The Staple Inn Actuarial Society

# Reinventing Annuities

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*"People will soon live twice as long as today, and have the potential to live for 1200 years"*

John Harris
Scientist and Member of UK Human Genetics Commission
as reported in The Sunday Times 25 June 2000

*"Funeral firm hit by 29% profit fall.
Not enough people are dying in the US, according to Service Corporation International, the world's largest funeral services company"*

Times
2 October 1999

*"........ ministers must find an alternative solution to the annuity"*

Times
6 February 1999

*"The rules that force millions of pensioners to buy annuities at the age of 75 would be scrapped under a Conservative government"*

Financial Times
5 October 2000

*"By providing financial protection against the major 18th and 19th century risk of dying too soon, life insurance became the biggest financial industry of that century ................. Providing financial protection against the new risk of not dying soon enough may well become the next century's major and most profitable financial industry"*

Peter Drucker
"Innovate or die"
The Economist Newspaper
25 September 1999

## Preface

Around the world, governments are impressing, or even imposing, on their citizens an obligation to increase savings for what appears to be an ever increasing period of retirement. Much attention has gone into designing and implementing pre-retirement structures; far less thought appears to have been given to the structures applicable after retirement. This is an important omission as:

- the post retirement period may be as long as or longer than the pre-retirement period
- investment strategies for retirement income should in order to optimise returns reflect the full period over which assets are used
- the greatest risk faced by many who save for retirement is outliving their assets and falling back on state provision or worse.

Converting assets to income in an orderly fashion will become an increasingly important issue for the ageing populations and economies of many nations.

Conventional annuities have many weaknesses, not least a diminishing supply of long bonds from governments. However, without a sharing of longevity risk the task of achieving a satisfactory income in old age will become impossible for many. Furthermore, it is likely that such sharing will have to become intra rather than inter generational (as it is now) if it is to be workable in the future.

The annuity structure of the future will have to be capable of accommodating much greater variation in:

- life span
- asset allocation
- customer attitudes/requirements in retirement

and to adapt to changes in these over the period for which income is payable.

The purpose of this paper is to stimulate a debate on these issues that will result in more and better choices for income in retirement. We believe that the annuity model described in this paper will become prevalent both in the UK and in other markets.

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# 1 Background to current annuity market

## History

1.1 Annuities have been around a long time but evolved only slowly. For example, the Roman Ulpian devised a set of annuity rates around 200 AD which were still being used by the Tuscan government in the 19th century. [(1)]

1.2 Appendix 1.1 contains highlights from the history of annuities as background. It is intriguing that many current issues relating to annuities and provision for old age were recognised very early.

## The legislative framework for UK pension annuities

1.3 An outline of the legislative framework including recent changes is given in Appendix 1.2.

## Annuity market size and growth

1.4 Pension annuity business has grown rapidly over the last decade (see Appendix 1.3). There are some signs at present of a slowing in market expansion, perhaps in part as a consequence of perceptions of poor value. However, much of the variation recently is attributable to fluctuations in the volume of bulk-buyout business from the winding up of occupational pension schemes. Volumes from this source appear likely to grow over the longer term. The average purchase price for personal pension annuities is currently around £25,000. [(2)]

1.5 The market for income drawdown products has grown even faster, and it may be that the slowing in growth of pension annuity volumes is also a result of deferral of annuity purchase, with funds diverted to drawdown in the hope of buying annuities on improved terms at a later date. Average purchase price is currently of the order of £115,000. [(2)]

1.6 Volumes of purchased life annuities (PLA) have been declining during the last decade (see Appendix 1.3) and are now only about 5% of the premium volumes of pension annuities.[(2)] These volumes would have been substantially lower were it not for 'home income' plans, where proceeds from either a mortgage loan or equity release based on domestic property are used to purchase a PLA. Should equity release grow in the future, volumes of PLAs may move back towards growth.

1.7 More generally, some key facts about older people (assembled by Richard Disney [(3)]) are:

- their incomes have risen relative to the average for the overall population (from 57% of the population average in 1985 to 62% in 1998) for those aged 65-74
- the share of their income that is represented by private pensions has risen from around 12% in 1972 to around 28% in 1998 (almost exactly mirroring a decline in the share represented by earnings)
- inactivity rates for men aged 50-65 have risen from 6.6% in 1975 to 28.2% in 1998
- pensioner incomes are spread across the income distribution (with nearly 5% of pensioners in the top income decile for the population as a whole - under-represented, but still significant)
- many older households have significant wealth (mean housing wealth plus mean financial wealth (excluding value of pensions) £107,000 in January 1996), and this is heavily skewed with the corresponding medians totalling £82,700.

1.8 The retired population thus represents a diverse group of individuals many of whom have significant income and significant wealth.

1.9 There are also many of them and projections made over time have tended to underestimate their numbers. The table below [3] shows the number of pensioners in 2020-21 for projections made at different times:

| Year when projection was made: | 1981 | 1990 | 1995 | 1999 |
|---|---|---|---|---|
| Projected number of pensioners (million): | 10.6 | 13.4 | 14.4 | * 14.6 |

* allowing for 2 million adjustment for equalisation of state pension age.

1.10 The wealth and income controlled by pensioners will increasingly become factors that the financial services industry cannot ignore.

# 2 Why change the conventional annuity model?

2.1 Each of the parties to the conventional annuity market:

- customers
- insurance/reinsurance companies
- intermediaries
- governments and corporations

is directly or indirectly experiencing difficulties.

Customers

2.2 Customers (and their representatives in the press) appear to regard conventional annuities as inflexible and poor value, and some have challenged the rationale for compulsory purchase of annuities.

2.3 Whether or not these perceptions are justified in respect of the insurance aspect of annuities, the apparent obligation to invest in bonds for a period which for many lives may be 20 years or more appears ripe for challenge. For an increasing number of customers, the period that funds are invested after retirement may well exceed the period over which they were accumulated prior to retirement.

2.4 If equity investment is preferred pre-retirement, then why not post-retirement? Potentially adverse 'asset allocation' is made worse through 'lifestyling/ lifecycling' of funds pre-retirement so that the switch to bonds occurs well before the annuity purchase. Furthermore, the switch to bonds whether through 'lifestyling' or annuity purchase is made as a 'once for all' shift.

2.5 Compared with 'drawdown' products the customer has little scope to tailor asset allocation or income to changing economic or personal circumstances.

Insurance/reinsurance companies

2.6 The products are easily compared and competition on rate is keen. Because of solvency margin and reserving requirements, such products also impose significant capital requirements on providers. Furthermore, bonds of appropriate duration and structure to meet regulatory requirements are not always readily available (see also 2.10).

2.7 Additionally, writing annuities carries very great risk as it involves estimating future improvements in mortality over long periods in circumstances in which advances in scientific and medical knowledge appear likely to have a substantial but unpredictable impact. CMI report 17, covering experience in the period 1991-94, showed continuing improvement in mortality and indicated that mortality predicted for 2010 had in some groups already been achieved. Richard Willets' recent SIAS paper provides further evidence not only that rates of improvement in mortality have been increasing, but also of the wide range of outcomes that may emerge in the future. [4]

2.8 The absence of any material supply of reinsurance or capital market products to enable a laying off of long-term longevity risk is further evidence that the risk is unattractive, at least on current pricing.

Intermediaries

2.9 Conventional annuities provide no scope for advice once the purchase has been made. However, post retirement wealth management and income generation should be an area in which value can be added, and in which the cost of advice can be relatively small compared with the sums invested.

## Governments and corporations as issuers of bonds

2.10 Pension structures in the United Kingdom appear to create particularly heavy demand for long government and other bonds (compared with other major markets) producing a substantially downward sloping yield curve (see Appendix 2.1). The problem is especially acute in the index linked market given the obligation of pension schemes to provide limited price indexation (LPI) pensions. A potent cocktail of MFR (as amended), rising volumes of annuities and Government surplus appears likely if sustained to continue to worsen this situation. [5] Entry to the euro would provide the UK with access to a larger pool of bonds at higher yields and greater future volumes of issuance. However, these higher yields would not entirely remove the objections currently expressed towards conventional annuities.

## An academic view

2.11 Michael Orszag [6] in his lecture to the NAPF identified four problems with the annuity market in the UK:

- perceptions: the belief that annuities are "poor value for money" or that insurers act as a cartel which exploits mandatory annuitisation requirements to make excess profits
- products: the lack of products that match consumer needs on portfolio allocation or income flexibility
- processes: inadequate distribution and marketing processes for individuals about to purchase an annuity
- politics: the requirement that individuals purchase an annuity by age 75 and hence surrender their capital on death.

2.12 He comments: "One conclusion of our work is that individuals could be complaining about annuities not because they are poor value for money, but because they are not suitable investment products".

# 3 Assessment of current 'alternative' products

## Recent trends

3.1 The choices available to someone retiring with a personal pension are limited. In principle, aside from the possibility of using part of the plan to provide tax-free cash, they can:

- take an annuity,
- defer vesting, or
- go into income drawdown.

3.2 In practice the options for most people are even more restricted than this, as:

- many cannot defer vesting, as they have an immediate need for post-retirement income
- income drawdown has established a niche, but is arguably suitable only for the more affluent
- some wish to access the tax-free lump sum and worry that it may be withdrawn in the future.

3.3 Until recently those not wishing to purchase a conventional annuity had a very restricted choice, in that the number of providers of alternatives was small.

3.4 However, recently there has been an increased number of providers of with-profit annuities, and a gradual extension of the features included. The reasons for this are doubtless linked to the problems with conventional products along with the expectation of continued market growth.

## Current alternative products

3.5 The basic with-profit and unit-linked annuity products could be characterised as follows:

### Basic with-profit annuity

- Income level defined by life company
- "Regular" bonuses added as permanent additions to income
- "Terminal" bonuses added as temporary additions to income
- Customer able to anticipate a future level of regular bonus, increasing the initial income level but reducing prospects for future growth and introducing the possibility of a fall in income.

### Basic unit-linked annuity

- Income level defined by life company, but in terms of a number of units rather than a value in money terms
- Income payments therefore move directly in response to unit price
- Customer able to anticipate a future level of unit price growth, increasing the initial income level but reducing prospects for future growth
- Potential to incorporate a unitised with-profit fund, which produces a unitised with-profit annuity product.

3.6 Appendix 3.1 lists key points of products available in the market. This is not intended to be a definitive analysis of particular products (and the provider names are not given).

3.7 Features incorporated in addition to the basic designs described above include:

- the option for joint life contracts to convert to a conventional annuity on the death of the main life
- the option to convert to a conventional annuity at any time
- unit-linked annuity with a self-invested option
- with-profit annuity with the ability to amend the anticipated bonus rate at any time more than one year from outset
- purchase of income in five-year tranches, with the balance of the fund remaining invested in one or more unitised funds.

3.8 A key criticism of conventional annuities, and of the basic unit-linked and with-profit designs, is lack of flexibility after purchase. The general trend in the newer products is to give customers more options after purchase.

3.9 It is striking that the bulk of activity has been in the area of with-profit annuities. This presumably relates to the failure of unit-linked annuities to sell in significant volume. Providers might expect to have prospects of success launching with-profit annuities with gradual enhancements to previous designs, whereas a major rethink might be necessary to develop a radical alternative. However, there is a lack of clarity in such products as to the extent to which each of the various parties bears longevity risk.

