objective is to ensure that the scheme is funded to meet the benefits in full in the long-term. The scheme will be required to file the recovery plan with OPRA and report annually on progress against it. OPRA will have some discretion to allow extensions to the deadline for returning funding to an adequate level, in the light of the specific circumstances of the scheme.

The trustees, actuaries and auditors will have whistleblowing duties to report to OPRA if contributions are not paid in accordance with the recovery plan. In particular, the scheme actuary will have a *statutory duty of care* towards scheme members. This will be particularly important for smaller funds where there may not be people or organisations with the required skill or interest to exercise effective scrutiny of the scheme's funding statement. The actuary will have an explicit duty to consider the implications of funding plans for the scheme members and beneficiaries. The actuary will have a duty to report to OPRA if: contributions are not being paid according to the funding statement, if there are any delays in drawing up a recovery plan in a scheme that is underfunded, and if contributions to an underfunded scheme are not being paid in line with the recovery plan.

There will also be an extension of the *fraud compensation scheme*. The level of compensation for fraud will be increased to cover not simply the MFR liabilities as at present, but the full cost of securing members' accrued benefits (or the amount of the loss from fraud, whichever is the lesser).

The government argues that: 'These proposals will provide protection for members of all defined benefit schemes and will encourage an intelligent and thought-through approach to planning investment and contributions policy. They do not distort investment as the MFR does, because they do not involve the valuation of liabilities using statutory reference assets which create artificial incentives for schemes to invest in those assets. Employers that wish to go on offering defined benefit schemes will find it easier to do so under these proposals. At the same time, the proposals will make it more difficult for those that wish to walk away from the pension promises that they have made'.

4. 5 Winding up a pension scheme

The 1995 Pensions Act allows a pension scheme to be wound up in the following circumstances:

- notice given by the employer to terminate contributions,
- the liquidation of the employer other than arising from amalgamation and reconstruction,
- the objects for which the scheme was initially set up no longer exist,
- the failure of the employer to rectify a serious breach of obligations,
- by order of OPRA if it is deemed necessary to protect the interests of the generality of the members of the scheme.

The most common event triggering a wind up is the insolvency of the sponsoring company under the 1986 Insolvency Act.

The purpose of section 73 of the Pensions Act is to ensure that, in the event of a wind up, the liabilities covered by the MFR are secured where this is possible. The first step is to assign to each member the actuarial value of

his accrued rights including the rights to indexation calculated on an MFR basis. In the event that there are insufficient funds to pay everyone in full, the order of priority of claims is as follows:

- liabilities arising from additional voluntary contributions
- pensions in payment (including pensions payable on the death of the member)
- deferred benefits of early leavers
- accrued benefits of current employees
- the indexation of benefits in the same order as above.

The liabilities under each category must be met in full before any of the liabilities in the next category are met.

Section 74 of the 1995 Act allows trustees to discharge their liabilities to members on wind up in any of the following ways:

- acquiring transfer credits in another approved scheme under *bulk transfer* provisions
- acquiring rights under a personal pension scheme
- purchasing approved immediate and/or deferred annuities from an insurance company, including the establishment of a *group deferred annuity scheme* for current employees
- purchasing buy-out policies from an insurance company
- establishing a claim on the Redundancy Fund (which is financed from national-insurance contributions) under the terms of the Employment Protection Act 1978.

Section 75 of the 1995 Act imposes on employers an obligation on wind up to make good a deficiency representing the difference between the assets and liabilities. The deficiency is calculated in accordance with Guidance Note GN19 of the Institute and Faculty of Actuaries. The resulting debt on the employer is non-preferential, which means that pension-scheme members count as unsecured creditors and so rank behind the Inland Revenue, HM Customs and Excise, secured lenders, and debenture holders in their claims on the other assets of the employer.

Section 76 of the 1995 Act prohibits any refund of assets to an employer before the liabilities of the scheme are fully discharged and before provision for LPI increases on pensions in payment and to be paid has been met. Section 77 allows remaining assets to be paid to the employer subject to a 40 per cent capital charge.

Following the 1990 Social Security Act, an *independent trustee* has to be appointed to schemes where the company is in liquidation. The appointment can be made by an insolvency practitioner or the official receiver. The independent trustee must have no interest in the assets of either the employer or the scheme and must not be connected with or an associate of the employer. The independent trustee has wide powers: once appointed, any powers vested in the trustees of the scheme and exercisable at their discretion may be exercised *only* by the independent trustee. The intention is to ensure that on winding up the discretionary powers given to trustees are exercised fairly between all parties, especially where the existing trustees have been appointed by the employer and so may favour the employer in any application of pension assets.

In March 2001, the government announced that it would introduce stricter conditions concerning the voluntary wind-up of pension schemes¹⁹. The government would legislate to make it clear that companies will be required to meet in full the accrued entitlements of scheme members as they fall due. This will ensure that an employer who remains in existence cannot walk away from the scheme leaving it insufficiently funded to pay the accrued pension liabilities. It is currently possible for companies to walk away from a scheme leaving it inadequately funded to pay the liabilities. Under the new proposal, employers will have to put in place a plan to ensure that benefits can be paid at the appropriate time. This proposal will mean that shareholders and creditors of the sponsoring company will have a stronger incentive to take an interest in the long-term health of the pension scheme, as the ability of the company to reduce its liabilities by winding-up the scheme will be reduced. The company will have the choice as to whether to meet these liabilities immediately, in full, or to set in place arrangements to meet them as they fall due. Whichever plan is adopted members should receive the benefits accrued to date.

There would also be new rules governing the wind-up of schemes following the insolvency of the employer. The intention is to make a debt on the insolvent employer equal to the cost of paying all benefits accrued to date. At

present unpaid employee and employer contributions are debts under insolvency proceedings with amounts becoming due just before the start of the insolvency proceedings having priority along with other recent debts for income tax, VAT and employees' wages. The rest of any debt relating to the pension scheme does not have priority and is treated in the same way as all the other debts.

5. The Accounting Framework for Occupational Pension Schemes

5.1 Financial Reporting Statement 17

In November 2000, the Accounting Standards Board (ASB) issued a new Financial Reporting Standard (*Financial Reporting Standard 17 – Retirement Benefits*) with the objective of replacing SSAP24, the existing accounting standard for reporting pension costs in DB pension schemes. The principal changes are that:

- Actuarial gains and losses will be recognised fully and immediately (rather than amortised over a period of up to 15 years).
- Scheme assets and liabilities will be valued by reference to current market conditions.

The consequence of this could be greater volatility of pension costs year on year and greater volatility in the balance sheet.

Prior to the introduction of SSAP24 (*Accounting for Pension Costs*) in 1988, employers accounted for pension schemes on a cash basis. Under SSAP24, the profit and loss account is charged with 'regular pension cost' which is designed to be a stable proportion of pensionable pay. Any variations from regular cost are spread forward and charged to P&L gradually over the average remaining service lives of the employees. Assets and liabilities are reported at actuarial value rather than fair value.

A number of problems emerged with SSAP24:

- Too much flexibility in choosing the valuation method and in accounting for the resulting gains and losses.
- Inadequate disclosure requirements and lack of transparency.
- Inconsistency between the pension assets and liabilities in the company's balance sheet and the actual surplus or deficit in the scheme.
- Inconsistent with international accounting standards (e.g., FAS87 (*Employers' Accounting for Pensions*) and IAS19 (*Accounting for Retirement Benefits in the Financial Statements of Employers*)) which had moved towards a market basis for valuing scheme assets.

The objectives of FRS17 are to ensure that:

- The employer's financial statements reflect the assets and liabilities arising from retirement benefit obligations and any related funding, measured at fair value.
- The operating costs of providing retirement benefits are recognised in the periods the benefits are earned by employees.
- Financing costs and any other changes in the value of the assets and liabilities are recognised in the periods they arise.
- There will be immediate recognition of gains and losses in the statement of recognised gains and losses, not in the P&L.

- The financial statements contain adequate disclosures.

FRS17 will have the following effects when it is fully in force for year-ends after June 2003.

5.1.1 Scheme assets

Scheme assets will be included at their fair value on the company's balance sheet date. This, in turn, will require an annual update of the scheme's actuarial valuation. The expected return on scheme assets will be calculated as the product of the expected long term rate of return and the market value (at the start of the period).

5.1.2 Actuarial liability

The actuarial liability will be calculated using the projected unit method and an AA corporate bond discount rate, although the actual discount rate used can be based on gilt yields with a constant risk premium of, say, 1%. This rate will generally be lower than that used under SSAP24 which is based on the assumed returns on the pension fund assets and so includes an equity component. The discount rate should be of equivalent currency and term as the scheme liability; however, the ASB argues that 'In theory, different discount rates should be applied to cash flows arising in different periods, reflecting the term structure of interest rates. In practice, acceptable results may be achieved by discounting all the cash flows at a single weighted average discount rate' (Accounting Standards Board (1997, p8)).

The AA corporate bond yield was chosen because this was the yield used in the equivalent US accounting standard, FAS87. FAS87 adopted this particular yield because it matched the asset class that a US insurance company, taking on the liabilities of an insolvent pension plan, would use to invest the scheme's remaining assets. The same yield was subsequently adopted by the International Accounting Standards Committee in IAS19.

At the end of each accounting year, a pension scheme member will have earned an additional year of service: this current service cost is classified as an operating cost in FRS17. Also by the end of the year, the member's pension liability will have risen because it is one year closer to being delivered (this is denoted the interest cost or pension liability discount), but this will be offset by the expected return generated on the assets backing the liability: the difference is denoted the net financing cost in FRS17.

The current service cost will be higher than the regular cost under SSAP24. On the other hand, under FRS17 the discount rate (and hence the interest cost relating to the liability) is likely to be lower than the expected return on scheme assets, so that the net financing cost for the pension scheme is likely to be a credit.

5.1.3 Surplus or deficit

The net defined benefit pension asset or liability, after attributable deferred tax, will be shown after other net assets in the balance sheet. FRS17 limits the surplus recognised by the employer to the amount that the employer could recover through reduced contributions and agreed refunds.

5.1.4 Past service costs

Past service costs arise whenever an improvement in benefits is backdated (e.g., the award of a spouse's pension). Under SSAP24, they may be set against any surplus, with any excess cost charged to the P&L. With FRS17, they are charged to P&L over the period of vesting. In most cases, the vesting of such improvements is immediate, so the cost is charged immediately to the P&L account without offset against the surplus even if it is funded from a surplus.

5.1.5 Profit and loss account

The P&L charge will be split between:

- Operating costs – which includes current service costs and past service costs.
- Financing costs – which includes interest costs (the pension liability discount) and the expected return on assets.

Any overpaid/unpaid contributions are represented as debtor/creditor due within one year.

5.1.5 Actuarial gains and losses

SSAP24 and IAS19 allow differences between actual and expected outcomes to be spread in the P&L over a number of years and to defer a hard core (the 10% corridor) indefinitely.

FRS17, in a radical departure from conventional practice, requires immediate recognition of actuarial gains and losses through a new account, the 'statement of recognised gains and losses' or STRGL. The asset returns in the pension fund are divided into two parts which are recognised separately in the P&L and STRGL. The financing item in the P&L will show an expected asset return, which is designed to be reasonably stable over time. The differences between realised and expected asset returns are shown in the STRGL, as are changes in actuarial assumptions and differences between these assumptions and actual experience in respect of the liabilities. A five-year history of these differences is required to enable users of the accounts to assess the accuracy of the forecast returns.

5.2 Assessing FRS17

FRS17 will have three major impacts:

1. It will reduce the volatility of the P&L but cannot eliminate it, since changes in realised market rates eventually flow through to the P&L via consequential changes in the long-term expected returns on both assets and AA corporate bonds.
2. It will increase the volatility of the balance sheet due to the inclusion of the net pension asset or liability and this may trigger loan covenants or borrowing limits.
3. There will be increased complexity of the financial statements arising from non-cash pension items, e.g. current service cost and amortisation of past service costs within operating cost, and the unwinding of the pension liability discount and the expected return on assets within financing costs.

International accounting standards deal with this volatility by averaging the market values over a number of years and/or spreading the gains and losses forward in the accounts over the remaining service lives of the employees. But the consequences are that the balance sheet does not represent the current surplus or deficit in the scheme and that charges to P&L are infected by gains and losses that arose many years previously.

With FRS17, the P&L shows the relatively stable ongoing service cost, interest cost and expected returns on assets measured on a basis consistent with international standards. The effects of the fluctuations in market values, on the other hand, are not part of the operating results of the business and are treated in the same way as revaluations of fixed assets, i.e., are recognised immediately in the STRGL. This has two advantages over the international approach:

- The balance sheet shows the deficit or recoverable surplus in the scheme.
- The total profit and loss charge is more stable than it would be if the market value fluctuations were spread forward.

The Association of Chartered Certified Accountants (ACCA) argued that the spreading forward of gains/losses over average service lives is better than immediate recognition because of the long-term nature of pension costs, the uncertainty over the estimates of key yields, and the conformity with current international standards (e.g., IAS19). Although the various components might be separately disclosed, the ACCA preferred the pension cost to be charged as a single item in operating cost.

The FIA argued that, while FRS17 will make 'the respective risks and rewards borne by companies and shareholders more transparent to the shareholders', there would be 'adverse impacts on pension scheme members, because it will introduce new volatility into the assessment of pension costs and liabilities'. As a consequence, sponsors of DB schemes could become more reluctant to improve benefits since these would be immediately reflected in company P&L, even if funded from surplus assets.

The long-term effect of FRS17 on asset allocation is not clear. On the one hand, as in the case of the MFR, the use of a specific discount rate for liabilities (such an AA corporate bond yield) might induce funds to adopt a more bond-based investment strategy. On the other hand, by excluding the impact of equity risk on the P&L, FRS17 provides companies with an incentive to raise the equity component of their pension fund in order to generate higher expected asset return and profit figures. However, anecdotal evidence suggests that pension funds are increasing rather than reducing their weighting in bonds in preparation for the introduction of FRS17.