## Comparison with income drawdown

3.10 The other main alternative to the conventional annuity, income drawdown, is not an annuity at all, but converts a fund into instalments of income within prescribed limits.

3.11 Because of mortality drag and other issues associated with the absence of an insurance element (discussed later in Section 5), this product appears not to be well suited for some of those whose primary need after retirement is efficient capital to income conversion. However, it provides a useful comparator for annuity products.

3.12 Key points are that income drawdown offers:

- investment freedom, and
- income flexibility (within wide limits)

whereas most annuities offer:

- little investment freedom (typically a simple non-profit or with-profit choice)
- little income flexibility.

3.13 The intermediate solution, giving investment freedom and income flexibility but reduced or no mortality drag, is not available. We believe that this is a significant market gap. The middle annuity market (consisting of those with significant retirement funds but not necessarily enough to be appropriate candidates for income drawdown) is set to grow, and these customers are poorly served (see Appendix 3.2).

# 4 Global perspective

4.1 The United Kingdom is relatively unusual in operating a regulatory framework for defined contribution pensions that imposes an obligation to purchase an annuity at retirement. Even in those countries in which deferred annuity products are sold, commutation of proceeds is prevalent. Where defined contribution pension structures are introduced so as to provide benefits that are incremental to generous state schemes, as in Germany or Italy, the case for expressing benefits as income in retirement is less compelling and in some countries there are tax disincentives to taking benefits in income form. However, even where annuities are not subject to fiscal disadvantage (or indeed are favoured) for example Australia, Singapore and the USA, lump sums or drawdown are the prevalent structures for retirement benefits. (See country data in Appendix 4.1.)

4.2 The extent to which pension systems in which post retirement benefits are not subject to a process of annuitisation will be robust remains to be tested as populations age. There is an asymmetry in a system in which benefits are not annuitised:

- those dying 'early' pass on assets
- those dying late may have to fall back on the state.

[Note: this problem has to do with the distribution of longevity covered in Section 5 and does not assume 'feckless' spending of lump sums following retirement.]

4.3 The three-pillar World Bank model for pensions which many, perhaps most, countries are adopting in shifting towards funded pensions, for example in Eastern Europe, does not prescribe post retirement structures. It is understandable that conventional annuities are not prescribed, as the bond and/or insurance markets of many countries may not be able to support such provision. However, the structure described in Section 6 of this report could be tailored to virtually any set of reasonably liquid and/or marketable assets.

# 5 The case for 'annuitisation'

The financial planning challenge

5.1 Fully retired individuals face an interesting financial planning challenge: for the purpose of planning retirement income, they are seeking to exhaust their funds (subject to making desired bequests) on the day they die. The problem is that they do not know how long they will live, and the difficulty this gives them is that they may:

- outlive their assets, and die in poverty, or
- restrict their living standards needlessly and die excessively asset rich.

5.2 Appendix 5.1 shows, for individuals alive at 60 in 2001 (based on the stated tables), the probability that they will die at each age. This distribution of deaths is interesting, for example:

- the most likely ages at death are 86 and 89 for men and women respectively, exceeding the life expectancies (of 84 and 87 respectively) by 2 years in each case
- over 25% of men are expected to reach age 90, and over 25% of women are expected to reach age 94.

5.3 A strategy where the aim is to exhaust an investment fund over the future life expectancy, is somewhat unsatisfactory:

- the most likely outcome is that the final 2 years of life (mode minus expectation) will be spent in poverty, and
- around 25% of those following this strategy will spend their last 6 or 7 years in such circumstances.

5.4 The shape of the curve alters with current age and this alters the consequences of any 'spreading' decision. This is shown in Appendix 5.2. The bell shape at the young ages changes into a consistently downward sloping curve. The level of uncertainty is indicated in Appendix 5.3, which shows how the standard deviation of the distribution of deaths as a proportion of the life expectancy varies with age.

5.5 The implications are summarised in Appendix 5.4. For each starting age from 60 to 100 this shows:

- the "targeted income" supportable by an investment fund seeking to exhaust it at the end of the life expectancy
- the "reduced income", seeking to exhaust the fund at a later age (one standard deviation higher than the expectancy in the distribution of deaths)
- the fund remaining at death if the reduced income is taken, but the life dies at the life expectancy.

5.6 Points to bring out from this appendix are:

- the probability of living more than one standard deviation beyond the life expectancy is around 15%-20% dependent on age
- taking the reduced income means that the probability that the annuitant outlives the fund is around that level, ie 15-20%
- the level of income reduction to achieve this varies from around 10% in the sixties to around 40% in the nineties, compared with income targeting based on life expectancy
- if the annuitant takes the reduced income but then dies at the normal life expectancy, the fund remaining on death is projected to be around 50% of the original fund subscribed.

5.7 The position is clearly not satisfactory: the individual must take a significant risk of outliving the fund, or expect to die without having had the benefit of a substantial proportion of his or her wealth.

## The annuity solution

5.8 Such uncertainty indicates the need for an insurance solution, in this case insurance against longevity. The risk is then passed on to an insurer. The insurer can 'play the probability distribution'.

5.9 The insurance structure might operate as follows:

- The insured are able to consume their 'annuitised' fund in the form of an income during their expected lifetime. The fund receives ongoing credits to reflect a transfer of assets from those annuitants who die.
- On death any remaining assets are forfeited. This is effectively the 'premium' for the insurance.

5.10 As funds on death are 'distributed among survivors' (via the insurance mechanism) rather than retained by the deceased, the income supportable by the fund is increased. This is illustrated in Appendices 5.5-5.6, showing:

- Appendix 5.5 - the age at which a non-annuitised fund is exhausted if the income drawn from it is fixed at outset to equal the amount supportable by an annuitised fund, and the probability that the annuitant lives longer than this.
- Appendix 5.6 - progression of income supportable by an annuitised or a non-annuitised fund for a specimen age at outset assuming that, instead of fixing the income at outset and allowing the fund to be exhausted, the income taken from the non-annuitised fund is recalculated each year. (These diagrams assume the same investment return for annuitised and non-annuitised funds.)

5.11 Appendices 5.5-5.6 demonstrate that for those whose primary requirement from their assets is income generation the retention of assets in non-annuitised form is costly.

5.12 The 'value added' by the annuity in Appendix 5.6 is represented by the area between the red and blue lines. This is plotted in Appendix 5.7 for each entry age from 60 to 90.

5.13 Clearly the benefits of annuitising are greater the longer the annuitant lives. Appendix 5.7 shows this by examining the proportion of income foregone over their retirement period by those who do not 'annuitise' and then die at each quartile point in the distribution of deaths for each entry age. It is not just those who live exceptionally long who can benefit from annuitising.

5.14 Appendix 5.8 shows the equivalent additional growth required in a non-annuitised fund in order to compensate for the absence of the mortality cross subsidy. The shaded area indicates the level of out-performance that might be considered credible as a result of additional investment flexibility compared with a conventional annuity (but at the cost of increased risk).

5.15 Clearly if the annuitised vehicle offers the same investment choices as the non-annuitised fund then no such out-performance is available, and the non-annuitised fund will always lag.

5.16 Appendix 5.8 is useful in considering proposals to extend the upper age limit for income drawdown. It appears, based on the mortality tables used, that those reliant on the income generating power of their assets for supporting their standard of living would be taking a brave step in deferring annuity purchase much beyond age 75 for a man and a couple of years later for a woman. This is even without allowing for the additional costs involved in income drawdown.

5.17 Clearly it could be argued that income drawdown is aimed at those who are not so reliant on generating maximum income to support their lifestyle. However, it is not clear why their interests should determine in entirety Government pensions policy.

## Academic contributions to the debate

5.18 Yaari put the argument as follows [7]: “If income in retirement is the only goal of the investor, then for any choice of underlying investment vehicle, full annuitisation is always the best choice for a retiree as long as administrative costs and selection effects are not too strong.”

5.19 Following this we need to analyse separately:

- administrative costs and selection effects
- other investor goals apart from income in retirement
- investment vehicles.

## Administrative costs and selection effects

5.20 A recent paper for the World Bank [8] studies annuity markets in Canada, UK, Switzerland, Australia, Israel, Chile and Singapore. It points out that the annuity markets are generally relatively undeveloped and that therefore one might expect to find:

- lack of good service to customers
- low money’s worth ratio (discounted value of benefits divided by initial cost)
- substantial adverse selection, as only small proportions of the population are in the market.

5.21 However, their conclusions were just the opposite. In summary, money’s worth ratios were:

- over 97% assessed on annuitant mortality at a risk-free rate
- over 90% assessed on population mortality at a risk-free rate.

5.22 In other words administrative costs consume around 3% of the consumer’s money, and the effect of adverse selection is around a further 6-9%. This is not regarded as excessive. It is also worth mentioning that if greater proportions of the population were involved in the annuity market then both these costs might be expected to reduce.

5.23 Poterba and Finkelstein [9] suggest that an area of market failure in the UK annuity market is the inadequate attention given to socio-economic status in premium rating. Evidence gathered by Banks and Emmerson [10] gives an indication of the socio-economic differences between those above age 50 with an annuity income and those without:

| | Without annuity | With annuity |
|---|---|---|
| Median household income (£ per week) | 262 | 288 |
| % educated beyond minimum | 18.1 | 32.1 |
| % who are outright home owners | 46.3 | 75.3 |
| % with savings >£20,000 | 26.2 | 58.9 |
| % with savings < £8,000 | 46.1 | 23.7 |

5.24 Annuities are of course priced to reflect the insured population. Poterba and Finkelstein's point is "if an individual of low socio-economic status who decided to purchase an annuity would not be able to get a lower price that reflected his low socio-economic status and hence lower life expectancy, then there is a market failure". At present we are starting to see some attempts to tackle this problem in the form of 'impaired life' annuities.

5.25 A further area of failure, identified by Murthi, Orszag and Orszag (11), is the failure to exercise open market options. While overall market annuity rates offer decent value for money, individual company rates may not, and individual companies may be slow to respond to interest rate changes. Michael Orszag (12) proposed the concept of Compulsory Best Quote annuities, where pension providers would be required to facilitate an open market option to a good market annuity rate as a default option.

## Other investor goals

5.26 An obviously important investor motivation that militates against the annuity is that of bequest (the desire to pass on capital after death), as this is directly opposed to the capital forfeiture that is central to annuitisation.

5.27 Other goals could include the desire to maintain access to capital to meet uncertain demands (the precautionary motive), or for some the desire to be able to maintain control over assets (for example in terms of investment decisions).

5.28 However, these investor goals do not directly rule out the benefits of annuitisation. Instead they suggest the need for greater flexibility in product design, coupled with greater focus among financial advisers on the whole issue of wealth management (especially after retirement).

5.29 The real aim is to produce the desired trade-off between income during life and other goals for each individual.

## Investment vehicles

5.30 Many discussions of annuitisation compare investment in a conventional guaranteed annuity with investment in an equity-backed vehicle, mixing the issues of the annuity principle and the investment vehicle.

5.31 Kapur and Orszag (13) summarised work they performed on portfolio choice and annuitisation in retirement as follows:

- annuities are optimal for investment in retirement in the absence of a bequest motive
- with a bequest motive, an unbundling of annuity and investment management (and advice) is a possible approach
- without appropriate investment annuities, mandatory annuitisation is costly, but so is equity-only investment

5.32 The clear challenge for the insurance industry from this type of work is to introduce "appropriate investment annuities".

## Should annuitisation be compulsory?

5.33 In the UK opinion formers have tended to argue against the compulsory annuitisation that is a key element of the pensions system in the UK. It is illuminating that in the US market, where annuitisation of private pensions savings is not compulsory, the questions being asked relate more to why people are not voluntarily buying more annuities and whether mandatory annuitisation would be desirable. Indeed James Poterba of MIT referred in July 2000 to the "puzzle" of why so few buy voluntary annuities. (14)

5.34 The paper "Choices – an independent report to encourage the debate on retirement income" produced by the Retirement Income Working Party chaired by Oonagh MacDonald [15] essentially proposed the following:

- an individual should continue to be able to take a tax-free lump sum, as currently
- on retirement they must purchase a price index-linked annuity to meet a Minimum Retirement Income (MRI), designed to avoid their becoming eligible for means-tested benefits
- much greater freedom should be allowed in the application of any residual fund after the MRI is achieved, including the use of non-annuitised vehicles
- shortcomings of existing annuities should be reduced by the government and the financial services industry.

5.35 The paper simultaneously proposes relaxation of annuitisation requirements for the residual funds above MRI and a more stringent annuitisation requirement (in that the annuity must be index-linked) for the MRI element itself.

5.36 Many of the retiring population would be likely to be affected only by the MRI element (as is acknowledged in the paper), because their pension resources would be inadequate to provide them with any residual fund.

5.37 Consequently the main effects of the proposals would be:

- to increase demand for index-linked annuities (which it is questionable whether the bond market can support satisfactorily), and
- to give more options after retirement but only to the relatively affluent.

5.38 Also in the UK, the Social Market Foundation published a report arguing either for an approach similar to the MRI ideas outlined above or for a complete abolition of compulsory annuitisation. [16]

5.39 In a recent paper [17] Jeffrey R Brown of Harvard University questioned why in the US (where they are not compulsory) more people don't buy annuities. His points were:

- existence of pensions and social security benefits (as an annuitised safety net)
- pricing of individual annuities (costs and mortality assumptions)
- bequest motive and self-insurance within families
- the desire for flexibility
- inflation (and the relative unattractiveness of inflation-proofed annuities)
- higher-return portfolio choices
- lack of understanding of the benefits of annuitisation.

5.40 The same issues need to be considered in a system with mandatory annuitisation.

# 6 Proposed redesign within the current legislative/regulatory framework

Desirable features

6.1 Let us accept for the purposes of this section that annuitisation is desirable for at least some pensioners. The question then arises as to how this should best be accomplished.

6.2 The aims of our redesign are (within any limits imposed by existing UK regulation).

For annuitants:

- to increase potential lifetime income through greater freedom to choose optimally performing assets, and to vary this choice during retirement to reflect any change of attitude to risk and reward, and in financial circumstances
- to provide insurance against longevity, but with flexibility as to the extent of such cover chosen
- to generate stable income but allow flexibility as to the level of income generation
- in a 'stakeholder' culture, to be transparent.

For insurers:

- to limit/manage longevity exposure through time
- to reduce the capital cost of providing guarantees/solvency margin
- to increase profit margins
- to have more facility to lay off risk to reinsurers and/or capital markets.

For intermediaries:

- to have more scope to provide post retirement advice/wealth management services and to be remunerated accordingly.

[This intermediary role may of course be carried out by individuals on their own behalf.]

For governments and other bond providers:

- to operate within a less distorted yield curve, typically issuing more short to medium term bonds.

6.3 These aims if achieved should result in a reconfiguration of risk between annuitants and providers. Given that some members of each of these parties are dissatisfied with the conventional annuity market, we would expect at least some members to prefer such a reconfiguration.

6.4 A framework is set out below to turn the desirable features listed above into an outline design for an annuity. We will refer to this as the "annuitised fund".

## The annuitised fund

6.5 With an annuity, the concept is that forfeited benefits for those who die gear up the benefits of survivors for the purpose of providing a sustainable stream of income. In the case of the annuitised fund this 'cross subsidy' is made explicit and can be expressed in the form of "survival credits". Thus at the point of annuity purchase, the status of the fund used for annuity purchase is changed so that the annuitant will enjoy a 'lifetime tenancy' of the fund, forfeiting it on death but receiving 'survival credits' while alive. An upper limit is set to the rate at which the fund can be consumed as income so that this income may be sustainable (in the case of a pension) throughout life, and this rate is reviewed periodically.

6.6 A schematic representation is included as Appendix 6.1. This assumes single life mortality. The principles would of course hold good for joint lives and/or for annuities including capital protection.

6.7 Set out below are guidelines as to how the annuitised fund concept can be made to fit with the list of desirable features set out above.

### Lifelong income…

- Assess the supportable income level over the remaining lifetime, using a suitable annuity factor based on investment and mortality expectations at the time (a targeting calculation).
- Review the product periodically to reassess the supportable income (as investment returns and/or mortality rates are not guaranteed).
- At high ages where future life expectancy is very short, lock into a conventional annuity or similar structure ('guaranteed annuity') (as the review process is likely to generate excessively volatile results).
- Provide default mechanisms either through investment links or overall guarantees to prevent income falling below acceptable levels.

### … avoiding the need to guarantee mortality over the long term

- Review survival credits, to reflect experience, limiting guarantees to fixed periods.

Notes:

- When the product converts into a guaranteed annuity the remaining life expectancy will be much lower and the problem of predicting mortality far into the future will have been avoided.
- Reinsurers may be more willing to become involved because of the shortening of mortality guarantee periods.
- Bonds of appropriate duration and structure are readily available.

### Investment choice

- Offer investment choice, so risk/reward can be geared to the needs of the individual annuitant.
- Allow investment choice to be amended over time as circumstances change, to cater for changing attitudes to risk, past performance (influencing freedom of action in the future), and unforeseen events (such as an inheritance, or ill-health).

Notes:

- "Wealth management" is a key area for financial advice in the future.
- Products that permit annuitised wealth to be managed alongside non-annuitised wealth make more tailored wealth management strategies possible.
- Investment strategies that manage down risk through time fit much more appropriately into post rather than pre-retirement fund management.

Adequate stability of income

- Break the short-term link between income and investment performance by setting stable income levels between reviews. This enables asset allocation decisions to be strategic rather than tactical.

Notes:

- Making stable payments from a volatile fund is unlikely to be a major problem early in the term of the annuity because each income payment will only represent a very small proportion of the fund. At higher ages the risks increase (and tolerance of risk usually reduces), so move progressively into less volatile investments: in other words the concept of post-retirement lifestyling may be introduced.

Income flexibility

- Allow annuitants to take varying income, within limits.
- Set an upper limit to maintain the principle of lifetime income; set a lower limit to avoid 'excessive' deferral of tax, and also to prevent policyholders suffering from a version of reckless conservatism and dying with 'excessive' funds unused.

Notes:

- Income flexibility may introduce some selection risks against the provider, but these should be limited if the difference between minimum and maximum income is restricted.

Transparency

- Present the annuity as a fund (see Appendix 6.1 and also paragraph 7.20).

Notes:

- Separating the mortality element from the investment element by means of the 'survival credit' also contributes to transparency.
- Survival credits visibly challenge the contention that "annuities are unfair because the insurer retains the fund on death".

Scope for appropriate commercial return

- Apply fund based charges to achieve front end loading (contrast say with stakeholder pensions).
- Limit or remove guarantees to reduce or eliminate solvency margin requirements.
- Reduce mortality guarantees to introduce greater accuracy in pricing, which should in principle improve the product's efficiency.

Notes:

- If investment flexibility leads to superior investment returns, as would be the objective, then greater commercial return would be possible.
- The product introduces an increased need for ongoing financial advice, compared with a conventional annuity and provides the margins to pay for this.

Maximise expected income

- Offer a number of possible investment strategies, each aimed at different market segments and offering appropriate risk levels for that segment.
- Possibly include specific funds tailor-made for the product and incorporating appropriate derivative-based guarantees.

### Comparison with other products

6.8 The above framework bridges the gap between current investment-linked annuity products and income drawdown.

### Demand for bonds

6.9 Assume that:

- a conventional annuity is entirely backed by bonds, whereas
- an annuitised fund could commence with little or no bond content and then increase this, say switching over the period from age 80 to 90 and reaching 100% investment in bonds by age 90. Of course greater bond content could be deployed either tactically or strategically according to the financial circumstances and the requirements of the annuitant.

6.10 We can then illustrate the effect on demand for bonds of writing an annuitised fund product rather than a conventional annuity. Appendix 6.2 shows the effect for a tranche of business written at age 60.

6.11 There is a large reduction in the demand for bonds and, equally important, the demand is for shorter bonds. Both effects would be likely to appeal to governments and to issuers of corporate bonds.

# 7 Regulation, illustrations and presentation

## Regulation

7.1 What is an acceptable annuity for pension purposes? In the case of personal pensions the annuities do not have to be approved by the Inland Revenue. However, there are restrictions on the nature of annuity that it is permissible to purchase with the proceeds of a personal pension.

7.2 Consequently the views of the Inland Revenue on the acceptability of an innovative annuity design do in practice need to be taken into account. Otherwise, the danger exists that the Inland Revenue may argue after the event that the purchase of the product was not a permissible use of personal pension proceeds.

7.3 The main relevant restrictions are to be found in Sections 634 and 636 of ICTA1988 and, driven by these, in the Inland Revenue's practice note IR76. The key sections are reproduced in Appendix 7.1 and Appendix 7.2.

7.4 Unfortunately, the rules were framed with traditional conventional annuity products in mind. Consequently, in the absence of further legislation, the Inland Revenue needs to decide whether a particular product complies with the spirit of the law, in a situation where the law is lagging the requirements of the current market.

7.5 In particular, annuity products with variable income, or where the focus is shifted more towards the fund value and away from the income delivered, raise interesting questions in interpretation of the law and Inland Revenue practice.

7.6 Our experience is that the policy makers at the Inland Revenue will genuinely try to be helpful if it is clear that the intention of a product proposal is to provide a vehicle for capital to income conversion that has regard to the intentions and spirit of the law.

7.7 The broad tests of principle are that income should be:

- regular
- stable, and
- throughout life.

7.8 Not unreasonably the Inland Revenue is likely to become less co-operative if it appears that the aim of the product is to provide 'excessive income' in the early years or to find a way of preserving the member's capital on death to an extent greater than is allowed for in the income protection permitted by legislation. It is worth noting that income guarantees can extend up to ten years beyond age 75 under current legislation.

## Annuity illustrations

7.9 For conventional annuities, quotations amount to a statement that in return for the payment of £A an income of £I per annum will be payable until the death of the annuitant.

7.10 With-profit and unit-linked annuity illustrations are more complex in that they show possible future income levels given certain assumed rates in investment growth. However, the trade-off between income and fund through time is not typically transparent.

7.11 A fund-based annuity of the sort described in Section 6 can benefit greatly from good visual presentation, so the issue is really how to achieve this rather than reluctantly to comply with the minimum required by regulation. Complex financial concepts and decisions become more accessible in visual form.

7.12 From the customers' perspective, we would argue that they:

- often find graphical presentations of information easier to understand than tables of numbers
- are familiar with the idea of a bank statement or credit card statement as a means of monitoring financial matters
- will become ever more comfortable with (interactive) screen-based presentations of financial products, in particular as online financial services grow. Such formats will enable the consequences of decisions to be explored and understood more easily.