Other objections have been put forward:

- The P&L depends on an assessed or expected figure for asset returns.
- There are potentially two different valuation results, the trustees' funding valuation and the company's accounting valuation; companies prefer to align the two types of valuation, if possible using the weaker funding basis, thereby reducing the security of benefits.
- Despite the greater transparency from using market values, there can be substantially different investment conditions if companies use different measurement dates, even if these dates are only a short time apart.
- A pension scheme deficit has to be deducted from distributable reserves, thereby lowering dividend cover and possibly forcing a company to pass a dividend payment. Some commentators have suggested that this is what should happen if companies make a pension promise and do not have the resources to cover it.
- The use of the projected unit method to determine pension liabilities is inconsistent with the MFR, even though it gives a more realistic measure of the true eventual liability.
- Unlike the US, AA bonds are not a significant investment category in the UK: their weighting was just 7% of the total UK bond market in December 2000.

6. The Risks and Returns in Funded Schemes

There are two main types of funded scheme: the *defined benefit* (DB) scheme and the *defined contribution* (DC) scheme²⁰. With a DB scheme, it is the pension benefit that is defined. In the UK, for example, most DB schemes are arranged by companies and are known as occupational final salary schemes, since the pension is some proportion of final salary, where the proportion depends on years of service in the scheme. A typical scheme in the UK has a benefit formula of one-sixtieth of final salary for each year of service up to a maximum of 40 years' service, implying a maximum pension in retirement of two-thirds of final salary, and with the pension indexed to inflation up to a maximum of 5% per annum (i.e., limited price indexation or LPI). In contrast, with a DC scheme, what is defined is the contribution rate into the fund, e.g. 10% of earnings. The resulting pension depends solely on the size of the fund accumulated at retirement. Such schemes are also known as money purchase schemes and in the UK they are better known as personal pension schemes. The accumulated fund must be used to buy a life annuity from an insurance company (although, in the UK, up to 25% of the fund can be taken as a tax-free lump sum on the retirement date).

6.1 Defined benefit schemes

Defined benefit and defined contribution schemes have different costs and benefits. Defined benefit schemes offer an assured (and in many cases a relatively high) income replacement ratio in retirement. People in retirement can expect to enjoy a standard of living that is related to their standard of living just prior to retirement. But this is the case only for workers who remain with the same employer for their whole career. Fewer than 5% of workers in the UK do this: the average worker changes jobs about six times in a lifetime²¹.

Every time workers switch jobs they experience a 'portability loss' in respect of their pension entitlement. This is because DB schemes are generally provided by specific employers and when a worker changes jobs they have to move to a new employer's scheme. When they do so, they will either take a transfer value equal to the cash equivalent of their accrued pension benefits with them or leave a deferred pension in the scheme that they are leaving. Accrued benefits are valued less favourably if someone leaves a scheme than if they remain an active member of the scheme. This is because scheme leavers (whether they choose a transfer value or a deferred pension) have their years of service valued in terms of their leaving salary (although this is uprated annually to the retirement date by the lower of the inflation rate or 5%), whereas continuing members will have the same

years of service as the early leaver valued in terms of their projected salary at retirement which is likely to be higher. Long stayers are therefore subsidised at the expense of early leavers. In the UK, the portability loss is more commonly known as a ‘cash equivalent loss’.

For a typical worker in the UK changing jobs six times during their career, Table 2 shows that the portability loss lies between 25 and 30% of the full service pension (i.e., the pension of someone with the same salary experience but who remains in the same scheme all their working life). Even someone changing jobs once in mid-career can lose up to 16% of the full service pension. It is possible to reduce portability losses by, for example, indexing leaving salaries between the leaving and retirement dates to the growth in real earnings or by providing full service credits on transfers between jobs, but this is not common in the UK (except on transfers between different public sector occupational pension schemes).

6.2 Defined contribution schemes

With DC schemes, it is important to distinguish between the accumulation and decumulation stages.

6.2.1 The accumulation stage

Defined contribution schemes have the advantage of complete portability when changing jobs. However, individual DC schemes (such as personal pension schemes) tend to have much higher operating costs than occupational DB schemes (although occupational DC schemes may have lower operating costs than occupational DB schemes on account of their much simpler structure). Individual DC schemes in the UK take around 2.5% of contributions in administration charges and up to 1.5% of the value of the accumulated assets in fund management charges. The Institute of Actuaries has estimated that all these costs are equivalent to a reduction in contributions of between 10 and 20%; in contrast, the equivalent costs of running an occupational scheme work out to between 5 and 7% of annual contributions²². On top of this, most of the costs associated with an individual DC scheme relate to the initial marketing and set-up. To reflect this, charges are also frontloaded, i.e. they are extracted at the start-up of a scheme rather than spread evenly over the life of the scheme. In many schemes, much of the first two years of contributions are used to pay sales commissions. This has a dramatic effect in reducing the surrender value of a scheme if contributions cease early on and it is transformed from an ongoing to a paid-up basis. The cumulative effect of these charges in respect of DC schemes is shown in Table 3. Over a 25-year investment horizon, the average scheme with a full contribution record takes around 19% of the fund value in charges, while the worst scheme provider takes around 28%²³. There is also evidence of a substantial absence of persistency in regular premium personal pension policies. Table 4 shows that the estimated average lapse rate is 27% after two years and 53% after four years: it is 84% after 25 years (assuming a 6.5% annual average lapse rate after 4 years). The lapse rate-adjusted reduction in contributions for a 25-year policy is 62%: the effective contributions into this scheme for a typical policy holder are just 38p in the £²⁴.

Further, although individual DC schemes are portable between jobs, they are not fully portable between scheme providers or even between different investment funds operated by the same provider. Transfers between personal pension scheme providers, for example, can incur charges of between 25 and 33% of the value of the assets transferred. Transfers from DB schemes into DC schemes can cost even more than this. Table 2 shows that even if a worker changes jobs only once in mid-career and moves out of a DB scheme, he would receive a reduced pension of: 71-79% of the full service pension if he moved to an employer-run DC pension (with the same total contribution rate as the DB scheme and no extra charges), 61-68% if he moved to a personal pension scheme (where the employer also contributes), and only 37-44% if he moved to a personal pension scheme (without employer contributions). Moving to a DC scheme involves a ‘backloading loss’ in addition to the cash equivalent loss incurred when leaving a DB scheme. The backloading loss arises because benefits are backloaded in final salary schemes but not in DC schemes; this follows because salary and therefore accrued benefits generally *increase* with years of service. Individuals transferring to a DC scheme (with age-independent contributions) forego these backloaded benefits: the marginal benefit from an additional year’s membership of a DC scheme is simply that year’s contributions (plus the investment returns on these) which are usually a *constant* proportion of earnings. If the DC scheme happens to be a personal pension scheme then there are also initial and annual charges to pay, plus the possible loss of the employer’s contribution. The impact of these factors can be extensive as the above portability losses indicate²⁵.

Another problem with DC schemes, in practice, is that total contributions into them tend to be much lower than with DB schemes. In a typical DB scheme in the UK, the employee's contribution is about 5-6% of employee earnings, while the employer's contribution is double this at about 10-12%²⁶. The size of the employer's contribution is not widely known amongst employees; and, to an extent, the size of the employer's contribution is irrelevant from the employee's viewpoint, since the pension depends on final salary, not on the level of contributions. This is not the case with DC schemes where the size of the pension depends critically on the size of contributions. When personal pension schemes first started in the UK in 1988, most employers refused to contribute anything towards these schemes and many workers were not fully aware of the penalty in terms of the reduced pension they were incurring as a result of foregoing the employer's contribution.

However, most (about 85%) of the new occupational schemes being established in the UK are DC schemes. The average employee contribution into such schemes is 3%, while the average employer contribution is again double at 6% (although some employers only match the employee's contribution)²⁷. Total contributions into occupational DC schemes are therefore around 9% of employee earnings compared with 15-18% for occupational DB schemes. Nevertheless, administration costs are much lower with occupational DC schemes than with personal pension schemes, so even if employers made the same contribution into an employee's personal pension scheme as into their own DC scheme, the final pension would still be lower in the personal pension scheme.

Asset risk is not the only risk borne by DC scheme members and their dependants. They also bear some of the other types of risk, namely, ill-health, disability and death-in-service. In DB schemes, these risks exist, but are typically carried by the scheme sponsor. In DC schemes, protection against these risks has to be purchased directly by the member as additional insurance policies.

Nevertheless, Table 5 shows that so long as individuals join a DC scheme at a sufficiently early age and maintain their contribution record over a sufficiently long investment horizon (and so get the benefits of compounded returns), a decent pension in retirement can be achieved for a modest contribution rate. The table indicates that a 25-year old male can expect a pension of two-thirds of final salary (the maximum available from a DB scheme in the UK) with a total net contribution rate of just under 11% of earnings. The required contribution rate rises sharply with age, however. Someone joining at 35 would need a contribution rate of around 17%, and by the age of 40, the required contribution rate is above the maximum permissible under the regulations establishing such schemes.

6.2.2 The distribution stage: annuities

The weak tail of DC pension provision lies in the distribution stage and relates to the annuities market.

The market for immediate annuities is highly concentrated: of around 240 authorised life companies in the UK, only about 10 are serious providers of life annuities at any given time²⁸. There are a number of problems facing both annuitants and annuity providers²⁹. First, there is an adverse selection bias associated with mortality risk. This is the risk that only individuals who believe that they are likely to live longer than the average for the population of the same age will wish to purchase annuities. Second, mortality tends to improve over time and there can be severe consequences if insurance companies underestimate mortality improvements. Insurance companies add substantial cost loadings to cover these risks, something of the order of 10-14% of the purchase price³⁰. Third, there is inflation risk, the risk that with level annuities, unanticipated high inflation rapidly reduces the real value of the pension. Fourth, there is interest rate risk. Annuity rates vary substantially over the interest rate cycle. They are related to the yields on government bonds of the same expected term; and since these yields vary by up to 150% over the cycle³¹, annuity rates will vary by the same order of magnitude. Finally, there is reinvestment or mismatch risk arising from an inadequate supply of long-maturing assets, such as government fixed-interest and indexed-linked bonds, to provide an income stream that can be used to pay the annuity³².

Even worse, the market for deferred annuities is extremely thin, particularly at distant starting dates (where the market is virtually non-existent). Where deferred annuities are available, they are very poor value for money.

Deferred annuities are particularly important in the case where a DB scheme is wound up, say, as a result of the insolvency of the sponsoring company. The assets of the scheme, which is often in deficit at the time (since the company, recognising its serious financial position, usually ceases making contributions into the scheme some time before the insolvency is formally declared) are insufficient to pay the current and future pension liabilities in full. In the past, the residual assets in the scheme were used to buy non-profit policies for current pensioners and deferred annuities for deferred pensioners. But fewer and fewer insurance companies are willing to sell deferred annuities because of the uncertainties attached to forecasting mortality improvements.

Insurance companies use the government bond market to protect themselves against both interest rate and inflation risk. When an insurance company sells a level annuity it uses the proceeds to buy a fixed-income government bond of the same expected term as the annuity (typically 15 years) and then makes the annuity payments from the coupon payments received on the bond. Similarly, when an insurance company sells an indexed annuity, it buys an index-linked bond of the same expected term as the annuity; few, if any, insurance companies sell indexed annuities with expected maturities beyond that of the most distant trading indexed-linked gilt. As a consequence, interest and inflation risk are transferred to the annuitant. If a DC scheme member retires during an interest rate trough (as happened in the mid to late 1990s), he can end up with a very low pension. Similarly, if a 65-year old annuitant chooses an indexed annuity, he will receive an initial cash sum that is about 30% lower than a level annuity, and, with inflation at 3% p.a., it would take 11 years for the indexed annuity to exceed the level annuity³³. Since retired people tend to underestimate how long they will continue to live, most prefer to buy a level annuity and thereby retain the inflation risk. In 1995, as a result of falling interest rates, the UK government was pressed into allowing income drawdown: it became possible to delay the purchase of an annuity until annuity rates improved (or until age 75 whichever was sooner) and in the interim take an income from the fund which remained fully invested.

However, until very recently, the insurance industry (especially in Europe) has been reluctant to offer products that help annuitants hedge the risks, especially interest rate risk, that they have been forced to assume. Yet a whole range of financial instruments and strategies is available to enable them do this. The simplest strategy, based on the principle of pound cost averaging, involves a planned programme of phased deferred annuity purchases in the period prior to retirement which must be of sufficient length to cover an interest rate cycle (say, 5-7 years). A more sophisticated solution for the pre-retirement period is protected annuity funds which employ derivative instruments. One example places a fraction (e.g., 95%) of the funds on deposit and the rest in call options on bond futures contracts: if interest rates fall during the life of the option, the profit on the options will compensate for the lower interest rate. Another example places a fraction of the funds in bonds and the rest in call options on an equity index, thereby gaining from any rise in the stock market over the life of the options. However, there are very few providers of these products in the UK.

A possible solution for the post-retirement period is provided by variable annuities. These were first issued in 1952 in the US by the TIAA-CREF³⁴. In the UK, they are better known as unit-linked or with-profit annuities, but only a few insurance companies offer them. A lump sum is used to buy units in a diversified fund of assets (mainly equities) and the size of the annuity depends on the income and growth rate of assets in the fund. The annuity can fall if the value of the assets falls substantially, so there is some volatility to the annuity in contrast with a level annuity. But since the pension from a level annuity is based on the yield on gilts, it is likely that the pension from a variable annuity, based on the return on equities, will generate a higher overall income (assuming that the duration of the annuity is sufficiently great).