7.13 A number of possible forms of illustration material based on this thinking are included, and discussed below.

### Income projection

7.14 Appendix 7.3 shows a graphical representation of the income stream delivered by an annuitised fund allowing for asset growth rates of 5%, 7% or 9% per annum. This example has been calculated to generate a level central outcome. The product envisaged works with a three yearly review cycle, following the example of income drawdown.

7.15 Appendix 7.4 then shows the effect of taking more, or less, income than this, by calculating the "supportable" income and then actually drawing 10% more, or less, than that. Appendix 7.5 shows the consequences of the three income assumptions on one chart, based on the central growth assumption.

7.16 This presentation makes clear to the customer the trade-off between higher initial income and prospects for growth. An interactive system permitting income choices to be examined in this way should increase customer understanding, and is well suited for Internet presentation.

### Fund projection

7.17 Projections of the fund values consistent with Appendix 7.5 are shown in Appendix 7.6. Coupling these shows how the income streams are being delivered. In simple terms:

- if you take a high initial level of income the fund runs down more quickly, so the future income levels that the fund can support decline;
- if you take a low initial income then the fund grows, so the future income levels that the fund can support grow.

7.18 This is fairly obvious, but important. If a product offers income flexibility then it is highly desirable that customers can see how the trade-off between different income choices works. To do this really requires the insurer to expose the associated fund value to scrutiny.

7.19 The fund projections are also relevant for illustrating death benefits, if the product is structured such that a proportion of the fund is available to provide an annuity certain element or a spouse's benefit.

### Annual benefit statement

7.20 In terms of communication with existing customers, an illustrative annual statement of how the product is progressing is shown in Appendix 7.7.

7.21 Those who are familiar with receiving pension plan statements or bank statements should find this style of presentation easy to follow.

7.22 A similar statement would be required at a review date, with additional information regarding any changes and options at review.

# 8 Financials

## Solvency margins

8.1 Conventional non-profit and with-profit annuity products are Class I long term business. Unit-linked annuities are Class III long-term business.

8.2 Minimum solvency margin requirements for Class I are clear, ie 4% of reserves, but the situation for Class III is less obvious.

8.3 For a basic unit-linked annuity, it would seem at first sight that no solvency margin is required (provided the insurer offers no expense guarantees) as:

- the benefits to the annuitant fluctuate in line with the unit price and the insurer is not taking an investment risk
- there is no death risk, as the capital at risk is negative.

8.4 However, the position facing the insurer is that they are guaranteeing to pay out the value of a defined number of units for as long as the annuitants live. If mortality is lighter than expected then the insurer will need to top up its unit reserves.

8.5 Consequently, although the insurer faces no death risk, there is a significant survival risk and the cost of this is investment-related.

8.6 In the annuitised fund approach the product might be structured with no survival risk to the insurer, and no solvency margin requirement.

8.7 If the annuitised fund were structured to provide guaranteed benefits at some point towards the end of the annuitant's life then a solvency margin requirement could be introduced, but the level of capital required at outset would typically be very low.

## Charges

8.8 In the world of stakeholder pensions the neatest approach for an annuitised fund would be to have a single charge as a percentage of fund.

8.9 Compared with stakeholder pensions there are a number of advantages:

- the fund starts large and reduces over time, so a fund management charge is biased towards the front end
- surrenders and transfers are not allowed, so the funds are "sticky".

8.10 The appeal of being able to change smoothly from a personal pension or stakeholder accumulation vehicle through to a fund-based annuity vehicle is clear.

8.11 Advisers may wish to take an initial commission, in which case a one-off charge on swapping to the annuity may be required. There may also be other expenses for which a 'one-off' charge is appropriate.

## Profit

8.12 Some indicative profit testing results are set out below.

8.13 The results compare a conventional annuity model with the annuitised fund model on similar assumptions. The approach adopted has been simplified to focus on that comparison, rather than to reflect absolute level of profit.

8.14 Appendix 8.1 gives a list of assumptions. These are the base assumptions used in profit-testing the conventional annuity product.

8.15 Appendix 8.2 shows a profit signature for the product on these assumptions. The present value works out to be –0.7% of contribution.

8.16 Appendix 8.3 shows similar, figures on identical assumptions, except that it compares solvency margin requirements of 4%, 1% and 0%. The corresponding present values are:

| | Solvency margin | | |
|---|---|---|---|
| | 4% | 1% | 0% |
| Present value of profit (% contribution) | -0.7 | 0.0 | +0.2 |

8.17 Appendix 8.4 shows assumptions for the annuitised fund approach. The main differences are:

- assets backing the unit funds grow at 7.5% per annum
- the company receives a 1% management charge
- the investment management costs double to 0.2% per annum
- solvency margin is zero.

Note: it could be argued that the administrative expenses should also be higher, because of the greater product complexity, but we have not introduced that influence.

8.18 Appendix 8.5 shows the profit signature for this structure alongside the figures from Appendix 8.2.

8.19 The present value of profit is 4.2% of contribution, compared with –0.7% for the conventional annuity. Additionally, the income delivered to the policyholder is £705 per month, whereas the conventional annuity only delivered £665 per month.

8.20 There is no 'free lunch' here: the superior results for both insurer and policyholder derive from:

- higher assumed returns on investments (at the cost of higher risk)
- reduction in solvency margin.

8.21 There is clearly scope for increasing policyholder benefits further, or increasing adviser benefits, by reducing the insurer's share, if that is considered appropriate.

8.22 The ability of the product to deliver a stream of trail commission to an adviser in order to fund the costs of a regular review process is important. This fits naturally with a structure based on a fund management charge.

Risk

8.23 Appendix 8.6 shows the indicative results from a stochastic projection of the annuitised fund with a three yearly review cycle. This simply assumes an investment mix of 50% equities and 50% bonds throughout and a Wilkie model approach.

8.24 The outline picture is of substantial upside potential, but also a significant downside risk, with the fifth percentile showing income dropping to around half the initial level by age 90.

8.25 The suggestion would be that for those who are sensitive to risk a mechanism trading off some of the upside potential for partial downside protection might be appealing. Clearly those who are highly risk-averse would be likely to find the annuitised fund concept unappealing, whereas those who can afford to take high levels of risk might find the unprotected results represent an attractive bet.

## Conclusions

8.26 Compared with a conventional annuity, the annuitised fund offers the possibility of superior income to those who are willing to take increased risk (see Appendix 8.7). It simultaneously offers the prospects of higher returns to the insurer, with a lower capital requirement, and scope to incorporate higher adviser remuneration.

8.27 It seems likely that among those reaching retirement there would be a segment that would find higher risk levels acceptable, particularly given the scope to alter the risk over time by rebalancing the investments. Income flexibility increases the attractiveness of the product further.

# 9 Future development

9.1 Given the unbundling into investment and insurance components described in previous sections, a large number of developments are possible.

9.2 Investment aspects may include:

- linkage to a range of funds with varying risk profiles, including with profit funds and/or derivative underpin/controlled volatility. Key is not linking to guaranteed funds when the expected loss of return outweighs the benefit to the customer (however measured) of any reduction in volatility. Risk profiling and tailoring of asset allocation can be conducted along with reviews, and there are software packages that can perform this function cost effectively
- as an extension, multi-manager or multi-currency linkage.

9.3 Insurance aspects may include:

- adopting personalised rating perhaps analogous with motor rating. Various environmental, occupational, health and possibly in future genetic factors may enable more precise rating. Again software tools are available to facilitate this work. This could deal to a significant extent with the issues of selection raised by academics and referred to in Section 5 of this paper. Some preliminary versions of selective rating do already exist, for example, for ‘impaired lives’ (18) or size of annuity purchase.
- profit sharing with annuitants over rolling periods.

## 10 Future annuity market

10.1 The UK market for pension annuities is expected to continue to grow rapidly (20%+ pa) unless legislation is changed to remove the obligation to purchase annuities to provide retirement income.

10.2 Growth will be driven by:

- demographics
- the shift to defined contribution pension structures
- the introduction of stakeholder pensions from April 2001
- the maturing of drawdown arrangements.

10.3 The investment based structure described in Section 6 looks likely to be acceptable not only for annuity purchase for personal pensions, but also for stakeholder and for contribution-limited occupational pension scheme structures available under the new pension tax regime applicable in the United Kingdom from next April.

10.4 Even if the obligation to purchase annuities is reduced, or eliminated, the 'laws of arithmetic' confronting pensioners will not be suspended, and many of those seeking to maximise retirement income can be expected to find the structure in Section 6 of interest.

10.5 This paper has focused on pension sourced retirement income; annuitised funds have a wider potential role to play in the extraction of income from assets, however these have been accumulated, as part of a general process of lifetime income provision. The demographics of many countries suggest that we may see dramatic growth in demand for such structures.

## Appendix 1.1

## Annuities in History - Some Notable Events

| | |
|---|---|
| 40BC | Falcidean Law (regulating Wills in the Roman Empire) required that at least 25% of the testator's property had to pass to his legal heirs. In testing this it was necessary to value life annuities charged on the estate. [1] |
| ~200AD | The Roman jurist Ulpian (died 228 AD) devised a set of annuity rates for use in connection with the Falcidean Law, which were still used by the Tuscan government as late as the 19th century. [1] |
| King Alfred | Frith-Gilds recognised as bodies with no relation to mercantile or professional pursuits set up to provide sustenance for those past work, sometimes including widows. [19] |
| 1197 | Law passed against usury, forbidding Christians from lending money at interest. Other methods of obtaining a return from an investment were consequently developed to evade this prohibition. [1] |
| 1308 | Bishop of Exeter prohibited further sales of corrodies by Polsloe Priory, unless they were referred to him first. This was apparently related to the excessive longevity of the corrodars. [1] |
| Queen Elizabeth I | Compulsory contribution principles in force relating to the needs of the helpless and aged.[19] |
| 1630 | Committees established in connection with Poor Laws, with an involvement also in provision of pensions for the aged and incapable. [19] |
| 1692 | 'Million Act' passed by English Government, attempting to raise £1 million (to carry on the war against France) by the sale of life annuities.[1] There were 11 British State Tontines and Life Annuities between 1693 and 1780, and the practice continued on into the twentieth century.[20] |
| 1757 | Act of Parliament "for the relief of coal-heavers working on the Thames; and for them to make provisions for such of themselves as shall be sick, lame or past their labours". Numerous similar friendly societies established. [19] |
| 1819 | The Friendly Societies Act provided that "when any number of persons ... intend to form … a friendly society … whereby it is intended to provide contributions, on the principle of mutual insurance, for the maintenance or assistance of contributors thereto … in advanced age, widowhood, or any other natural state or contingency where the occurrence is susceptible of calculation by way of average it shall be lawful". Prior to this there had been frequent question marks over the legality of such schemes, on the basis that they might have been trades unions in disguise. [19] |
| 1833 | Act passed permitting the purchase of state annuities through savings banks. [19] |
| 1864 | Government Annuities Act permitting the sale of small annuities to the public through Post Offices. [19] |
| 1928 | Sale of Government Post Office annuities ceased. [19] |
| 1937 | Death in service annuities available to widows from Legal & General. [19] |
| 1956 | Budget implemented many recommendations of the Millard Tucker (no 2) Committee, including the introduction of a tax-free capital element in the taxation of purchased life annuities, and the separation of the annuity funds of life offices into two parts, with the part relating to approved retirement benefit schemes being freed of tax on interest income and capital profit. [1] |

## Annuities in British History - Further Background

The history of annuities is, naturally, tied up with the history of pensions. Interestingly however, it is also related to usury. From 1197 usury was outlawed in England (at least for Christians), and alternative methods were used in order to secure a return from a lump sum. Examples were:

- purchasing a sinecure (securing an income in return for a lump sum, but not regarded as interest)
- corrodies (securing a right to board and lodgings in return for a lump sum, in effect providing a life annuity of the cost of renting the board and lodgings)
- life annuities.

.

Corrodies were sold by religious houses, granting laymen the right to board and lodging in their old age. They provide an interesting precedent for long term care insurance and continuing care communities, and would also appear to relate to the use of "rents" as a term for annuities (especially in continental Europe).

Corrodies also provide an early example of the problem of assessing the likely longevity of annuitants. In 1308 the Bishop of Exeter prohibited further sales of corrodies by Polsloe Priory, unless they were referred to him first. (1) This was apparently related to the excessive longevity of the corrodars.

In the sixteenth century Dr Thomas Wilson described why life annuities were not usury: "It is a bargain and sale and no usurie, for that the principall is not to be restored againe at any time".(1) The basic principle that the purchaser of an annuity must give away future rights to the capital (in return for an income) is still with us, for example in regulations governing permissible pension annuities.

In the seventeenth century the sale of life annuities became a common practice for governments seeking to raise money. Competition ensued in the eighteenth and nineteenth centuries between life companies and the Government for annuity business.

The companies found it difficult to compete with Government annuities on price, as the Government mortality assumptions were too heavy. Some of the companies were of dubious standing, and business was delivered through questionable practice. More positively the marketing of the companies was better able to secure business than were the relatively passive attempts of the Government.

Gladstone in 1864 introduced the Government Annuities Bill (which permitted the sale of small annuities through Post Offices) with an attack on the high cost of management, vast number of lapses and number of failures of private sector providers. He also emphasised the need for pension provision such as the Post Office annuities would provide. "This Bill has grown … out of the wholesale error, deception, fraud and swindling which are perpetrated upon the most helpless portion of the community." (19)

Many of his charges resonate today in some of the comments made in connection with pensions mis-selling and the reasons given for the introduction of stakeholder pensions.

It is also interesting to note that in the event the volumes of Post Office annuities sold were small, partly through a lack of marketing and advertising and partly because the Act was emasculated to placate the assurance offices. The sale of Post Office annuities was ended in 1928. (19)

In the 1870s some companies withdrew from annuity business. For example, Norwich Union ceased writing annuities because of longevity losses. (19)

At the start of the twentieth century it appears that the market size of individual annuity business transacted by companies was approximately £1.2 million (of considerations). By the 1920s this had risen to around £2 million, with the Government transacting an additional £1 million. (19)

Throughout the first half of the twentieth century various developments occurred in annuity products, including annuities with guarantee periods, capital protected annuities and annuities back-to back with life products. However, the underlying concept remained essentially unchanged, with payment of a lump sum securing payment of a defined income stream throughout the future life of the annuitant.

In 1956 the budget implemented many of the recommendations of the Millard Tucker (no 2) Committee, which reported in 1954. These included:

- introduction of a tax-free capital element in the taxation of purchased life annuities, and
- separation of the annuity funds of life offices into two parts, with the part relating to approved retirement benefit schemes being freed of tax on interest income and capital profit. [19]

## Development of annuities in relation to UK pensions in the 20th century

(This section draws largely on Inventing Retirement by Leslie Hannah, published by Cambridge University Press. [21])

Lump sum benefits versus annuities

At the start of the twentieth century some pension schemes offered benefits in lump sum form, for example the Federated Superannuation System for Universities was established in 1913 and offered benefits either in the form of endowments or deferred annuities.

However, the payment of pensions in annuity form was the norm among members of the Association of Superannuation and Pension Funds (ASPF) by the First World War.

Finance Act 1921 had introduced an exemption from income tax for trust-based pension schemes (bringing them into line with the treatment of Friendly Societies but without the restrictions on size of benefit). However, the view of the ASPF was that the Inland Revenue would not permit lump sum benefits from tax-exempt (1921 Act) funds.

Restrictions on lump sums were relaxed from 1970, with the introduction of a new code of approval for pension schemes. The proportion of private sector pension scheme members able to commute part of their entitlement then rose from under a third in 1971 to more than 90% by the end of the decade. (Almost all public sector members also had access to partial lump sums.)  However, the pre-eminence of annuity payments as the main pension scheme benefit continued.

Widows' benefits

Widows' annuities have a history of their own. Married women were expected to be financially reliant on their husbands, and were frequently excluded from pension schemes (or indeed dismissed from work on marriage). Schemes often provided a refund of contributions to women on marriage, in the nature of a marriage dowry.

As women were typically younger than their husbands, and had longer life expectancy, there were many widows. In the nineteenth century widows' funds were established, sometimes predating the establishment of pension funds. Over time it tended to be compulsory for male employees to contribute towards provision for widows.

In 1930 tax relief was extended to widows' funds, and it became common to amalgamate them into the pension schemes.

The nature of widows' benefits from pension schemes was variable. Usually the only benefit on death in service was a return of the employee's contributions. (Indeed the tax free lump sum arose as a result of a concession to enable the non-contributory civil service scheme to mimic the return of contributions offered under contributory schemes.)

Death after retirement might typically provide for the widow by incorporating a guarantee period in the pension or a form of capital protected annuity, defined with reference to employee contributions.

These benefits (and other lump sum benefits that might be offered) were not well designed to meet the needs of a widow for lifelong income. Widows' annuities were sometimes offered (such as through a Legal & General product launched in 1937), but even as late as 1971 only one third of private sector pension schemes included widows' pensions for death in service.

Widows' pensions after death were viewed as expensive. By the 1956s three-quarters of scheme members had the option to take a reduced pension that incorporated a widow's pension, of say half or one-third of the member's pension. Very few did.

Part of the reason why widows' pensions were not taken was the issue of interaction with means-tested state benefits. For the less well off it was likely to be advantageous to take more income while the husband survived and for the widow to rely on state benefits after his death. This is another issue that resonates today.

The main impetus leading to improved widows' pensions arose from the requirements for contracting-out of SERPS. In 1971 only 39% of male employees in private sector schemes had provision for widows annuities on death in service, whereas by 1979 this proportion had reached 89%. Percentages for coverage of widows following death after retirement similarly rose from 35% to 89%.

Increases in payment

The key issue facing pension annuities in the second half of the twentieth century has been inflation and how to deal with it. This is not, however, a new problem. Over the period 1914 to 1920 inflation reduced the value of fixed pensions by two-thirds. The opposite problem occurred over the period 1929 to 1933, where deflation meant that the value of fixed pensions increased by almost half. [20]

For lucky employees the solution to inflation was ad hoc pension increases by employers; for the unlucky no such increases were forthcoming. By the 1960s some insured schemes were offering regular increases in pension of 2.5-3% per annum.

Under Edward Heath, public sector unions secured index-linking of pensions in retirement. However, even by 1979 almost no private sector schemes offered full index-linking, and schemes which did offer increases tended to do so on an ex gratia basis.

Cost uncertainty was a major influence in this. Index-linked bonds were introduced by the Government in 1981. These could be regarded as a solution to the problem of cost uncertainty, but index-linked bonds are in short supply and the cost seems to be unappealing to many investors.

In 1982 the Occupational Pensions Board decided not to recommend to Government that even minimum standards of inflation proofing should be made compulsory for pensions in payment (although some standards were recommended for preserved pensions).

Suggestions of reducing benefits at retirement in order to deliver index-linked pensions on a cost neutral basis for the scheme have not proved attractive to members. This is presumably for exactly the same reason that index-linked individual annuities sell only in very low volumes: the initial income level is the most important decision factor for pensioners and they are loath to reduce it.

The Social Security Act 1986 required increases of 3% pa (or RPI up to 3% pa) on protected rights benefits.

The picture was then further complicated by Pensions Act 1995.

The most recent significant change was the DSS proposal being enacted in legislation to permit defined contribution pension schemes to avoid increase requirements on non-protected rights pensions if they were provided by investment-linked annuities.

| | DC OPS Non-protected rights | DC OPS Protected Rights | DC OPS Commutation | Personal Pensions Non-protected rights | Personal Pensions Protected rights | Personal Pensions Commutation |
|---|---|---|---|---|---|---|
| ICTA 1988 effective from 6 April 1988 (reflecting new code arrangements introduced with the Finance Act 1970 effective from 6 April 1973)<br>Social Security Act 1986 introduced contracting out for money purchase OPS and personal pensions with effect from 6 April 1988 (backdating to 6 April 1987 for personal pensions) | NRA 55 - 70 (females) or 60 - 70 (males) (usually). Directors 60 onwards<br>The pensions may be level, escalating (at up to 8.5% pa) or index-linked, payable not less frequently than annually and guaranteed for up to ten years<br>Fixed increases not exceeding 3% are permissible, regardless of the level of pension. Where fixed increases exceeding 3% are given, the rate is scaled back* in line with the actual increase in RPI - even if this is lower than 3%<br>Where there is a guarantee period in excess of 5 years, and the member dies within that period, the annuity must continue for the duration of the guarantee (any spouse's/dependant's pension(s) will start at the end of the guarantee period)<br>The maximum single dependant's pension is 2/3 of the member's maximum pension. The total of all dependants' pensions cannot exceed 100% of the member's maximum pension | Annuity purchase required under SSA 1986 at age 60 for females and 65 for males<br>Increases in line with RPI up to 3% pa (or fixed at 3% - reg 4(6) SI1537/96). They must be payable no less frequently than monthly (except with the member's written consent when the frequency must be no less than annually)<br>50% spouse's pension, unisex rate and without regard to marital status<br>Guarantee period up to ten years permitted.<br>Upon death of the member, payments may continue at a level not exceeding that payable to the member for up to five years after the member's pension commenced<br>Payments must not exceed 50% of the member's pension thereafter | Subject to IR limits, amount (tax-free) dependent on 'regime'<br>Also permitted in the event of serious ill-health or on the grounds of triviality<br>If a guarantee period is less than or equal to 5 years and the member dies within this period, the remaining instalments may be commuted for a lump sum<br>On death in service, protected rights may be paid as a tax-free lump sum if there is no 'qualifying' spouse (either aged over 45 or in receipt of child benefit in respect of children of spouse and the member) | Annuity purchase required between age 50 and 75 (s634(2) ICTA 88)<br>The pensions may be level, escalating or index-linked, payable not less frequently than annually and guaranteed up to ten years (s634(5))<br>Aggregate of dependants' pensions may not exceed member's pension (s636) | Annuity purchase required under SSA1986 at age 60 for females and 65 for males<br>Increases in line with RPI up to 3% pa (or fixed at 3% - reg 4(6) SI1537/96). They must be payable no less frequently than monthly (except with the member's written consent when the frequency must be no less than annually)<br>50% spouse's pension, unisex rate and without regard to marital status<br>Guarantee period up to ten years permitted. Upon death of the member, payments may continue at a level not exceeding that payable to the member for up to five years after the member's pension commenced<br>Payments must not exceed 50% of the member's pension thereafter | Up to 25% (s635(3) ICTA 88) of the fund in respect of the member's benefits may be taken in the form of a tax-free lump sum subject to a maximum of £150,000 (s635(4))<br>No commutation on grounds of serious ill-health or triviality<br>On death of the member within a guarantee period, the remaining instalments cannot be paid in a lump sum<br>On death in service, protected rights may be paid as a tax-free lump sum if there is no 'qualifying' spouse (either aged over 45 or in receipt of child benefit in respect of children of spouse and the member) |

The provisions introduced under the Social Security Act 1986 and Income and Corporation Taxes Act 1988 remain applicable unless further detail/qualification is shown later in this Appendix.