The government could also do more to ameliorate these market failures in the private provision of annuities which arise, in part, from aggregate risks that are beyond the abilities and resources of private insurance companies to hedge. A number of proposals have been suggested recently. For example, in order to help the private sector hedge against inflation risk more effectively, the Goode Report (1993, sec. 4.4.44) suggested that the government introduce a new type of bond, with income and capital linked to the retail price index, but with payment of income deferred for a period. Such bonds were given the name 'deferred income government securities' (DIGS): they could be introduced with different starting and termination dates and would allow all deferred pensions to be indexed to prices. DIGS were never officially introduced, but the introduction of the gilt strips market in 1997 could help insurance companies construct them synthetically. Similarly, the introduction of limited price index (LPI) bonds would allow post-retirement inflation risk to be hedged more effectively.

But the main causes of market failure are the risks associated with adverse selection and mortality. Making second pensions mandatory rather than voluntary would do much to remove the adverse selection bias in the demand for annuities³⁵. The government could also help insurance companies hedge the risk associated with underestimating mortality improvements by issuing ‘survivor bonds’, a suggestion made in Blake, Burrows and Orszag (2000). These are bonds whose future coupon payments depend on the percentage of the population of retirement age on the issue date of each bond who are still alive on the date of each future coupon payment. For a bond issued in 2000, for instance, the coupon in 2010 will be directly proportional to the amount, on average, that an insurance company has to pay out as an annuity at that time. The insurance company which buys such a security bears no aggregate mortality risk and, as a consequence, cost loadings fall. There is therefore much that could be done by both government and the insurance industry to improve the market for annuities which remain the weak tail in DC pension provision.

7. The Management of the Pension Fund Assets

In the last section, we examined the costs and benefits of DB and DC schemes without discussing how the two schemes were related. In this section, we demonstrate the relationship between the two types of scheme, using an approach developed in Blake (1998). This will make it easier to understand the different investment management strategies appropriate for DB and DC schemes.

7.1 The relationship between DB and DC schemes

Fig. 1 shows that the present value of the DC pension on the retirement date depends entirely on the value of the fund’s assets on that date. Fig. 2 shows that the present value of the DB pension (L) is independent of the value of the fund’s assets. Fig. 3 shows that the DB pension can be replicated using an implicit long put option ($+P$) and an implicit short call option ($-C$) on the underlying assets of the fund (A), both with the same exercise price (L) which equals the present value of the DB pension at the member’s retirement age. The put option is held by the scheme member and written by the scheme sponsor, while the call option is written by the member and held by the sponsor. If, on the retirement date of the member, which coincides with the expiry date of the options, one of the options is in-the-money, it will be exercised. If the value of the fund’s assets is less than the exercise price, so that the scheme is showing an actuarial deficit, the member will exercise his or her put option against the sponsor who will then be required to make a deficiency payment ($L-A$). If, on the other hand, the value of the assets exceeds the exercise price, so that the scheme is showing an actuarial surplus, the sponsor will exercise his or her call option against the member and recover the surplus ($A-L$). This implies that a DB scheme is, in effect, a risk-free investment from the member’s viewpoint: DB scheme members end up with the same pension whatever the value of the underlying assets.

It is clear from this how DB and DC schemes are related. A DC scheme is invested only in the underlying financial assets. A DB scheme is invested in a portfolio containing: the underlying assets (and so is, in part, a DC scheme) *plus* a put option *minus* a call option on these assets. The actuarial surplus with a DB scheme is defined as the difference between the values of the pension assets and liabilities. The pension assets at any time comprise the financial assets accumulated by that time *plus* the present value of the promised future contributions into the scheme. The pension liabilities at any time are equal to the present value of the future pension payments from the scheme. By definition, the surplus is always zero with a DC scheme. The surplus risk (i.e., the volatility of the surplus) with a DB scheme depends on both the difference between the volatilities of the pension asset and pension liability values and on the correlation between these values. The main sources of these volatilities are uncertainties concerning future investment returns, real earnings growth rates and inflation rates. This is because investment returns determine the rate at which contributions into the pension fund accumulate over time, the growth rate in real earnings determines the size of both contributions into the scheme and the pension liability at the retirement date, and the inflation rate influences the growth rate of pensions during retirement. With a DC scheme, the surplus risk is zero by definition.

The options embodied in a DB scheme are known as ‘exchange options’. They are a variant of the more familiar Black-Scholes options which recognise that, if exercised, risky assets are exchanged at an exercise price that is indexed to the uncertain value of the pension liabilities, in contrast with the standard model where the exercise price is constant. The value of these options depends on the magnitude of both the surplus and surplus risk. In particular, if both the surplus and surplus risk can be maintained at zero, the call and the put both have

zero value. It follows that, if these conditions are satisfied, DB and DC schemes are equivalent in the sense of delivering the same pension in retirement. In other words, it is possible to manage a DC scheme in such a way that it generates the same pension in retirement as a final salary DB scheme: such schemes are known as ‘targeted money purchase schemes’.

7.2 The Optimal Management of DB and DC Schemes

7.2.1 DC schemes: Maximising risk-adjusted expected value

The optimal management of a DC scheme is fairly straightforward, once the critical task of determining the attitude to risk of the scheme member has been undertaken. This usually involves assessing the degree of risk tolerance of the scheme member. The greater the degree of risk tolerance, the greater the risk that can be borne by the scheme’s assets and hence the greater the expected value of the pension fund at the retirement date. This can be explained in terms of the risk-adjusted expected value of the asset portfolio which is defined as the expected value of the pension assets net of a risk penalty, where the latter equals the ratio of the volatility of the fund’s assets to the member’s degree of risk tolerance. The higher the asset risk and the lower the risk tolerance, the greater the risk penalty. The fund manager’s task is to maximise the risk-adjusted expected value. It is possible to increase the expected value of the pension assets by taking on more risk, but if too much additional risk is taken on, the risk-adjusted expected value will fall, especially if risk tolerance is low. The risk penalty shows the cost of taking on more risk.

Personal pension DC schemes in the UK are provided by financial institutions such as insurance companies, banks, building societies, unit trusts (i.e., open-ended mutual funds), investment trusts (i.e., close-ended mutual funds), and open-ended investment companies. The scheme provider will offer the scheme member a choice of investment vehicles in which the pension assets will accumulate, ranging from low risk (e.g. a deposit administration scheme), through medium risk (e.g. an endowment scheme from an insurance company) to high risk (e.g. a unit-linked scheme). The deposit administration scheme is targeted at a scheme member with a very low degree of risk tolerance, while the unit-linked scheme is targeted at a scheme member with a high degree of risk tolerance. However, it is arguable whether low-yielding deposits are a suitable investment vehicle for long-horizon investment programmes such as pension schemes. Other asset categories, such as equities, have, in the past, offered much higher long-run returns. Furthermore, equities may have high short-term volatility, but long-run returns have been much more stable. Investing in deposit administration schemes or bonds has been described as a strategy of ‘reckless conservatism’: these assets, while having stable capital values in nominal terms over short horizons, do not tend to have long-term returns that match the real growth rate in earnings. Despite this, surveys of personal pension scheme members in the UK and elsewhere tend to show that fear of short-term capital loss drives many individuals towards investment strategies that are recklessly conservative in the long run. Nevertheless, once a scheme member has selected a particular type of scheme, the fund manager’s task is to choose the asset mix (between equities, bonds, property etc.) that maximises the risk-adjusted expected value of the assets³⁶.

7.2.2 DB Schemes: asset-liability management

The appropriate investment management strategy for pension funds running DB schemes is asset-liability management (ALM) (also called surplus risk management)³⁷. This involves constructing a portfolio of financial assets that (together with promised future pension contributions) matches the pension liabilities in two key respects: size and volatility.

First, if pension schemes are always fully funded, so that assets are always sufficient to meet liabilities in full, then the surplus will always be zero. This can be achieved by adjusting the contribution rate (especially the employer’s contribution rate) into the fund. In practice, there are usually some tolerance limits. In the UK, for example, it is permissible for the value of assets to vary between 90% and 105% of the value of liabilities. If the value of assets exceeds the 105% limit, the scheme has up to 5 years to reduce the value to 100% of liabilities (Finance Act 1986). The most common means of doing this is the employer’s contribution holiday, although other means are available: an employee’s contribution holiday, improved pension benefits or selling off financial assets, the proceeds from which are returned to the sponsor subject to a 40% tax. If the value of assets

falls below 90% of the value of liabilities, the scheme has one year to raise the value of assets to 90% of liabilities and up to a further 5 years to raise it back to 100% (this is known as the 'minimum funding requirement' of the Pensions Act 1995). The most common means of doing this is additional employer contributions (i.e., deficiency payments), since most DB pension schemes operate on a balance of cost basis.

Second, if the assets in the pension fund are selected in such a way that their aggregate volatility matches that of the liabilities, then the surplus risk can be reduced to zero, which combined with a zero surplus, implies that the implicit options in the DB scheme can be issued free of charge. This requires the assets in the pension fund to have both the same variance as the pension liabilities and to be perfectly correlated with them (although it is unlikely in practice that financial assets with these precise properties exist, unless governments in the near future begin to issue zero-coupon wage-indexed bonds). This, in turn, requires the assets to constitute a 'liability immunising portfolio', that is, a portfolio that immunises (or hedges) the interest rate, real earnings growth rate and inflation rate risks embodied in the pension liabilities.

Structuring the liability immunising portfolio is the most important part of determining the fund's strategic asset allocation (SAA). The SAA is usually determined by the fund manager in collaboration with the fund's sponsor on the advice of the fund's actuary. Given the nature of the fund's liabilities (which are typically indexed to real wage growth), the liability immunising portfolio during the early life (i.e., immature stage) of a pension scheme will contain a high proportion of equities and other 'real' assets such as property, on the grounds that (as we argued above), the shares of factors of production in national income tend to be relatively stable, so that the returns to capital (equity) and land (property) will over the long run match that on labour (real wages). The actuary's advice will be based on an asset-liability modelling (ALM) exercise. ALM is a quantitative technique used to help structure asset portfolios in relation to the maturity structure of liabilities. It begins by making forecasts about how a pension fund's liabilities are going to accrue over a particular time horizon, that might be 5, 10 or 15 years ahead. To do this, assumptions concerning salary growth rates, staff turnover, and the age distribution and sex composition of the workforce have to be made. Then forecasts concerning the funding position of the pension scheme have to be generated. This involves making projections of future contribution rates and also assessing the value of assets in relation to accrued liabilities. These forecasts and projections are made under different scenarios concerning likely outcomes. Typically three scenarios are adopted: most likely, best-case and worst-case. This provides a realistic range of possible outcomes, and, in the latter case, spells out the extent of the risks that the pension fund sponsor faces.

There are two main uses of ALM. The first is to indicate the consequences of adopting any particular investment strategy. The second is to discover alternative strategies that increase the likelihood of meeting the fund's objectives. Proponents of asset-liability modelling argue that the strategy allows pension funds to generate higher returns without any consequential increase in risk. The modelling exercise might indicate, for example, that if current investment returns are sustained, there would be no need to change the employer contribution rate into the pension fund over the next 5 years. However, the worst-case scenario might indicate the employer contribution rate might have to rise by 10% over the next 5 years. The exercise therefore allows the scheme sponsor to plan for this possibility. As another illustration, the modelling exercise might indicate that because a pension fund is maturing, it should switch systematically out of equities into fixed-income bonds (in the five or so years prior to retirement), which are more likely to meet pension liabilities with lower risk of employer deficiency payments; this is known as 'lifestyle' fund management (or 'age phasing').

Some fund managers are concerned that ALM gives an unwarranted role to outsiders, such as actuaries, in designing the strategic asset allocation. Actuaries have always had a role in determining the value of a pension scheme's liabilities. But with the advent of ALM, actuaries have begun to have a role in setting the long-term or strategic asset allocation over, say, a 10-year horizon. Some fund managers claim they are being reduced to the subsidiary role of determining tactical asset allocation (or market timing) and stock selection relative to this new long-term strategic asset allocation benchmark. However, not all fund managers are critical of the redefinition of their respective roles. Many fund managers have positively welcomed the formal separation of long-term policy decisions from short-term tactical decisions that ALM allows.

Another potential problem concerns the interpretation of measures of investment performance in the light of the technique. ALM justifies different pension funds pursuing different investment policies. For example, small,

fast-growing funds might pursue very aggressive investment policies, while large mature funds might adopt more passive investment policies. This makes it very difficult to interpret a single performance league table drawn up on the assumption that all funds are pursuing the same objective of maximising expected returns. Performance measurement services have begun to take this into account by constructing peer-group performance league tables, drawn up for sub-groups of funds following similar objectives. We now discuss performance measurement in more detail.

8. The Investment Performance of Pension Fund Assets

Good or bad investment performance by DB and DC pension schemes have very different consequences for scheme members. With DB schemes, the investment performance of the fund's assets are of no direct relevance to the scheme member, since the pension depends on the final salary and years of service only and not on investment performance. The scheme member can rely on the sponsoring company to bail out the fund with a deficiency payment if assets perform very badly (i.e. the member exercises the implicit put option against the sponsor). In extreme circumstances, however, it is possible for a firm and possibly the scheme to become insolvent. Of course, if the assets perform well, the surplus is retained by the sponsor (who exercises the implicit call option against the member in this case).

However, investment performance is critical to the size of the pension in the case of a DC scheme: scheme members bear all the investment risk in such schemes. Scheme members, especially personal pension scheme members, can find themselves locked into a poorly performing fund, facing very high costs of transferring to a better performing fund. In addition, the type of funds in which personal pension scheme members invest can and do close down and then the assets do have to be transferred to a different fund. In this section, we examine the investment performance of pension scheme assets, beginning with those of DC schemes.

8.1 Investment performance of DC schemes

The anticipated return in a high-risk investment vehicle must be greater than that in a low-risk investment vehicle, but there can be wide differences in realised returns, even for schemes in the same risk class. Blake and Timmermann (1998) conducted a study of the investment performance of unit trusts in the UK, one of the key investment vehicles for DC schemes. Table 6 shows the distribution of returns generated by unit trusts operating in the four largest sectors. These figures indicate enormous differences in performance, especially over the long life of a pension scheme. For example, the 4.1 percentage point per annum difference between the best and worst performing unit trusts in the UK Equity Growth sector leads, over a 40-year investment horizon, to the accumulated fund in the top quartile being a factor of 3.2 times larger than the accumulated fund in the bottom quartile for the same pattern of contributions. The 5.9 percentage point per annum difference between the best and worst performing unit trusts in the UK Smaller Companies sector leads to an even larger fund size ratio after 40 years of 5.3.

So personal pension scheme members can find themselves locked into poorly performing funds³⁸. But should it not be the case in an efficient capital market that systematically underperforming funds fail to survive and are taken over by more efficient fund managers? Lunde, Timmermann and Blake (1999) investigated this possibility. They found that underperforming trusts are eventually merged with more successful trusts, but that on average it takes some time for this to occur. Fig. 4 shows the distribution of durations across the whole unit trust industry of trusts that were eventually wound up or merged. The modal duration is 4.25 years (51 months), but the average duration is about 16 years. Across the unit trust industry, the average return on funds that survived the whole period was 13.7% per annum, while the average return on funds that were wound up or merged during the period was 11.3% per annum. This implies that a typical personal pension scheme member might find him or herself locked into an underperforming trust that is eventually wound up or merged into a more successful fund, experiencing an underperformance of 2.4% p.a., over a 16 year period. This translates into a fund value that is 19% lower after 16 years than a fund that is not wound up or merged. So it seems that in practice personal pension scheme members cannot rely on the markets to provide them with a painless way of extricating them from an underperforming fund. They have to do it themselves, paying up to one-third of the value of their accumulated fund in transfer charges.

8.2 The investment performance of DB schemes

There are about 150,000 small defined benefit pension schemes in the UK, most with fewer than 100 members in each. Virtually all these schemes are managed on a pooled basis by insurance companies. There are about 2,000 large schemes, including 70 or so with assets in excess of £1bn each³⁹. As we indicated above, the investment performance of these funds is much more important for the scheme sponsor than for the scheme member. The recent history of the UK pension fund industry embraces a period of substantial deficiency payments in the 1970s (arising from the UK stock market crash in 1974-75), and the build up of huge surpluses during the bull markets of the 1980s and 1990s. These surpluses have enabled sponsors to reduce their contributions into their schemes (i.e. to take employer's contribution holidays). In other words, during the 1980s and 1990s, UK pension scheme sponsors have benefited enormously from the investment successes of their fund managers.

The investment performance of UK defined benefit pension fund managers between 1986 and 1994 has been investigated in Blake, Lehmann and Timmermann (1998, 1999)⁴⁰. The data set used covers the externally-appointed active fund managers of more than 300 medium-to-large pension funds with a mandate agreement to 'beat the market'. The UK pension fund industry is highly concentrated and most of these active fund managers come from just five groups of professional fund managers (Deutsche Asset Management, Merrill Lynch Investment Management, Phillips and Drew Fund Management, Schroder Investment Management and Gartmore Pension Fund Managers).

While the average or median performance has been very good over the sample period, important implications concerning the behaviour of fund managers can be derived from an examination of the distribution of this performance about the median. Table 7 shows the cross-sectional distribution of returns realised by the pension funds in the sample over the period 1986 - 94 in the most important individual asset classes as well as for the total portfolio. The semi-interquartile range is quite tight, below 2 percentage points for most asset classes and only just over 1 percentage point for the total portfolio return. This suggests evidence of a possible herding effect in the behaviour of pension fund managers: fund managers, although their fee is determined by their *absolute* investment performance, are appointed and evaluated on the basis of their *relative* performance against each other and therefore have a very strong incentive not to underperform the peer-group⁴¹. The fund managers in the sample are active managers who have won mandates on the basis of promises to beat the market: they are not passive managers attempting to match the market. If they were genuinely pursuing active strategies, there would be a wide dispersion in performance as is observed in the US. We find a tight dispersion of performance about a median. From this we may conclude that the active fund managers are herding to avoid delivering poor relative performance (which puts their mandate at risk). Despite this, the difference between the best and worst performing funds is very large, as the last row of Table 7 indicates.

Table 8 shows how well UK pension funds have performed in comparison with other participants in the market. The fourth column shows that the average UK pension fund underperformed the market average by 0.45% per annum; and this is before the fund manager's fee is taken into account. Further only 42.8% of funds outperform the market average. The main explanation for this is the relative underperformance in UK equities, the largest single category with an average portfolio weighting of 54% over the sample period; the average underperformance is -0.33% per annum and only 44.8% of UK pension funds beat the average return on UK equities. To be sure, relative performance is better in other asset categories, especially UK and international bonds, but the portfolio weights in these asset categories are not large enough to counteract the relative underperformance in UK equities.

Tables 7 and 8 together indicate how close the majority of the pension funds are to generating the average market return. The median fund generated an average total return of 12.06% per annum, just 12 basis points short of the average market return, and 80% of the funds are within one percentage point of the average market return. This suggests that, despite their claims to be active fund managers, the vast majority of UK pension fund managers are not only herding together, they are also closet index matchers.

There are some other features of UK pension fund performance worthy of note. First, there is some evidence of short term persistence in performance over time, especially by the best and worst performing fund managers.

For example, we found that UK equity fund managers in the top quartile of performance in one year had a 37% chance of being in the top quartile the following year, rather than the 25% that would have been expected if relative performance arose purely by chance. Similarly, there was a 32% chance of the fund managers in the bottom quartile for UK equities for one year being in the bottom quartile the following year. There was also evidence of persistence in performance in the top and bottom quartiles for cash/other investments, with probabilities of remaining in these quartiles the following year of 35% in each case. However, there was no evidence of persistence in performance for any other asset category or for the portfolio as a whole. Nor was there any evidence of persistence in performance over longer horizons than one year in any asset category or for the whole portfolio. This suggests that ‘hot hands’ in performance is a very short-term phenomenon.

Second, there was some evidence of spillover effects in performance, but only between UK and international equities. In other words, the funds that performed well or badly in UK equities also performed well or badly in international equities. This suggests that some fund managers were good at identifying undervalued stocks in different markets. This result is somewhat surprising since the world’s equity markets are much less highly integrated than the world’s bond markets, yet there was no evidence of spillover effects in performance across bond markets.

Third, there was evidence of a size effect in performance. Large funds tended to underperform smaller funds. We found that 32% of the quartile containing the largest funds were also in the quartile containing the worst performing funds, whereas only 15% of the quartile containing the smallest funds were also in the quartile of worst performing funds. These results confirm the often-quoted view that ‘size is the anchor of performance’: because large pension funds are dominant players in the markets, this severely restricts their abilities to outperform the market.

The final result concerns the abilities of UK pension fund managers in active fund management, that is, in their attempts to beat the market in comparison with a passive buy and hold strategy. The most important task of pension fund managers is, as we have seen above, to establish and maintain the strategic asset allocation. This is essentially a passive management strategy. However, fund managers claim that they can ‘add value’ through the active management of their fund’s assets. There are two aspects to active management: security selection and market timing (also known as tactical asset allocation). Security selection involves the search for undervalued securities (i.e. involves the reallocation of funds within sectors) and market timing involves the search for undervalued sectors (i.e. involves the reallocation of funds between sectors). We decomposed the total return generated by fund managers into the following components:

	%
Strategic asset allocation	99.47
Security selection	2.68
Market timing	-1.64
Other	<u>- 0.51</u>
Total	100

We found that 99.47% of the total return generated by UK fund managers can be explained by the strategic asset allocation, that is, the long-run asset allocation specified by pension scheme sponsors on the advice of their actuaries following an ALM exercise. This is the passive component of pension fund performance. The active components are security selection and market timing (or TAA). The average pension fund was unsuccessful at market timing, generating a negative contribution to the total return of -1.64%. The average pension fund was, however, more successful in security selection, making a positive contribution to the total return of 2.68%. But the overall contribution of active fund management was just over 1% of the total return (or about 13 basis points), which is *less than the annual fee that active fund managers charge* (which ranges between 20 basis points for a £500m fund to 75 basis points for a £10m fund)⁴².

10. The Myners Review of Institutional Investment

In March 2001 the H M Treasury-sponsored review of institutional investment chaired by Paul Myners, chief executive of Gartmore, was published⁴³. Its recommendations were immediately accepted in full by the government⁴⁴. The report called for a new approach to institutional investment, identified a series of current distortions to effective decision-making, and suggested ways of tackling them.

In introducing his report, Paul Myners said:

Our funded pensions system, our highly-developed equity culture and the professionalisation of investment in the UK are an enviable success story. I pay tribute to the commitment and dedication of institutions and their advisers in bringing this about. Nevertheless, the industry and its decision-taking structures face forbidding challenges: an ageing population, unrecognisably different labour markets, shifting employer attitudes. In the world we now face, an ever-higher premium is likely to be placed on efficiency and flexibility. The review finds that savers' money is too often being invested in ways that do not maximise their interests. It is likely to follow too that capital is being inefficiently allocated in the economy. The review sets out a blueprint for change, to drive clearer incentives and tougher customer pressures throughout the savings and investment industry.

The review identified the following main distortions:

- *pension fund trustees*, who are the very centre of the system, are being asked to take crucial investment decisions, yet many lack resources and expertise. They are often unsupported by in-house staff, and are rarely paid;
- as a result, they rely heavily on a narrow group of *investment consulting* (mainly actuarial) *firms* for advice. Such firms are small in number, have a narrow range of expertise and little room for specialisation. Furthermore, their performance is not usually assessed or measured;
- a particular consequence of the present structure is that *asset allocation* (the selection of which markets, as opposed to which individual stocks, to invest in) is an under-resourced activity. This is especially unfortunate given the weight of academic evidence suggesting that these decisions can be critical determinants of investment performance;
- a lack of *clarity about objectives* at a number of levels. Fund managers are being set objectives which, taken together, appear to bear little coherent relationship to the ultimate objective of the pension fund, namely to meet its pension obligations;
- fund managers are often set objectives which give them unnecessary and artificial incentives to *herd*. So-called *peer-group* benchmarks, directly incentivising funds to copy other funds, remain common. Risk controls for active managers are increasingly set in ways which give them little choice but to cling closely to stock market indices, making meaningful active management near-impossible;
- there is also extreme vagueness about the *timescales* over which fund managers' performance is to be judged. This is a real (but wholly unnecessary) cause of *short-termism* in fund managers' approach to investment;
- fund managers remain unnecessarily reluctant to take an *activist* stance in relation to corporate underperformance, in companies where they own substantial shareholdings, even where this would be in their clients' financial interests;
- finally, an important cost to pension funds, namely *broking commission*, is subject to insufficient scrutiny. Clearer and more rigorous disciplines could be applied to these costs, which are substantial;
- in the life insurance industry, competition, though intense, tends not to focus directly on investment performance, and this issue needs to be tackled if stronger incentives to efficient investment decision-making in the industry are to be created.

The review makes a number of proposals to deal with these distortions. The key proposal is the introduction of a *statement of the principles of institutional investment*, incorporating a short set of clear principles of investment decision-making. The idea is modelled on the approach taken on corporate governance by the Cadbury (and later) codes. These principles would apply first to pension funds and subsequently to other institutional investors. As with the Cadbury code, they would not be mandatory. However, where a pension fund chose not to comply with them, it would have to explain to its members why not.

The proposed set of principles for defined benefit pension schemes is as follows:

- *Effective decision-making.* Decisions should be taken only by persons or organisations with the skills, information and resources necessary to take them effectively. Where trustees elect to take investment decisions, they must have sufficient expertise to be able to evaluate critically any advice they take. Trustees should ensure that they have sufficient in-house staff to support them in their investment responsibilities. Trustees should also be paid, unless there are specific reasons to the contrary. It is good practice for trustee boards to have an investment subcommittee to provide appropriate focus. Trustees should assess whether they have the right set of skills, both individually and collectively, and the right structures and processes to carry out their role effectively. They should draw up a forward-looking business plan.
- *Clear objectives.* Trustees should set out an overall investment objective for the fund that: (i) represents their best judgement of what is necessary to meet the fund's liabilities, given their understanding of the contributions likely to be received from employer(s) and employees; and (ii) takes account of their attitude to risk, specifically their willingness to accept underperformance due to market conditions. Objectives for the overall fund should not be expressed in terms which have no relationship to the fund's liabilities, such as performance relative to other pension funds, or to a market index.
- *Focus on asset allocation.* Strategic asset allocation decisions should receive a level of attention (and, where relevant, advisory or management fees) that fully reflect the contribution they can make towards achieving the fund's investment objective. Decision-makers should consider a full range of investment opportunities, not excluding from consideration any major asset class, including private equity. Asset allocation should reflect the fund's own characteristics, not the average allocation of other funds.
- *Expert advice.* Contracts for actuarial services and investment advice should be opened to separate competition. The fund should be prepared to pay sufficient fees for each service to attract a broad range of kinds of potential providers.
- *Explicit mandates.* Trustees should agree with both internal and external investment managers an explicit written mandate covering agreement between trustees and managers on: (i) an objective, benchmark(s) and risk parameters that together with all the other mandates are coherent with the fund's aggregate objective and risk tolerances; (ii) the manager's approach in attempting to achieve the objective; and (iii) clear timescale(s) of measurement and evaluation, such that the mandate will not be terminated before the expiry of the evaluation timescale other than for clear breach of the conditions of the mandate or because of significant change in the ownership or personnel of the investment manager. The mandate should not exclude the use of any set of financial instruments, without clear justification in the light of the specific circumstances of the fund. The mandate should incorporate a management fee inclusive of any external research, information or transaction services acquired or used by the fund manager, rather than these being charged to clients.
- *Activism.* Making intervention in companies, where it is in shareholders' interests, a duty for fund managers. The mandate should incorporate the principle of the US Department of Labor Interpretative Bulletin on activism. Managers should have an explicit strategy, elucidating the circumstances in which they will intervene in a company; the approach they will use in doing so; and how they measure the effectiveness of this strategy. The US Department of Labor Interpretative Bulletin 26 on activism is as follows:
 - The fiduciary act of managing plan assets that are shares of corporate stock includes the voting of proxies appurtenant to those shares of stock.
 - The fiduciary obligations of prudence and loyalty to plan participants and beneficiaries require the responsible fiduciary to vote proxies on issues that may affect the value of the plan's investment.
 - An investment policy that contemplates activities intended to monitor or influence the management of corporations in which the plan owns stock is consistent with a fiduciary's obligations under ERISA⁴⁵ when the responsible fiduciary concludes that there is a reasonable expectation that activities by the plan alone, or together with other shareholders, are likely to enhance the value of the plan's investment, after taking into account the costs involved. Such a reasonable expectation may exist in various circumstances, for example, where plan investments in corporate stock are held as long-term investments or where a plan may not be able to easily dispose such an investment.