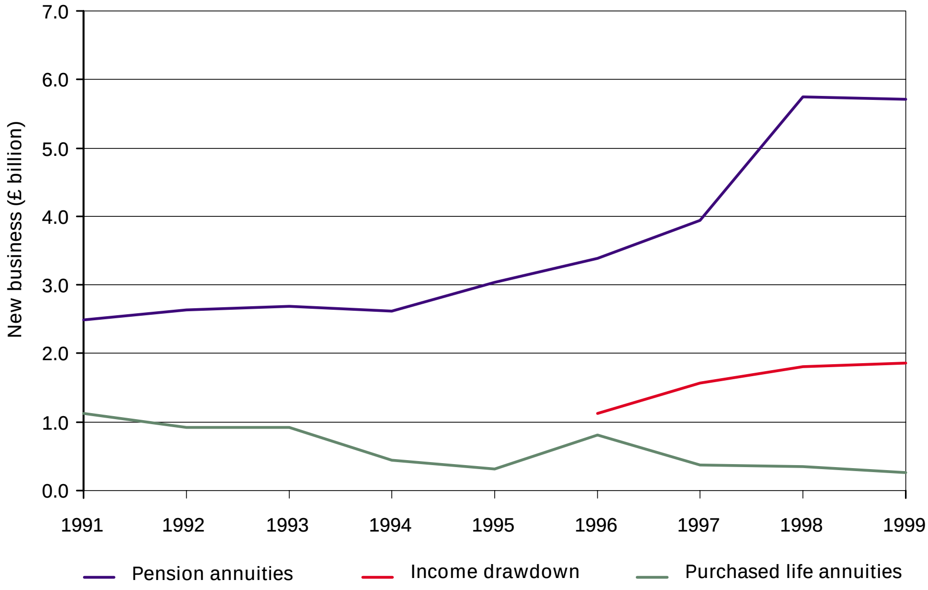
| | DC OPS Non-protected rights | DC OPS Protected Rights | DC OPS Commutation | Personal Pensions Non-protected rights | Personal Pensions Protected rights | Personal Pensions Commutation |
|---|---|---|---|---|---|---|
| Finance Act 1989 (schedule 7) with effect from 27 July 1989 | | | | | | Up to 25% (s635(3) ICTA 88) of the total fund excluding the value of the members protected rights may be taken in the form of tax-free lump sum |
| Social Security Act 1990 with effect from 17 May 1990 | | Annuity purchase required not earlier than age 60 and not later than 65 (or such later date as may be agreed between the trustees and the member) | | | | |
| Finance Act 1991 | Permissible NRA range changed under s34 of Finance Act 1991 to 60 - 75 for all members | | | | | |
| Pensions Act 1995<br><br>Effective from March/April 1996 as applicable | Pension fund withdrawal (income drawdown) permitted since March 1996, formalised in PSO Update 54 (30/06/99) | | | Pension fund withdrawal (income drawdown) introduced as an option through introduction of s634A (member's pension) to ICTA 88 and s636A (widows/dependant(s)) | Annuity purchase from age 60 for both sexes with effect from 6 April 1996<br><br>Pension fund withdrawal (income drawdown) extended to Protected Rights funds (s142 PA95), with effect from 6 April 1996 | Commutation of annuity on grounds of triviality introduced with effect from 6 April 1996 |

## Appendix 1.2

| | DC OPS Non-protected rights | DC OPS Protected Rights | DC OPS Commutation | Personal Pensions Non-protected rights | Personal Pensions Protected rights | Personal Pensions Commutation |
|---|---|---|---|---|---|---|
| With effect from April 1997 | Increases in line with changes in the retail prices index (or 5% if lower) (LPI) required on all benefits, except AVCs, arising in respect of service from 6 April 1997<br>Where fixed increases exceeding 3% are given, the rate is scaled back* to 3% (if RPI is lower) (from March 1997)<br>*scaling back is necessary only when the proposed pension is greater than the IR maximum pension increased by RPI | Single life annuity rates may be used (if unmarried at date benefits come into payment) in respect of PR accruing in respect of tax years 1997/98 onwards<br>LPI applies (s51PA95) in respect of all benefits arising from contributions from 6 April 1997 onwards | | | LPI applies to protected rights arising from contributions in respect of tax years 1997/98 onwards (s162PA95)<br>For protected rights accruing in respect of tax years from 1997/98 onwards, single life annuity rates may be used if unmarried at date benefits come into payment | |
| Welfare Reform and Pensions Act 1999 and Child Support, Pensions and Social Security Act 2000) | Investment linked annuities in place of LPI included under Child Support, Pensions and Social Security Act - not yet brought into force<br>Pensions in payment able to be split on divorce (December 2000) | Pensions in payment able to be split on divorce (December 2000) | | Pensions in payment able to be split on divorce (December 2000)<br>Phased retirement to be allowed from a single PP arrangement from 6 April 2001 (proposed under the Finance Act 2000) | Pensions in payment able to be split on divorce (December 2000) | |

## Trend in new business – annuities and income drawdown

## Appendix 1.3




Source: ABI

## Appendix 2.1

### Government Bond Redemption Yields

| | UK | France | Germany | US |
|---|---|---|---|---|
| 10 | 5.1 | 5.3 | 5.2 | 5.8 |
| 20 | 4.7 | 5.6 | 5.3 | n/a |
| 30 | 4.5 | 5.7 | 5.6 | 5.9 |

Source: Bloomberg
3 November 2000

| Type of product | Product A<br>Unit linked with temporary conventional annuity | Product B<br>Unit linked annuity | Product C<br>Unit linked annuity |
|---|---|---|---|
| **Flexibility**<br>*Income* | ■ Buy 5 year temporary annuity guaranteeing between 50% and 100% of level of equivalent lifetime annuity<br>■ Invest balance in unit linked funds<br>■ Repeat every 5 years<br>■ Must convert to lifetime annuity by age 85 | ■ Choose starting level of income (within limits) by selecting an 'anticipated investment return rate'<br>■ This rate cannot be changed once contract starts<br>■ Income defined by reference to value of a schedule of units | ■ Same as product B, plus<br>■ Can change to conventional annuity at any time |
| *Investment* | ■ Range of unit linked funds available | ■ Range of unit linked funds available | ■ Range of unit linked funds available |
| *Single life / joint life* | ■ Can alter temporary annuity between single and joint life at review point<br>■ Can change level of spouse's benefit<br>■ Fixed between review points | ■ Single/joint life status cannot be changed after policy inception<br>■ Level of spouse's benefit cannot be changed | ■ Single/joint life status cannot be changed after policy inception<br>■ Level of spouse's benefit cannot be changed |
| **Guarantees**<br>*Income* | ■ Income fixed for 5 year intervals<br>■ Income volatile at review points, dependent on returns achieved by funds during the 5 year period and annuity rates at the time | ■ Income not guaranteed<br>■ Varies depending on return on investments relative to level of investment return anticipated | ■ Income not guaranteed<br>■ Varies depending on return on investments relative to level of investment return anticipated |
| *Investment* | ■ Guarantee implicit in temporary annuity<br>■ No investment guarantees on unit linked portion, unless implicit in any specific fund | ■ No investment guarantees, unless implicit in any specific fund | ■ No investment guarantees, unless implicit in any specific fund<br>■ Fund available with guarantee that price will not fall more than 5% in one year |
| *Mortality* | ■ Survival bonus added to investment element at end of each 5 year period, if policyholder (and spouse) survives<br>■ Level of bonus not guaranteed | ■ Mortality assumptions used to determine unit schedule represent a mortality guarantee | ■ Mortality assumptions used to determine unit schedule represent a mortality guarantee |

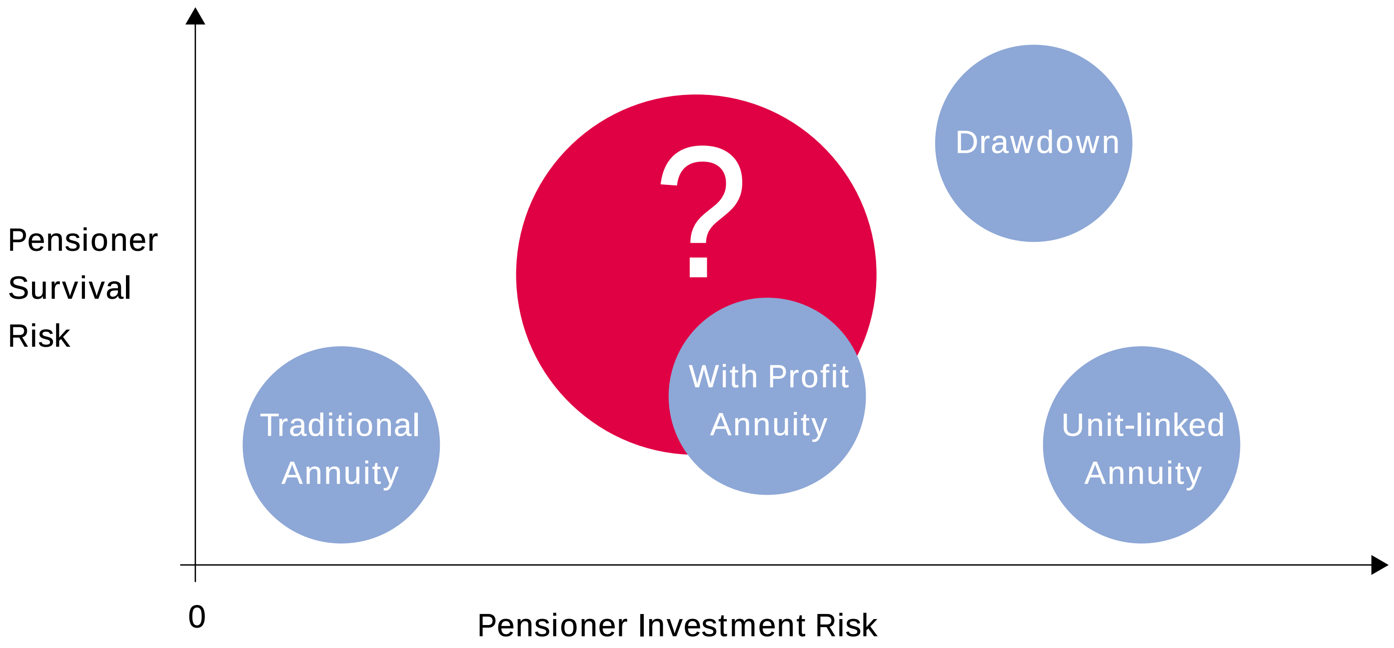
| Type of product | Product D<br>Unit linked unitised with-profit annuity | Product E<br>Unitised with-profit annuity | Product F<br>With profit annuity |
|---|---|---|---|
| **Flexibility** | | | |
| *Income* | ■ Choose starting level of income (within limits) by selecting an 'anticipated growth rate', and proportion of fund to invest in unitised with-profits fund<br>■ Cannot change these decisions except<br>■ Can convert to conventional annuity | ■ Choose starting level of income (within limits) by selecting an 'anticipated bonus rate' (ABR)<br>■ ABR cannot be changed, but<br>■ Annual bonuses can be waived to increase size of fund, and so increase income in the future | ■ Choose stating level of income (within limits) by selecting an 'anticipated bonus rate' (ABR)<br>■ ABR cannot be changed<br>■ Can convert to conventional annuity at any time |
| *Investment* | ■ Range of unit linked funds available, plus unitised with-profit fund | ■ No choice in investment of fund | ■ No choice in investment of fund |
| *Single life / joint life* | ■ Single/joint life status cannot be changed after policy inception. | ■ Single/joint life status cannot be changed after policy inception | ■ Single/joint life status cannot be changed after policy inception |
| **Guarantees** | | | |
| *Income* | ■ Income not guaranteed, varies monthly dependent on returns achieved (or bonuses on with-profit fund) relative to levels anticipated<br>■ With-profit bonus structure: 'regular' (permanent addition to benefit), or 'top-up' (addition for 6 months only) | ■ Income not guaranteed, dependent on bonus rate declared relative to ABR<br>■ Very low minimum income level guaranteed as part of technical product structure | ■ Income not guaranteed, dependent on bonus rate declared relative to ABR<br>■ Income guaranteed not to fall below certain level |
| *Investment* | ■ No investment guarantees on unit linked funds, unless specific to fund<br>■ With-profit bonus rate guaranteed not to drop below 0% | ■ No guarantee on bonus levels | ■ Bonus rate declared is guaranteed not to drop below 0% |
| *Mortality* | ■ Mortality assumptions used to determine unit schedule represent a mortality guarantee | ■ On death, some of outstanding fund is returned to estate of policyholder. Amount is not guaranteed | ■ Mortality adjustments possible within bonus rate calculations |