- Active monitoring and communication activities would generally concern such issues as the independence and expertise of candidates for the corporation's board of directors and assuring that the board has sufficient information to carry out its responsibility to monitor management. Other issues may include such matters as consideration of the appropriateness of executive compensation, the corporation's policy regarding mergers and acquisitions, the extent of debt financing and capitalisation, the nature of long-term business plans, the corporation's investment in training to develop its workforce, other workplace practices and financial and non-financial measures of corporate performance. Active monitoring and communication may be carried out through a variety of methods including by means of correspondence and meetings with corporate management as well as by exercising the legal rights of a shareholder.
- *Appropriate benchmarks.* Trustees should: explicitly consider, in consultation with their investment manager(s), whether the index benchmarks they have selected are appropriate; in particular, whether the construction of the index creates incentives to follow sub-optimal investment strategies; if setting limits on divergence from an index, ensure that they reflect the approximations involved in index construction and selection; consider explicitly for each asset class invested, whether active or passive management would be more appropriate given the efficiency, liquidity and level of transaction costs in the market concerned; and where they believe active management has the potential to achieve higher returns, set both targets and risk controls that reflect this, giving managers the freedom to pursue genuinely active strategies.
- *Performance Measurement.* Trustees should arrange for measurement of the performance of the fund and make formal assessment of their own procedures and decisions as trustees. They should also arrange for a formal assessment of performance and decision-making delegated to advisers and managers.
- *Transparency.* A strengthened Statement of Investment Principles should set out: (i) who is taking which decisions and why this structure has been selected; (ii) the fund's investment objective; (iii) the fund's planned asset allocation strategy, including projected investment returns on each asset class, and how the strategy has been arrived at; (iv) the mandates given to all advisers and managers; and (v) the nature of the fee structures in place for all advisers and managers, and why this set of structures has been selected.
- *Regular reporting.* Trustees should publish their Statement of Investment Principles and the results of their monitoring of advisers and managers and send them annually to members of the fund. The Statement should explain why a fund has decided to depart from any of these principles.

The following principles are proposed for defined contribution schemes:

- when selecting funds to offer as options to scheme members, trustees should consider the investment objectives, expected returns, risks and other relevant characteristics of each such fund.
- where a fund is offering a default option to members through a customised combination of funds, trustees should ensure that an objective is set for the option, including expected risks and returns.
- schemes should, as a matter of best practice, consider a full range of investment opportunities, including less liquid and more volatile assets. In particular, investment trusts should be considered as a means of investing in private equity.
- the Government should keep under close review the levels of employer and employee contributions to defined contribution pensions, and the implications for retirement incomes.

In commenting on the proposed set of principles, Paul Myners said: 'The principles may seem little more than common sense. In a way they are – yet they certainly do not describe the status quo. Following them would require substantial change in decision-making behaviour and structures.' The report called for the industry to adopt the principles voluntarily within two years, but if necessary the government should legislate to require disclosure against them.

The review made a series of other proposals. The main ones relate to:

- *Minimum Funding Requirement.* The replacement of the MFR with a regime based on transparency and disclosure, under which pension funds would report publicly on the current financial state of the fund and on future investment plans. Each year, every defined benefit pension fund would be required to publish:

- the current value of its assets and in what asset classes they were invested;
- the assumptions used to determine its liabilities;
- planned future contributions;
- its planned asset allocation for the following year or years;
- the assumed returns and assumed volatilities of those returns for each asset class sufficient to meet the liabilities;
- a justification by the trustees of the reasonableness of both their asset allocation and the investment returns assumed in the light of the circumstances of the fund and of the sponsor; and
- an explanation of the implications of the volatility of the investment values for possible underfunding, and a justification by trustees of why this level of volatility is judged to be acceptable.
- *Pension fund surpluses.* The Law Commission to be asked whether it can suggest greater legal clarity around the ownership of surplus pension fund assets, and reduction of the rate of tax on distributed pension fund surpluses.
- *Private equity.* Investment in private equity should benefit from the framework set out by the principles and from the replacement of the MFR. The review also made a number of proposals which take account of the special nature of private equity as an asset class for institutional investors, including changes to the maximum number of partners in a limited partnership and changes to the taxation of investments in limited partnerships. It also calls for the British Venture Capital Association to take action to improve transparency and disclosure about issues such as investment returns and compensation.
- *Compensation.* The level of compensation provided by the Pensions Compensation Board for non-pensioner members should be increased to cover not simply the 90 per cent of MFR liabilities as at present, but something closer to the cost of securing members' accrued rights (or the amount of the loss, whichever is the lesser).
- *Independent custody.* There should be a statutory requirement for funds to have independent custody of assets.

10. Conclusion

Over the last 20 years, governments have had two major impacts on pension provision in the UK. First they have reduced the cost of providing state pensions by reducing the level of benefits from the state schemes. Second they have encouraged greater and more effective private sector provision, although the Conservative and Labour governments have done this in quite different ways. The Thatcher-Major governments made private supplementary pension arrangements voluntary and used tax incentives to encourage consumers to join personal pension schemes, but they left it to the market to determine the structure and efficiency of these schemes. The result was schemes that exhibited very high front-loaded charges, because retail customers tend not to be skilled at assessing the cost-effectiveness of retail financial products⁴⁶. In contrast, the Blair government, recognising the market failure arising from poorly informed consumers, imposed restrictions on the structure of stakeholder pension schemes that helped to force economies of scale and hence lower charges.

The suitability of the two key types of private funded scheme, defined benefit or defined contribution, to particular workers depends on both individual behaviour and characteristics, for example, how often someone changes jobs and their attitude to risk. The more frequently someone changes jobs and the more risk tolerant they are, the more appropriate it will be for them to choose a DC scheme.

However, even if someone has chosen the appropriate pension scheme in principle, weaknesses in the design of their scheme can lead to lower pensions than otherwise need be the case. One illustration of this concerns investment performance: it affects the net cost to the sponsor of a DB scheme and the net pension benefit to the member of a DC scheme. We showed that, on average, UK pension funds have under-performed the market, and while there has been a wide dispersion of performance by individual fund managers, most of them appear to herd around the median fund manager. Furthermore, we found that fund managers have not been especially successful at active fund management: virtually the same or better returns could have been generated if pension funds had invested passively in index funds. In addition, fund management costs would have been lower and the dispersion in returns across fund managers would have been reduced. Another example concerns charges. It is most unlikely that good investment performance can compensate for high charges, and we have seen that it is

equally unlikely that above-average investment performance can be sustained for a significant period of time. Well-designed pension schemes would take these factors into account.

Some important policy conclusions emerge from this analysis. First, if governments want to see well-designed pensions in the private sector, they must provide an infrastructure that helps the private sector deliver these. The regulatory framework should be kept as simplified as possible in order to minimise compliance costs, and charging structures should be made simple and transparent to enable consumers identify the most competitive providers more easily. Governments could also help keep costs down or improve benefits in other ways: for instance, by enabling economies of scale to be exploited more fully (eg, establishing a central clearing house to channel contributions in the case of DC schemes) or by introducing a common set of actuarial assumptions, as in Holland, which would enable full service credits to be transferred between schemes when workers change jobs, thereby improving the portability rights of members of DB schemes. Governments could help the private sector cope with the market failures that prevent or at least make it difficult for individuals to hedge certain risks, e.g., surplus risk could be hedged more effectively through the introduction of zero-coupon wage-indexed bonds and mortality risk could be hedged through the introduction of survivor bonds.

Second, if governments wish to promote the efficient investment management of pension assets, they should not put in place regulations that distort pension fund asset allocations as is likely to happen with FRS17 or the proposed revision to the MFR: this has been explicitly recognised in the Myners report on institutional investment. They should also encourage the introduction of appropriate incentives, such as greater transparency in published performance data and the adoption of performance-related fund management fees⁴⁷. This would encourage the less talented fund managers to invest in index funds, with consequential benefits in terms of lower fund management charges and a lower dispersion of performance⁴⁸. There is evidence that governments are becoming more aware of at least some of these issues. For example, the new stakeholder pension schemes have an upper limit placed on the charges that can be imposed and this will effectively rule out the active management of the assets in such schemes; and, in the US, the government is considering a range of options for dealing with the growing burden of social security, including the establishment of individual privatised accounts and the investment of part of the Social Security Trust Fund in equities.

However, the greatest impediment to having a decent pension in retirement is inadequate pension savings made during the working lifetime. There is a strong case for arguing that only with sufficient mandatory minimum contributions into a funded pension scheme (with credits given to those on very low earnings) can a decent pension be achieved, but few governments seem willing to confront this issue: the UK mandatory minimum for the second pension (equal to the contracted-out rebate on National Insurance contributions of 4.6% of earnings) is not sufficient to build to an adequate pension (as Table 5 showed) and the Welfare Reform and Pensions Act explicitly ruled out additional compulsory contributions.

11. Appendix – Calculating the MFR

11.1 The 1995 Pensions Act

The rules and regulations governing the MFR are contained in sections 56 to 61 of the 1995 Act and in the Occupational Pension Schemes (Minimum Funding Requirement and Actuarial Valuations) Regulations 1996 (SI 1996/1536) as amended by paragraph 8 of Schedule 1 to the Personal and Occupational Pension Schemes (Miscellaneous Amendments) Regulations 1997 (SI 1997/786).

The MFR (which came into effect on 6 April 1997) establishes a minimum level of funding for a DB pension scheme (or for a defined contribution pension scheme which also provides salary-related benefits) and an associated schedule of contributions necessary to meet this minimum level of funding. It is the responsibility of the trustees to ensure that this schedule is delivered. The MFR can be satisfied either by the minimum level of funding being met currently or by having a schedule of contributions in place that will meet the minimum funding level within a specified time limit (a maximum of 5 years). Even then it may not necessarily be the case that the whole of a scheme's liabilities can be met in full if the scheme were to be wound up immediately. However, the MFR does establish a benchmark for measuring the funding level of a scheme and the trustees must ensure that any shortfall below the benchmark is eliminated over the specified time horizon.

Trustees had to receive the first signed MFR valuation report from the scheme actuary no later than twelve months after the effective date of the valuation as follows:

- For a scheme set up before 6 April 1997 which met the earlier requirements for scheme valuations - no later than three years after the effective date of the last scheme valuation before 6 April 1997 (or 6 April 1997 if later).
- For a scheme set up before 6 April 1997, but where there were no scheme valuations before that date (or the scheme did not meet the requirements for scheme valuations immediately before 6 April 1997) - no later than 6 April 1998.
- For a scheme set up on or after 6 April 1997 - within one year of the date on which the scheme started. The MFR valuation report must be made available to the scheme sponsor within seven days of receipt by the trustees. Subsequent MFR valuations must be carried out every three years.

A pension scheme has a 'deficiency' when it has insufficient assets to meet its liabilities. The schedule of contributions needed to make good the deficiency must be agreed between the trustees and sponsor. A 'serious deficiency' occurs when the assets are valued at less than 90% of the value of the liabilities. To reduce the deficiency, the assets must be increased to at least 90% of the liabilities, valued on the basis set out under the MFR rules, within one year. This can be achieved either through a cash payment to the fund by the sponsor or by the sponsor giving a financial guarantee to bring the scheme's assets up to at least 90% of the liabilities if the sponsor is insolvent and contributions to the fund must continue to be paid. If either of these solutions is not feasible, the trustees must inform the Occupational Pensions Regulatory Authority (OPRA) within 14 days and scheme members within one month.

If the deficiency is less serious, with assets worth between 90% and 100% of the liabilities, the assets must be increased to 100% of the liabilities by the end of the period covered by the schedule of contributions. Contributions may have to be increased to achieve this. Such increased contributions may be spread evenly throughout the period covered by the schedule. It is also permissible for larger contributions to be paid early on in the period (this is called 'frontloading'), but the 'backloading' of contributions towards the end of the period is not permitted.

Following each MFR valuation, the trustees must establish a schedule of contributions within twelve weeks. This shows the rates of contributions and the 'due dates' on which the trustees must receive the contributions. Each schedule covers a five-year period and may need to be revised during this period to ensure that the MFR continues to be met. During the transitional period after the introduction of the 1995 Act, funds have until 5 April 2007 to satisfy the MFR.

The schedule of contributions must show the contribution rates and 'due dates' for all the contributions to be paid:

- By (or on behalf of) all active members (excluding additional voluntary contributions).
- By (or on behalf of) each sponsoring employer taking part in the scheme.
- By the sponsoring employer to rectify a serious shortfall in funding.

The contributions can be expressed in cash amounts or as percentages of pensionable salary. The trustees must confirm that all scheduled contributions are paid by the 'due dates'. It is the sponsoring employer's responsibility to ensure that the trustees receive the members' contributions within 19 days of the end of the calendar month in which they were deducted from salary. Even though additional voluntary contributions are not included in the schedule of contributions, they must still be paid by the 19th of the month following the calendar month in which they were deducted from salary.

The scheme's appointed actuary (appointed under section 47 of the 1995 Act) must prepare an annual certificate for the trustees confirming that the schedule of contributions has been met for the preceding year. The certificate must also confirm whether the actuary considers that the level of contributions shown on the schedule

is sufficient:

- For the scheme to continue to meet the MFR for the remainder of the period covered by the schedule.
- If the actuary considers that the MFR is not currently being met, to enable the scheme to meet the MFR by the end of the period covered by the schedule.
- If the actuary believes that the level of contributions is insufficient to meet the MFR, this must also be stated on the certificate and this will trigger either a revision to the schedule of contributions or a new MFR valuation within six months of the date of the certificate. The trustees must hand the certificate to the sponsor within seven days of receiving it.

If the trustees have not received all the contributions payable within 10 days of each 'due date', as shown in the schedule of contributions, this must be reported to OPRA within 30 days of the 'due date'. The trustees must also report to members within 90 days of the 'due date' if the contributions have still not been paid 60 days after the 'due date'. If contributions are paid directly to an insurance company, investment manager or other adviser, trustees need to be informed if contributions are not paid on time.

If trustees do not take all reasonable steps to comply with their (individual and collective) responsibilities under the 1995 Pensions Act, they face the possibility of financial penalties and/or disqualification from serving as a trustee. Financial penalties can be up to £5,000 for an individual trustee and up to £50,000 for organisations, such as corporate trustees. These and any associated legal costs cannot be reclaimed from the pension fund.

The sponsoring employer can face both civil and criminal penalties. For example, the late payment of contributions into the pension fund and the late submission of audited accounts are civil offences, while the fraudulent evasion of paying over contributions deducted from members' salaries is a criminal offence.

11.2 Guidance Note 27

The appointed actuary must use the actuarial methods and assumptions set out in Guidance Note 27 of the FIA to determine whether the MFR is being met. Assets are recorded at market values, and the following assumptions concerning asset returns are used in the MFR calculations of liability values, where the MFR pension age is the earliest age at which a member can retire without a reduction in the pension.

A – Current Financial Assumptions

The current gilt yields to be used for valuing pensioner liabilities should be the gross redemption yield on the FT-Actuaries Fixed Interest 15 year Medium Coupon Index or the FT-Actuaries Index-linked Over 5 years (5% inflation) Index, as appropriate. In the case of LPI pension increases, either fixed-interest gilts with 5% pension increases or index-linked gilts with a 0.5% addition to the gross redemption yield should be used, whichever gives the lower value of liabilities. Similar principles should be applied for other pensions which are index-linked but subject to a cap other than 5%.

B – Long-Term Financial Assumptions

	% Per Annum
Rate of Inflation	4
Effective Rate of Return on Gilts	8
Effective Real Rate on Index-Linked Gilts	3.85
Effective Rate of Return on Equities - Pre MFR Pension Age	9
Effective Rate of Return on Equities - Post MFR Pension Age	10
Rate of Increase of GMP Under Limited Revaluation	5
Rate of Statutory Revaluation for Deferred Benefits	4

Rate of LPI Increase in Payment	3.5
Rate of Increase in Post 1988 GMPs	2.75
Rate of salary growth	6

C – Market Value Adjustments (MVAs)

1. The MVA in relation to equities should be the ratio of 3.25% to the net dividend yield on the FT-SE Actuaries All-Share Index.
2. The MVA in respect of gilts should be the value at the annualised yield on the FT-Actuaries Fixed Interest 15 year Medium Coupon Index or the FT-Actuaries Index-linked Over 5 years (5% inflation) Index, as appropriate, of a 15 year stock with coupon equal to the relevant long-term assumption, payable annually in arrears.
3. For liabilities which when in payment might be valued using either the yield on a fixed-interest gilt basis or that on an index-linked gilt basis, the MVA to be used should be that which produces the lower liability.
4. If the liability includes a retirement lump sum payment, for the lump sum liability the market value adjustment on the proportion (g) of that part of the liability deemed invested in gilts (e.g., 0.3 if seven years from MFR pension age) should be: $g + (1 - g) \times \text{gilt MVA}$.

D – Demographic Assumptions

1. Mortality (before and after retirement) – PA90 rated down 2 years.
2. In the case of schemes which have a pensioner liability (assessed on the gilt basis) of at least £100 million, the mortality basis to be adopted should be that which the actuary considers appropriate for that scheme in respect of current pensioners and other members who have reached MFR pension age. In the case of all other schemes, and for non-pensioners below MFR pension age, the standard mortality table specified above should be adopted.
3. Proportions married – 80% (men) or 70% (women).
4. Age difference between husband and wife + 3 years.

E – Expenses

The allowance to be made for the expenses connected with closure of the scheme, continuation as a closed scheme and eventual wind-up should be 4% of the value of accrued liabilities for the first £50 million of such liabilities, 3% of the value of the accrued liabilities for the next £50 million of such liabilities and 2% of the remainder of the value of accrued liabilities.

F – Other Assumptions

1. A maximum lump sum of 2.25 times the annual amount of member's pension at retirement.
2. Liabilities should relate only to benefits to which members are entitled, such as discretionary benefits already granted and survivors' pensions, but not future discretionary benefits.

11.3 The MFR Calculation

On the basis of these assumptions, the MFR funding level is calculated using the following steps:

1. For active members, the liability is the present value of the accrued benefits using the effective rate of return on equities pre MFR pension age as the discount rate up to payment and the effective rate of return on gilts throughout payment. The calculated value will then be adjusted by multiplying by the factor $(1+0.005n)$ where n is the number of years before MFR pension age (with a maximum of 10).
2. This value is multiplied by a Market Value Adjustment (MVA) to allow for current market conditions. The MVA for a person 10 years or more below MFR pension age is the equity MVA and the MVA for a person within 10 years of MFR pension age is a linear combination of the equity and gilt MVAs assuming a linear switch from 100% equity investment 10 years before MFR pension age to 100% gilt investment at MFR pension age.

3. For pensioners, the liability is first calculated as the present value of all payments due after the MFR effective date (the date on which the MFR valuation takes place) using current gilt yields.
4. If the liability is greater than £100 million, the liability should instead be calculated as follows:
 - a. The present value of the first £100 million of payments or the first 12 years of payments from the MFR effective date using current gilt yields.
 - b. The present value of any remaining payments, using the effective rate of return on equities for post MFR pension age, multiplied by the equity MVA (this is known as 'equity easement').
5. Assets should be taken into account at their audited market value.
6. The effective rate of return on equities for pre MFR pension age should be used to calculate the values of contributions during the period of the schedule of contributions.
7. The MFR regular contribution due each year should be the rate calculated on the current unit method as at the MFR effective date.
8. To calculate the MFR regular contribution, the actuary should assume that any members past their MFR pension age retire immediately and allow for identifiable expenses due to be met by the scheme.
9. An MFR contribution adjustment is designed to meet any shortfall of past MFR liabilities.
10. The notional MFR surplus or deficit is calculated as the difference between:
 - a. The notional market value of the actual assets and
 - b. The MFR liabilities using the long-term financial assumptions and MVAs of 100% plus the difference between:
 - (i) The aggregate value of the MFR regular contributions due.
 - (ii) The value of the actual contributions paid during that period.
11. If the result is a surplus, the MFR contribution adjustment is a single negative contribution equal to the surplus. If the result is a deficit, the MFR contribution adjustment is calculated as the level of contributions to meet the estimated deficit before the end of the period of the schedule of contributions.
12. All other asset categories should be treated as the nearest equivalent of cash, UK equities and UK gilts.