| Type of product | Product G<br>With profit annuity | Product H<br>With profit annuity | Product I<br>With profit annuity |
|---|---|---|---|
| **Flexibility** | | | |
| *Income* | ■ Choose starting level of income (within limits) by selecting an 'anticipated bonus rate' (ABR)<br>■ ABR cannot be changed | ■ Choose starting level of income (within limits) by selecting an 'anticipated bonus rate' (ABR)<br>■ ABR cannot be changed | ■ Choose starting level of income (within limits) by selecting an 'anticipated bonus rate' (ABR)<br>■ ABR can be varied at any time to alter the current level of income<br>■ Can change to conventional annuity at any time |
| *Investment* | ■ No choice in investment of fund | ■ No choice in investment of fund | ■ No choice in investment of fund |
| *Single life / joint life* | ■ Single/joint life status cannot be changed after policy inception | ■ Single/joint life status cannot be changed after policy inception | ■ Single/joint life status cannot be changed after policy inception |
| **Guarantees** | | | |
| *Income* | ■ Income not guaranteed, dependent on bonus levels relative to ABR<br>■ Income guaranteed not to fall below certain level (addition for 6 months only) | ■ Income not guaranteed, dependent on bonus levels relative to ABR<br>■ Income guaranteed not to fall below certain level | ■ Income not guaranteed, dependent on bonus levels relative to ABR<br>■ Income guaranteed not to fall by more than a fixed amount each year |
| *Investment* | ■ Bonus rate declared is guaranteed not to drop below 0% | ■ Bonus declared is guaranteed not to drop below 0% | ■ Bonus declared is guaranteed not to drop below –10% |
| *Mortality* | ■ Mortality adjustments possible within bonus rate calculations | ■ Mortality adjustments possible within bonus rate calculations | ■ Mortality adjustments possible within bonus rate calculations |

| Type of product | Product J<br>With profit annuity | Product K<br>With profit annuity | Product L<br>With profit annuity |
|---|---|---|---|
| **Flexibility** | | | |
| *Income* | ■ Starting level of annuity is fixed, no choice of 'anticipated bonus rate' | ■ Choose starting level of income (within limits) by selecting an 'anticipated bonus rate' (ABR)<br>■ ABR cannot be changed | ■ Choose starting level of income (within limits) by selecting an 'anticipated bonus rate' (ABR)<br>■ ABR cannot be changed |
| *Investment* | ■ No choice in investment of fund | ■ No choice in investment of fund | ■ No choice in investment of fund |
| *Single life / joint life* | ■ Single/joint life status cannot be changed after policy inception | ■ Single/joint life status cannot be changed after policy inception | ■ Single/joint life status cannot be changed after policy inception |
| **Guarantees** | | | |
| *Income* | ■ Income not guaranteed, dependent on bonus rate declared, but<br>■ guaranteed not to fall below initial level | ■ Income not guaranteed, dependent on bonus levels relative to ABR<br>Bonuses can either be 'reversionary' (permanent addition to benefit), or 'terminal' (additions for one year) | ■ Income not guaranteed, dependent on bonus levels relative to ABR<br>Bonuses can either be 'annual' (permanent addition to benefit), or 'additional' (additions for one year only). Income guaranteed not to fall below certain level. |
| *Investment* | ■ No guarantees on bonus levels (but minimum income level is guaranteed) | ■ Bonus declared is guaranteed not to drop below 0% | ■ Bonus declared is guaranteed not to drop below 0% |
| *Mortality* | ■ Mortality adjustments possible within bonus rate calculations | | |

| Type of product | Product M<br>With profit annuity |
|---|---|
| **Flexibility** | |
| *Income* | ■ Choose starting level of income (within limits) by selecting an 'anticipated bonus rate' (ABR)<br>■ ABR cannot be changed |
| *Investment* | ■ No choice in investment of fund |
| *Single life / joint life* | ■ Single/joint life status cannot be changed after policy inception |
| **Guarantees** | |
| *Income* | ■ Income not guaranteed, dependent on bonus rate declared relative to ABR chosen<br>■ Bonuses can either be 'annual' (permanent addition to benefit), or 'top-up' (additions for one year only)<br>■ Income guaranteed not to fall below certain level. |
| *Investment* | ■ Bonus declared is guaranteed not to drop below 0% |
| *Mortality* | ■ Mortality adjustments possible within bonus rate calculations |

## Options for retirement income



## Appendix 4.1

| Region/Country | Annuity (1) | Annuity (2) | Drawdown (1) | Drawdown (2) | Lump Sum (1) | Lump Sum (2) | Comment |
|---|---|---|---|---|---|---|---|
| **Western Europe** | | | | | | | |
| France | ✓ | | ✓ | | ✓ | | Lump sum benefits from life insurance policies are tax free, unless the beneficiary is not designated, in which case there is an estate duty liability. |
| Denmark | ✓ | | ✓ | | ✓ | | Lump sum and annuity payments are dominant vehicles to handle retirement savings. Trying to shift more towards annuities. Drawdown policies are not common. |
| Germany | ✓ | ✓ (coming?) | ✓ | | ✓ | | Drawdown policies mainly offered by fund managers. |
| Greece | ✓ | | ✓ | | ✓ | | Great flexibility for the individual to design their own appropriate retirement benefits ie part annuity, drawdown and lump sums. |
| Ireland | ✓ | | ✓ | | ✓ | | Lump sum benefits are generally not permitted but commutation of part of the employee's pension benefit at retirement is granted tax-free treatment. Approved Retirement Funds introduced in 1999 are drawdown type vehicles. |

Notes: (1) = available; (2) = compulsory

| Region/Country | Annuity (1) | Annuity (2) | Drawdown (1) | Drawdown (2) | Lump Sum (1) | Lump Sum (2) | Comment |
|---|---|---|---|---|---|---|---|
| **Western Europe (continued)** | | | | | | | |
| Italy | ✓ | ✓ (coming) | | | ✓ | | Italy will move towards individual pension contracts that require 50% of the pay out to be annuitised. |
| Netherlands | ✓ | | ✓ | | ✓ | | Regulations are in place to restrict the level of lump sums. |
| Spain | ✓ | | ✓ | | ✓ | | Lump sums are very common with strong integration existing between social security and pension plans. Annuities are provided with non-qualified plans offering limited drawdown facilities for senior managers. |
| Switzerland | ✓ | | ✓ | | ✓ | | Lump sum and pensions generated from annuities are most common. Drawdown policies are largely limited to senior executives. |
| United Kingdom | ✓ | ✓ | ✓ | | ✓ | | Part lump sum can be taken with compulsory annuitisation for the majority of benefit. |

Notes: (1) = available; (2) = compulsory

## Appendix 4.1

| Region/Country | Annuity (1) | Annuity (2) | Drawdown (1) | Drawdown (2) | Lump Sum (1) | Lump Sum (2) | Comment |
|---|---|---|---|---|---|---|---|
| **Eastern Europe** | | | | | | | |
| Czech Republic | ✓ | | | | ✓ | | Difficult to quantify whether Eastern Europe has well established drawdown policies. |
| Hungary | ✓ | | | | ✓ | | Whole region is relatively immature with preference being expressed for lump sum amounts and small interest in annuity products. No real evidence of drawdown vehicles. |
| Poland | ✓ | | | | ✓ | | |
| Romania | ✓ | | | | ✓ | | |

Notes: (1) = available; (2) = compulsory

| Region/Country | Annuity (1) | Annuity (2) | Drawdown (1) | Drawdown (2) | Lump Sum (1) | Lump Sum (2) | Comment |
|---|---|---|---|---|---|---|---|
| **Asia/Pacific** | | | | | | | |
| Australia | ✓ | | | | ✓ | | Favourable taxation treatment tends to encourage the creation of annuity business but lump sum culture prevails. |
| Hong Kong | ✓ | | | | ✓ | | Under private plans, tax treatment favours lump sums, so retirement benefits are generally paid in this form. |
| Japan | ✓ | | | | ✓ | | More common to receive retirement benefit as lump sums. |
| Singapore | ✓ | | ✓ | | ✓ | | CPF allows for accounts to be maintained or investment accounts used to fund retirement through lump sums or drawdown policies. |