Fig. 1 Defined contribution pension plan

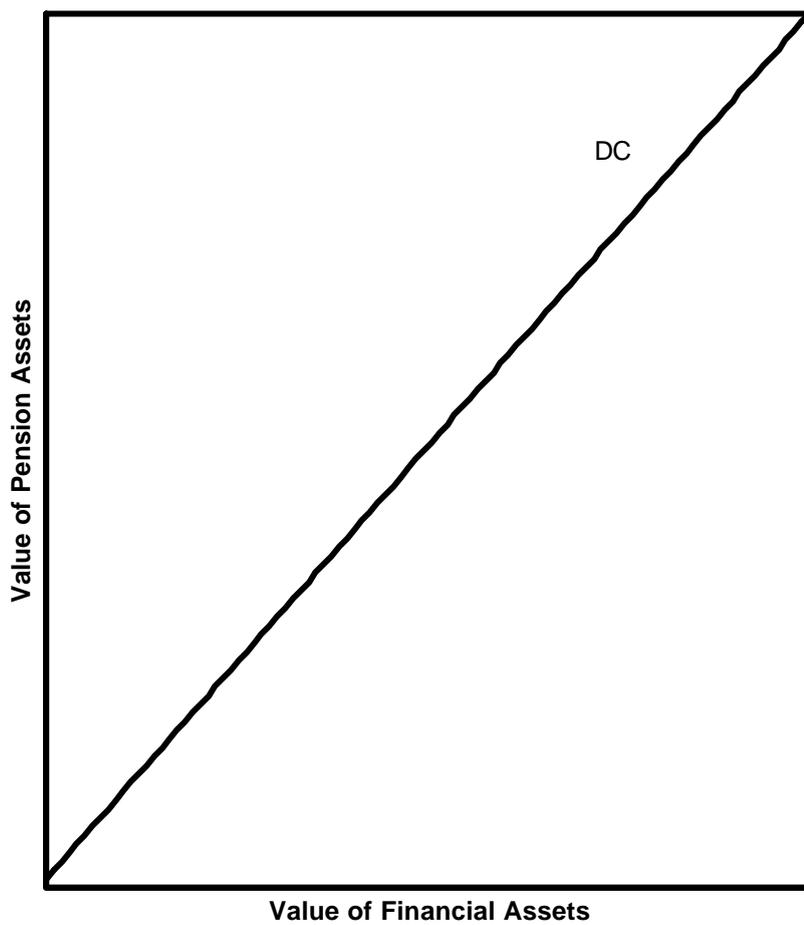


Fig. 2 Defined benefit pension plan

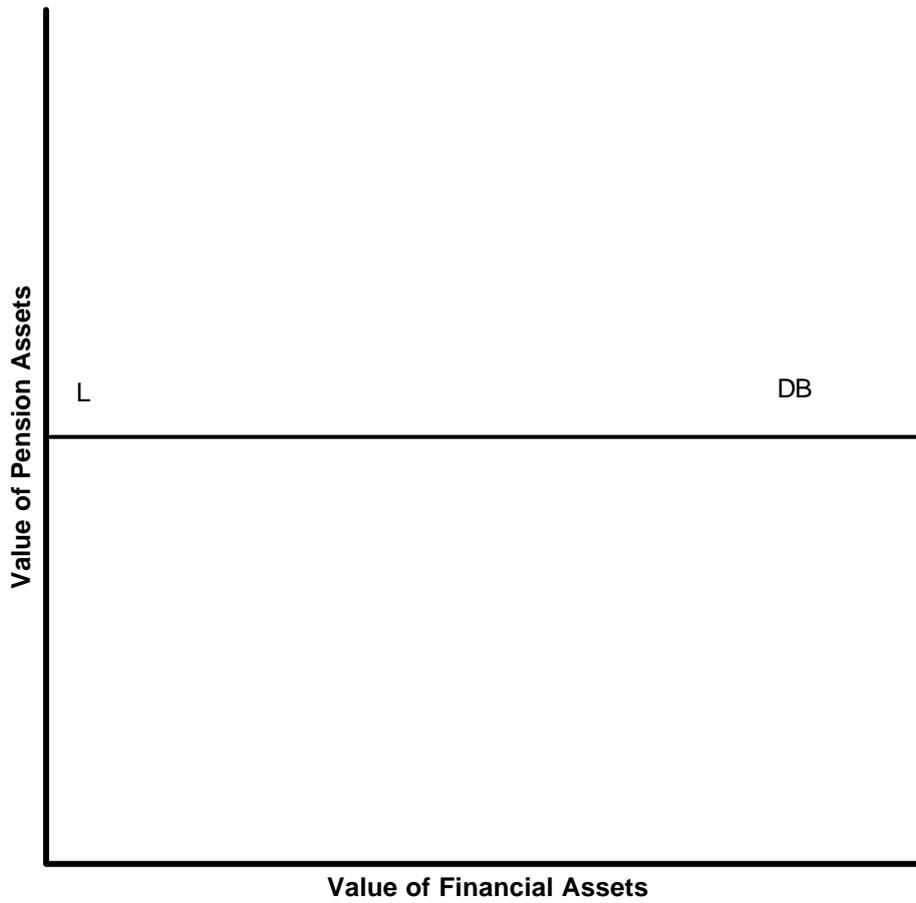
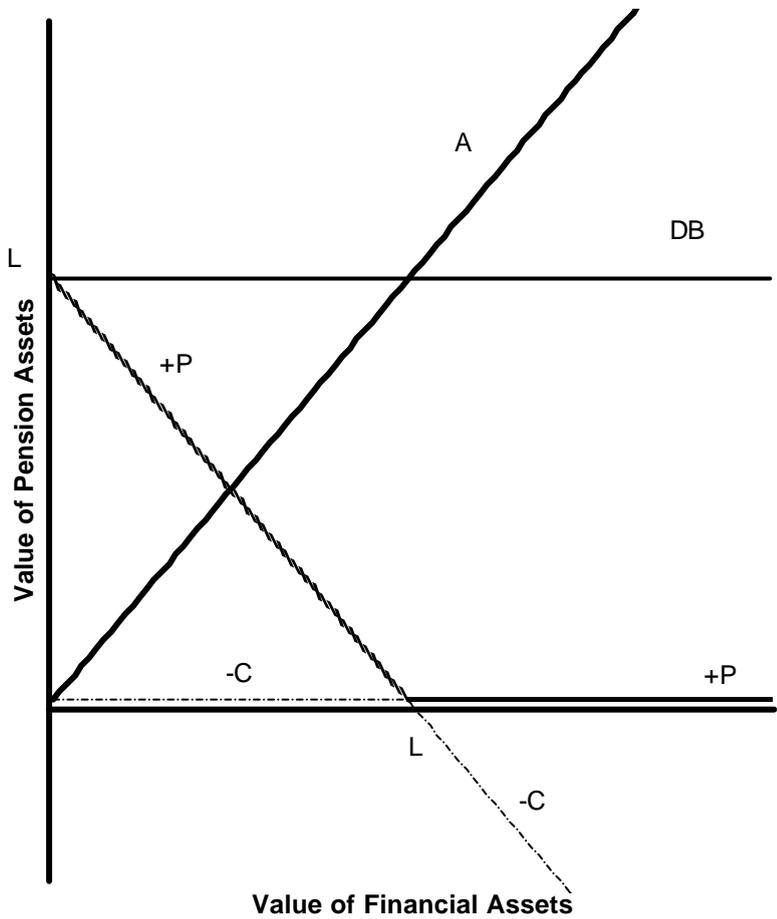
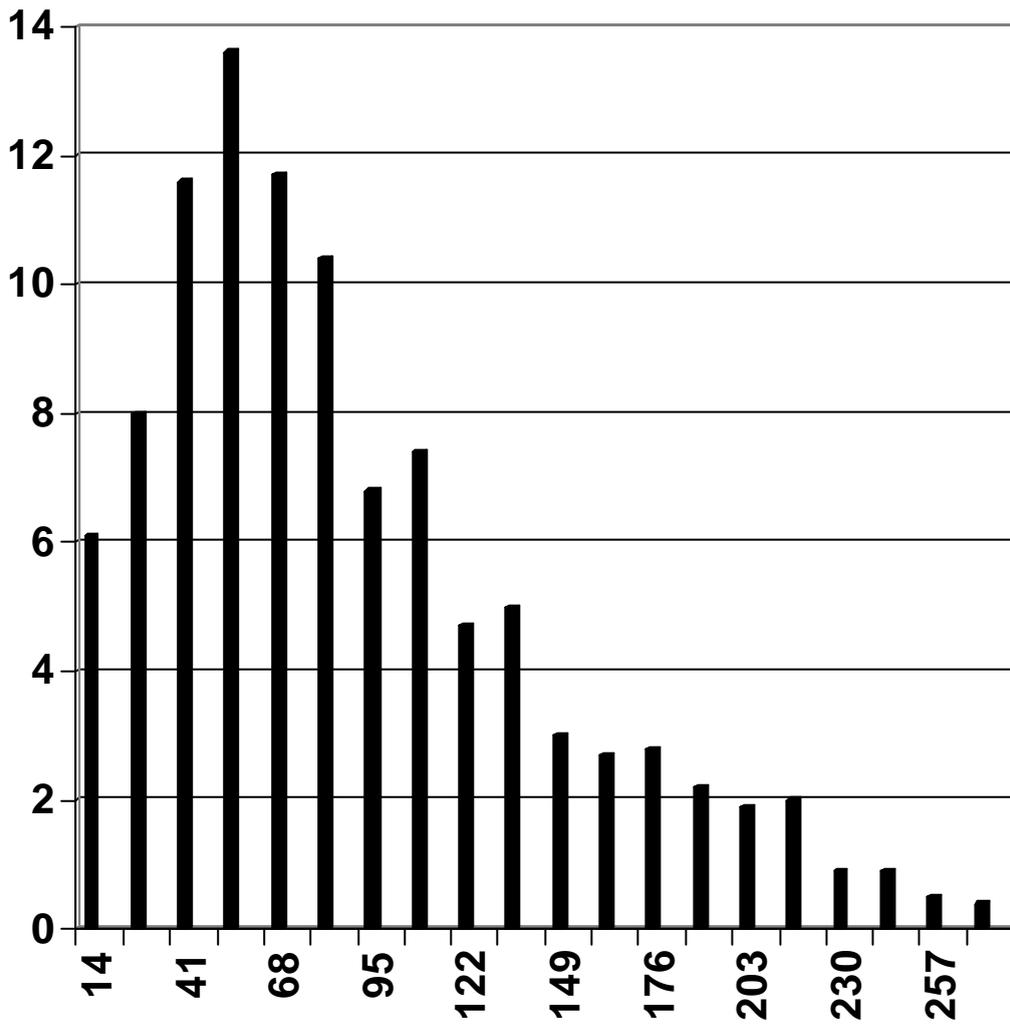


Fig. 3 Option composition of defined benefit pension plan



**Figure 4 Duration of UK Unit Trusts from Inception
(Percentages)**



Note: The histogram shows the distribution of the lifetimes in months of the 973 unit trusts which were wound or merged during sample period 1972-1975

Table 1 Sources of Retirement Income in 1997-98

<i>Source</i>	<i>Single person</i>			<i>Married couples</i>		
	<i>£per week</i>	<i>% of total</i>	<i>% of NAE</i>	<i>£per week</i>	<i>% of total</i>	<i>% of NAE</i>
State benefits ^a	95	64	27	133	44	38
Occupational pensions	33	22	10	90	30	26
Investment income ^b	14	9	4	48	16	14
Earnings ^c	7	5	2	33	11	9
Total	149	100	43	304	100	87

Notes: ^a Includes Incapacity Benefit, Housing Benefit, Council Tax Benefit etc.; ^b Includes income from personal pensions; ^c Women in the age range 60-65 and men in the age range 65-70.

Source: Department of Social Security (2000, Table 1)

**Table 2 Portability Losses from Defined Benefit Schemes
(Percentage of Full Service Pension Received at Retirement)**

Worker type	Job separation assumptions ¹	Transfer value ²	Deferred pension ³	Defined contribution pension (employer-run) ⁴	Personal pension (employer contributions) ⁵	Personal pension (no employer contributions) ⁶
Average UK worker (MFR assumptions realised) ⁷	A	75	75			
	B	71	71			
	C	84	84	71	61	37
Average UK manual worker	A	75	88			
	B	71	86			
	C	84	96	78	66	45
Average UK non-manual worker	A	75	86			
	B	71	83			
	C	84	94	79	68	44

Notes:

1. This table presents estimates of the size of the portability losses experienced by three different types of UK workers (based on typical lifetime earnings profiles) under three different sets of job separation assumptions: A - separates at ages 28, 29, 30, 40 and 57; B - separates at 26, 27, 30, 31, 38, 44 and 55; C - separates at 45. The loss is expressed in the form of a reduced pension compared with what each of the three workers would have received had they remained in a single scheme for their whole career.
2. Leaving worker takes transfer value to new scheme.
3. Leaving worker leaves deferred pension in leaving scheme.
4. Leaving worker transfers into employer-run DC scheme.
5. Leaving worker transfers into personal pension scheme where the employer also contributes.
6. Leaving worker transfers into personal pension scheme where the employer does not contribute.
7. The MFR (Minimum Funding Requirement) assumptions are the assumptions specified in the 1995 Pensions Act concerning future inflation, earnings growth and investment returns that must be used by UK pension funds from April 1997 to determine the minimum contribution level needed to meet projected pension liabilities.

Source: Blake and Orszag (1997, Appendix E, Table 5.8, p.74).

Table 3 Percentage of DC Fund Value Represented by Charges

	5 years	10 years	15 years	20 years	25 years
Regular premium scheme (£200/month)					
Best commission-free fund	3.1	4.1	7.2	8.5	9.8
Best commission-loaded fund	4.0	4.1	7.4	8.9	10.6
Industry average	11.6	13.0	14.8	17.7	19.0
Worst fund	19.2	22.0	24.6	28.2	27.8
Single premium scheme (£10,000)					
Best commission-free fund	3.8	7.1	9.2	10.6	10.4
Best commission-loaded fund	3.8	7.1	9.2	10.6	10.4
Industry average	9.6	13.3	16.3	19.1	21.9
Worst fund	17.4	20.5	27.0	32.9	38.2

Source: Money Management (October 1998)

**Table 4 Persistency Rates for Regular Premium Personal Pension Plans
(Percentages)**

	<i>Company representatives: after</i>				<i>Independent financial advisers: after</i>			
	<i>1 Year</i>	<i>2 Years</i>	<i>3 Years</i>	<i>4 Years</i>	<i>1 Year</i>	<i>2 Years</i>	<i>3 Years</i>	<i>4 Years</i>
1993	84.1	72.3	63.6	56.7	91.5	83.3	76.6	70.5
1994	83.7	72.8	64.4		91.3	82.1	74.5	
1995	85.5	75.0			90.8	81.6		
1996	86.6				90.2			

Source: Personal Investment Authority (1998, Table 1)

**Table 5 Contributions Needed to Achieve a Pension of
Two-Thirds Final Salary**

Age at commencement (male)	Required contributions (% of salary)	Maximum contributions (% of salary)
25	10.90	17.5
30	13.41	17.5
35	16.81	17.5
40	21.66	20.0
45	28.92	20.0
50	40.81	25.0
55	64.15	30.0
60	129.83	35.0

Assumptions: Male retiring at age 65; no previous contributions into any other pension scheme; salary increases by 3% p.a.; investment return 6% p.a.

Source: Blake (1997, Table 10.2).

Table 6 Distribution of Returns Generated by UK Unit Trusts, 1972 - 1995

Sector	Top quartile	Median	Bottom quartile	Ratio of fund sizes
UK Equity Growth	16.0	13.6	11.9	3.2
UK Equity General	14.3	13.4	13.1	1.4
UK Equity Income	15.4	14.0	12.4	2.3
UK Smaller Companies	18.7	15.5	12.8	5.3

Note: The first three columns are averages measured in percentages per annum for the sample period 1972 - 95; the last column gives the ratio of fund sizes after 40 years based on the top and bottom quartile returns. The formula is (assuming the same contribution stream):

$$\frac{(1+r_T)^T - 1}{r_T} \div \frac{(1+r_B)^T - 1}{r_B}$$

where $r_T = 0.160$, $r_B = 0.119$ and $T = 40$, etc.

Source: Blake and Timmermann (1998) and Lunde, Timmermann and Blake (1999).

**Table 7 Fractiles of Total Returns by Asset Class for UK Managed Funds, 1986 - 94
(Average Annualised Percentages)**

	<i>UK equities</i>	<i>Internat'l equities</i>	<i>UK bonds</i>	<i>Internat'l bonds</i>	<i>UK index bonds</i>	<i>Cash/ other inv'mnts</i>	<i>UK property</i>	<i>Total</i>
Minimum	8.59	4.42	6.59	-0.64	5.59	2.67	3.05	7.22
5%	11.43	8.59	9.44	2.18	7.2	5.46	5.07	10.6
10%	11.85	9.03	9.95	7.56	7.81	7.6	6.58	10.96
25%	12.44	9.64	10.43	8.3	7.91	8.97	8.03	11.47
50%	13.13	10.65	10.79	11.37	8.22	10.25	8.75	12.06
75%	13.93	11.76	11.22	13.37	8.45	11.72	9.99	12.59
90%	14.81	12.52	11.7	14.55	8.8	14.2	10.84	13.13
95%	15.46	13.14	12.05	18.15	8.89	16.13	11.36	13.39
Max	17.39	14.68	17.23	26.34	10.07	19.73	13.53	15.03
Max-Min	8.8	10.26	10.64	26.98	4.48	17.06	10.48	7.81

Note: The table shows the fractiles of the cross-sectional distribution of returns on individual asset classes as well as on the total portfolio.

Source: Blake, Lehmann and Timmermann (1998, Table 1).

**Table 8 Performance of UK Pension Funds in Comparison with the Market, 1986-94
(Percentages)**

	<i>Average portfolio weight (%)</i>	<i>Average market return (%)</i>	<i>Average pension fund return (%)</i>	<i>Average out- performance (%)</i>	<i>Percentage outperformers</i>
UK equities	53.7	13.3	12.97	-0.33	44.8
International equities	19.5	11.11	11.23	0.12	39.8
UK bonds	7.6	10.35	10.76	0.41	77.3
International bonds	2.2	8.64	10.03	1.39	68.8
UK index bonds	2.7	8.22	8.12	-0.1	51.7
Cash/other investments	4.5	9.90	9.01	-0.89	59.5
UK property	8.9	9.00	9.52	0.52	39.1
Total		12.18	11.73	-0.45	42.8

Note: International property is excluded since no market index was available.

Source: Blake, Lehmann and Timmermann (1998, 1999).

References

- Accounting Standards Board (1997), *Discounting in Financial Reporting*, ASB Publications, Milton Keynes.
- Accounting Standards Board (1999), *Retirement Benefits: Financial Reporting Exposure Draft 20*, ASB Publications, Milton Keynes.
- Accounting Standards Board (2000), *Retirement Benefits: Financial Reporting Standard 17*, ASB Publications, Milton Keynes.
- Anson, Sir J. (Chairman) (1996), *Pensions 2000 and Beyond*, Report of the Retirement Income Enquiry, London.
- Bishop, G. (1999) *Why are Long Gilts the Richest Bonds in the World, and Getting Richer?*, SalomonSmithBarney, London, October.
- Blake, D. (1992), *Modelling Pension Fund Investment Behaviour*, Routledge, London.
- Blake, D. (1995), *Pension Schemes and Pension Funds in the United Kingdom*, Oxford University Press, Oxford.
- Blake, D. (1997), Pension Choices and Pensions Policy in the United Kingdom, in S. Valdés-Prieto (ed.), *The Economics of Pensions: Principles, Policies and International Experience*, Cambridge University Press, New York, 277-317.
- Blake, D. (1998), Pension Schemes as Options on Pension Fund Assets: Implications for Pension Fund Management, *Insurance: Mathematics and Economics*, 23, 265-88.
- Blake, D. (1999), Annuity Markets: Problems and Solutions, *Geneva Papers on Risk and Insurance*, 24, 358-75.
- Blake, D. (2000), *Financial Market Analysis*, Wiley, Chichester.
- Blake, D., and Board, J. (2000), *Measuring Value Added in the Pensions Industry*, Pensions Institute, London.
- Blake, D., Burrows, W., and Orszag, J.M. (2000), *Survivor Bonds: Reducing the Cost of Pension Provision*, Pensions Institute, London.
- Blake, D., Lehmann, B., and Timmermann, A. (1998), *Performance Clustering and Incentives in the UK Pension Fund Industry*, Discussion Paper No. 294, Financial Markets Group, London School of Economics.
- Blake, D., Lehmann, B., and Timmermann, A. (1999), Asset Allocation Dynamics and Pension Fund Performance, *Journal of Business*, 72, 429-47.
- Blake, D., and Orszag, J.M. (1997), *Portability and Preservation of Pension Rights in the UK*, Report of the Director-General's Inquiry into Pensions, Vol.3, Office of Fair Trading, London, July.
- Blake, D. and Timmermann, A. (1998), Mutual Fund Performance: Evidence from the UK, *European Finance Review*, 2, 57-77.
- Borrie, Sir G. (Chairman) (1994), *Social Justice – Strategies for National Renewal*, Report of the Commission for Social Justice, Vintage, London.
- Burgess, S., and Rees, H. (1994), *Lifetime Jobs and Transient Jobs: Job Tenure in Britain 1975-91*, Centre for Economic Policy Research, London.

- Credit Suisse First Boston (1999) *Equity-Gilt Study*, CSFB, London.
- Dahrendorf, Lord R. (Chairman) (1995), *Wealth Creation and Social Cohesion in a Free Society*, Report of the Commission on Wealth Creation and Social Cohesion, Xenogamy, London.
- Davis, E.P. (1988), *Financial Market Activity of Life Insurance Companies and Pension Funds*, Economic Paper No.21, Bank for International Settlements, Basle.
- Department of Social Security (1998a), *A New Contract for Welfare: Partnership in Pensions*, Department of Social Security, London (Cm 4179, December).
- Department of Social Security (1998b), *Second Tier Pension Provision 1995-96*, Analytical Services Division, Newcastle upon Tyne.
- Department of Social Security (2000), *The Pensioners' Income Series 1997-98*, Analytical Services Division, London.
- Department of Social Security and HM Treasury (2000), *Security for Occupational Pensions: A Consultation Document*, London, September.
- Department of Social Security and H M Treasury (2001), *Security for Occupational Pensions: The Government's Proposal*, London, March.
- Fabozzi, F, and Konishi, A. (eds)(1991), *Asset-Liability Management*, Probus, Chicago.
- Faculty and Institute of Actuaries (1998), *Retirement Benefits - The Minimum Funding Requirement*, Guidance Note 27 of the Faculty and Institute of Actuaries (Version 1.3, 15 June 1998), Edinburgh and London.
- Faculty and Institute of Actuaries (2000), *Review of the Minimum Funding Requirement*, Edinburgh and London, May.
- Fenton, J., Ham, R., and Sabel, J. (1995), *Pensions Handbook*. Tolley Publishing, Croydon.
- Field, F. (1996a), *Stakeholder Welfare*. Choice in Welfare Series No. 32, Institute of Economic Affairs, London.
- Field, F. (1996b), *How to Pay for the Future: Building a Stakeholders' Welfare*, Institute of Community Studies, London.
- Field, F., and Owen, M. (1993), *Private Pensions for All: Squaring the Circle*, Fabian Society Discussion Paper No. 16, London.
- Finkelstein, A., and Poterba, J. (1999), *Selection Effects in the Market for Individual Annuities: New Evidence from the United Kingdom*, Discussion Paper, Economics Department, Massachusetts Institute of Technology, Cambridge, MA.
- Goode, R. (1993), *Pension Law Reform: Report of the Pension Law Review Committee*, CM 2342-I, HMSO, London.
- Government Actuary's Department (2000), *Occupational Pension Schemes 1995 – Tenth Survey by the Government Actuary's Department*, The Stationery Office, London.
- Gregg, P. and Wadsworth, J. (1995), A Short History of Labour Turnover, Job Tenure, and Job Security, 1973-93, *Oxford Review of Economic Policy*, 11, 73-90.
- Khorasanee, M.Z. (1996), Annuity Choices for Pensioners, *Journal of Actuarial Practice*, 4, 229-55.

- Lakonishok, J., Shleifer, A., and Vishny, R., (1992), The Structure and Performance of the Money Management Industry, *Brookings Papers: Microeconomics*, 339-91.
- Lunde, A., Timmermann, A., and Blake, D. (1999), The Hazards of Mutual Fund Underperformance, *Journal of Empirical Finance*, 6, 121-55.
- MacDonald, A. (1996), United Kingdom, in A. MacDonald (ed.) *The Second Actuarial Study of Mortality in Europe*, Groupe Consultatif des Associations D'Actuaires des Pays des Communautés Europeennes, Brussels.
- Mitchell, O.S., Poterba, J.M., Warshawsky, M.J., and Brown, J.R. (1999), New Evidence on the Money's Worth of Individual Annuities, *American Economic Review*, 89, 1299-1318.
- Myners, P. (2000), *Institutional Investment: A Consultation Paper*, H M Treasury, London.
- Myners, P. (2001), *Institutional Investment in the United Kingdom: A Review*, H M Treasury, London March.
- National Association of Pension Funds (1997), *Annual Survey*, London.
- Office of Fair Trading (1997a), *Report of the Director General's Inquiry into Pensions*, London, July.
- Office of Fair Trading (1997b), *Consumer Detriment under Conditions of Imperfect Information*, Research Paper 11, London.
- Office of Fair Trading (1999), *Vulnerable Consumers and Financial Services*, Report 255, London.
- Pensions Provision Group (1998), *We All Need Pensions: Prospects for Pension Provision*, The Stationery Office, London.
- Personal Investment Authority (1998), *Survey of Persistency of Life and Pension Policies*, London, October.
- Poterba, J.M., and Warshawsky, M.J. (1998), *The Cost of Annuitising Retirement Payouts*, Working Paper, Economics Department, Massachusetts Institute of Technology, Cambridge, MA.
- Reardon, A. M. (1997), *Pensions Handbook*, Pitman Publishing, London.
- HM Treasury (1999), *Helping to Deliver Stakeholder Pensions: Flexibility in Pension Investment*, February, London.
- World Bank (1994), *Averting the Old-Age Crisis*, Oxford University Press, Oxford.

Endnotes

¹ NICs also build up entitlement to health service, sickness, disability and incapacity benefits and the job seeker's allowance.

² Worth £67.50 per week for a single person in 2000-2001, while national average earnings were £415 per week, suggesting a replacement ratio of about 16%.

³ The LEL was £67 per week and the UEL was £535 per week in 2000-2001.

⁴ The State Pension Age for women is being progressively raised to 65 over the period 2010-20.

⁵ The non-contracted out National Insurance Contribution rate in 2000-2001 for employees was 10% of earnings between £76 per week and the UEL, while for employers it was 12.2% on all earnings above £84 per week.

⁶ UK private pension schemes benefit from an EET system of tax breaks: the contributions into schemes are exempt from tax, the investment returns (with the exception, since 1997, of dividend income on UK equities) are exempt from tax, and the pension is taxed (with the exception of a tax-free lump sum equal to 1.5 times the final salary in the case of a defined benefit scheme and 25% of the accumulated pension fund in the case of a defined contribution scheme).

⁷ *Economic Trends Annual Supplement 1999* (Table 3.2).

⁸ Department of Social Security (1998a, Table 1.0), National Association of Pension Funds (1997) and estimates by the Government Actuary's Department.

⁹ For more details of the UK pension system, see Blake (1995, 1997), Fenton et al. (1995), Reardon (1997), Pensions Provision Group (1998).

¹⁰ This is partly because personal pension schemes have only been around since 1988.

¹¹ Although the backloading effect is lower in average salary schemes (such as SERPS) than in final salary schemes (such as a typical occupational scheme).

¹² An additional £3bn per year (*Daily Telegraph*, 31 July 1999).

¹³ In fact, the Conservative government in the UK announced in March 1997 plans to privatise the entire state pension system from the turn of the century and to end its unfunded nature. All individuals in work would receive rebates on their NICs which would be invested in a personalised pension account. The initial costs in terms of additional taxation were estimated to be £160m in the first year, rising to a peak of £7bn a year in 2040. However, the long term savings to the taxpayer from the end of state pension provision were estimated to be £40bn per year (all in 1997 prices). The proposals were put on hold as a result of the Conservative government's defeat in the May 1997 General Election (see *Basic Pension Plus*, Conservative Central Office, 5 March 1997).

¹⁴ *Money Management*, October 1998.

¹⁵ Had the indexation of the BSP been preserved to the growth rate in national average earnings since 1980, the BSP would have been £95 per week in 1999 rather than £66.75 (*Daily Telegraph*, 31 July 1999).

¹⁶ In 1991, Robert Maxwell stole £400m from the pension funds of his companies, Mirror Group Newspapers and Maxwell Communication Corporation. He had been a trustee of both these pension funds.

¹⁷ This section draws heavily on Department of Social Security and H M Treasury (2001).

¹⁸ Myners (2001).

¹⁹ This section draws heavily on Department of Social Security and H M Treasury (2001).

²⁰ However, there is an increasing number of hybrid schemes being introduced which combine features of both DB and DC schemes. It is also possible to have unfunded DB and DC schemes.

²¹ Burgess and Rees (1994) and Gregg and Wadsworth (1995).

²² Blake (1995, sec. 7.34).

²³ It is the high costs associated with individual personal pension schemes in the UK that has led many small companies without the resources to run either occupational DB or occupational DC schemes to establish group personal pension schemes (GPPs) which have lower unit costs than personal pension schemes.

²⁴ The lapse rates come from Personal Investment Authority (1998), while lapse rate-adjusted reductions in contributions are estimated in Blake and Board (2000).

²⁵ There are other costs which are more difficult to quantify, the most important of which are search and information costs. The Office of Fair Trading's (1997a) *Inquiry into Pensions* found (on the basis of a survey it conducted) that most people in the UK did not regard themselves as being financially literate and also they did not tend to shop around (80% of the survey's respondents had little or no interest in financial matters and 85% of respondents who had sought advice on pensions had used only one source). Traditional providers of pensions (such as insurance companies) were regarded as offering complex products that were difficult to understand and therefore required additional training by sales staff. Newer providers (such as direct-selling pension providers) were regarded as offering pension products that were easy to understand and therefore to sell. The tax rules were also regarded as a major source of confusion.

²⁶ National Association of Pension Funds (1997), Government Actuary's Department (2000).

²⁷ National Association of Pension Funds (1997).

²⁸ Department of Trade and Industry Returns 1997. The top 5 providers account for about 60% of sales.

²⁹ Blake (1999).

³⁰ MacDonald (1996) found that mortality forecast errors of 15-20% over intervals of 10 years are not uncommon. US studies (e.g., Mitchell et al. (1999) and Poterba and Warshawsky (1998)) found that the deduction from the actuarially fair value of an annuity for a 65-year old US male was 15% if the male was a typical member of the population as a whole (calculated using the mortality tables for the whole US male population) and 3% if the male was typical of the population buying annuities voluntarily (calculated using the select mortality tables for male annuity purchasers), implying a 12% deduction for the greater mortality risk. Finkelstein and Poterba (1999), using UK data, estimated cost loadings for 65-year old males of 10%.

³¹ CSFB (2000).

³² This is currently a serious issue in the UK on account of recent government budget surpluses and the consequential absence of new gilt issues, see Bishop (1999).

³³ Khorasane (1996).

³⁴ Teachers Insurance and Annuity Association of America - College Retirement Equity Fund.

³⁵ There is a growing body of support for mandatory contributions into second pensions, including Field and Owen (1993), Borrie (1994), World Bank (1994), Dahrendorf (1995), and Anson (1996), as well as

surveys of customers conducted by NatWest Bank and Coopers & Lybrand (reported in Field (1996b, pp. 52-3)). Compulsory contributions are seen as one way of dealing with individual myopia and the problem of moral hazard. The first issue arises because individuals do not recognise the need to make adequate provision for retirement when they are young. The latter problem arises when individuals deliberately avoid saving for retirement when they are young because they know the state will feel obliged not to let them live in dire poverty in retirement.

³⁶ See Blake (1995, Ch.13) or Blake (2000, Ch.14).

³⁷ See, e.g., Fabozzi and Konishi (1991) or Blake (1995, Ch.13). Formally the fund manager's objective with a DB scheme is to minimise surplus risk each period subject to the condition that the surplus is always zero. The control variables in this dynamic programming exercise are the contribution rate into the fund and the composition of the assets in the funds (i.e. the portfolio weights or the asset allocation). See Blake (1992) for an analysis of UK pension fund investment behaviour over a period when DB schemes were broadly unconstrained by their liabilities and hence pursued investment strategies more akin to maximising risk-adjusted expected value.

³⁸ This is despite the fact that, as we have seen above, there are investment management techniques available to reduce the dispersion of realised returns.

³⁹ Pension Schemes Registry and Government Actuary's Department (2000).

⁴⁰ Very similar results have been found for the US, see Lakonishok et. al. (1992).

⁴¹ Davis (1988) reports a survey of UK and US fund managers in which they acknowledge the existence of a herding effect.

⁴² Pensions Management, September 1998.

⁴³ Myners (2001).

⁴⁴ Department of Social Security and H M Treasury (2001).

⁴⁵ The 1974 Employee Retirement Income Security Act.

⁴⁶ Office of Fair Trading (1997b, 1999).

⁴⁷ The fund manager benefits by sharing some proportion of the outperformance of the benchmark index; there is also a penalty for underperformance, although it comes in the form of a credit against the future fee rather than as a cash refund in the quarter in which the underperformance occurs.

⁴⁸ Even though we found no evidence that fund managers could systematically outperform the market, it would be difficult for the government to require pension fund managers to use index matching. There would be no clear consensus on which index to match (the FTSE100 index, the FT A All Share index, a European index or a global index). Also there is a risk that market inefficiencies could emerge if large institutional investors such as pension funds were prevented from searching for under- and over-valued stocks: we found that the only source of value-added in active fund management was security selection.