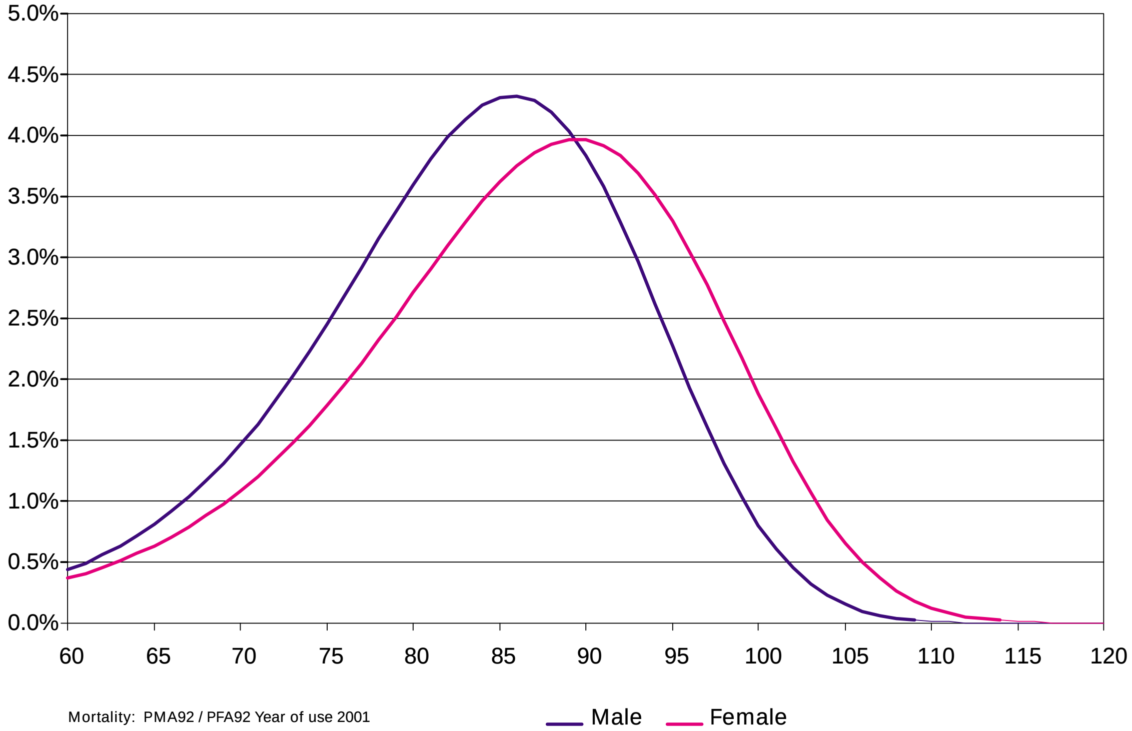
Notes: (1) = available; (2) = compulsory

# Appendix 4.1

| Region/Country | Annuity | | Drawdown | | Lump Sum | | Comment |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (1) | (2) | (1) | (2) | |
| **Americas** | | | | | | | |
| Argentina | ✓ | | ✓ | | ✓ | | Similar model to that of Chile and the United Kingdom but seems to be some leakage through lump sums out of personal pension programs. |
| Brazil | ✓ | | | | ✓ | | Most pension plans seem to fund lump sum payouts. No strong evidence for sophisticated draw down policies. |
| Canada | ✓ | | ✓ | | ✓ | | Taxation efforts to move away from lump sum payments |
| Chile | ✓ | | ✓ | | | | Choice of a lifetime annuity, programmed withdrawals or temporary programmed withdrawals with deferred lifetime annuity. |
| Mexico | ✓ | | ✓ | | | | Choice of either a lifetime annuity or programmed withdrawals based on life expectancy and those of the dependants. |
| USA | ✓ | | ✓ | | ✓ | | Predominantly drawn down or lump sums outside of DB pensions. Taxation makes annuities attractive as retirement vehicles. |

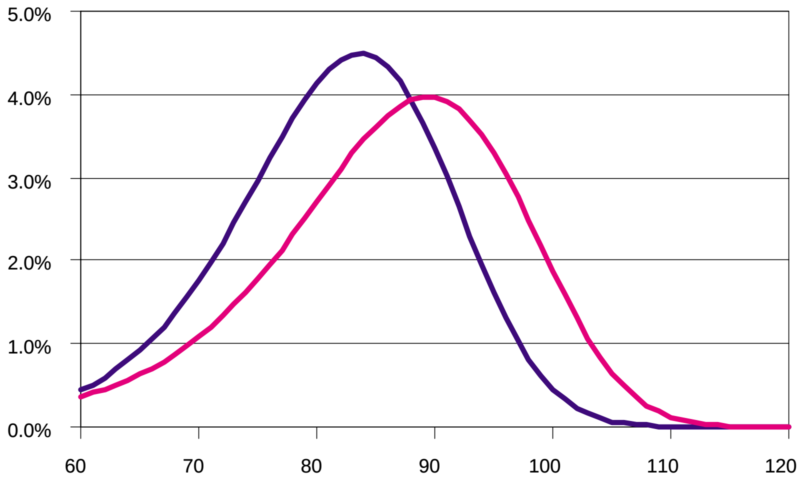
Notes: (1) = available; (2) = compulsory

## Distribution of deaths

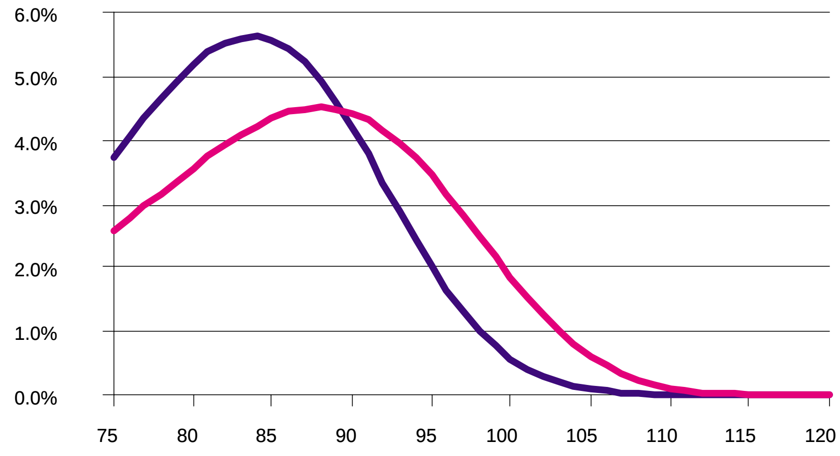


## Distribution of deaths by age now

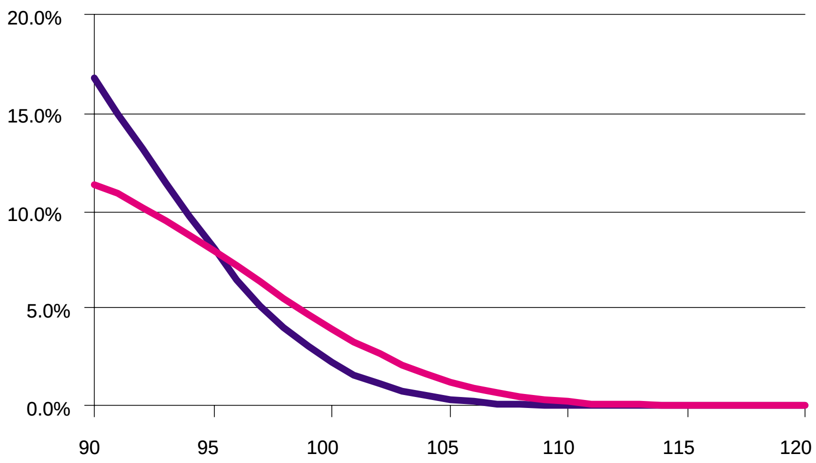
Age 60 now



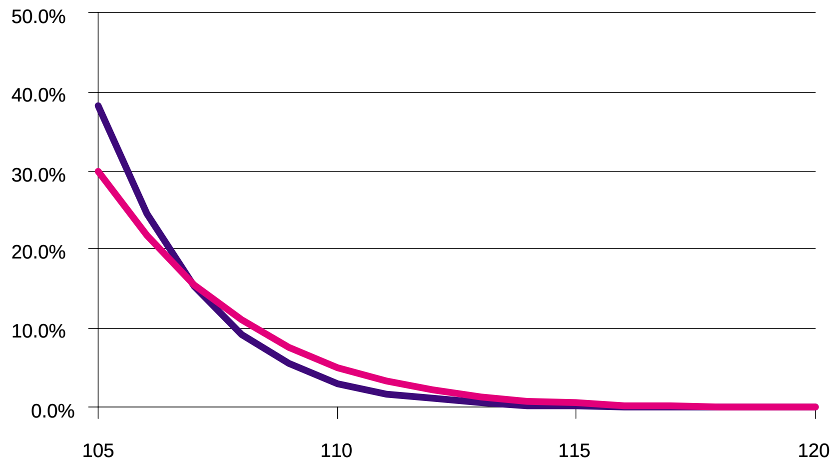

Age 75 now



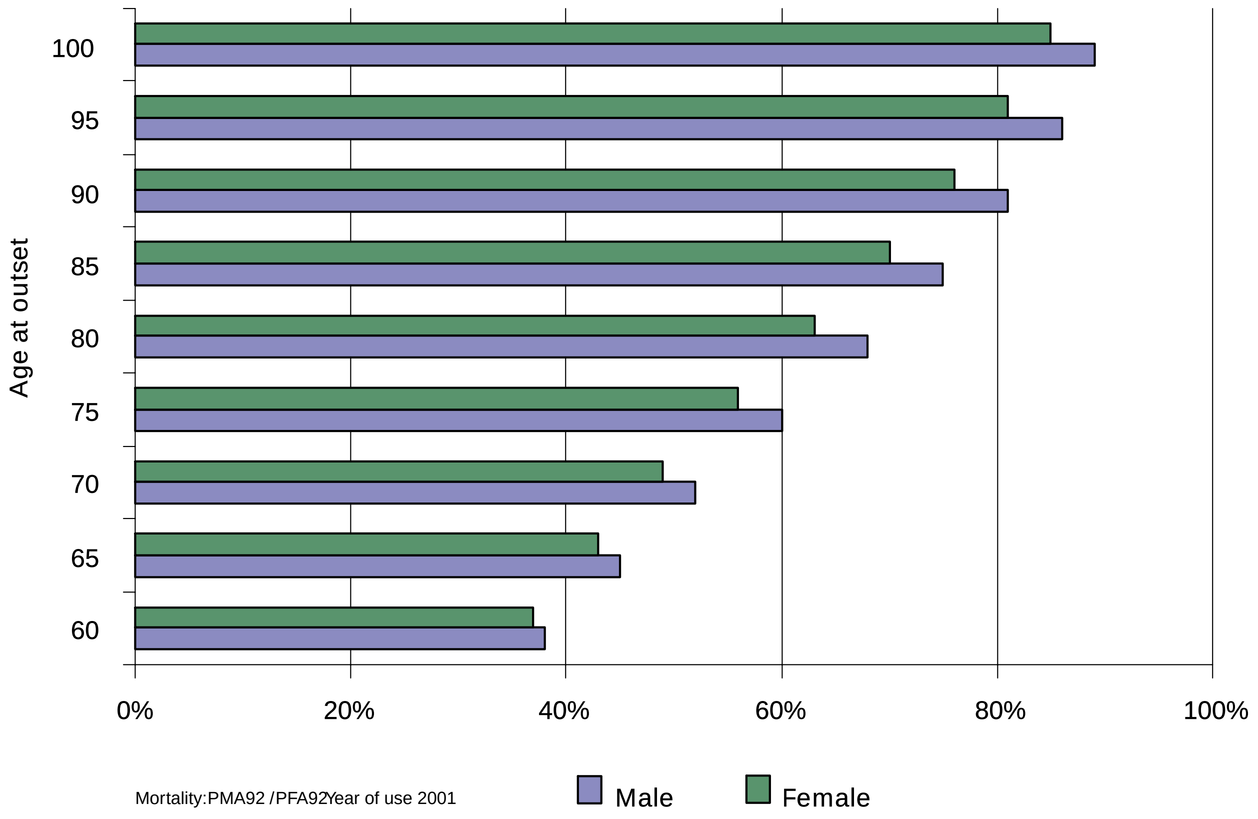

Age 90 now




Age 105 now



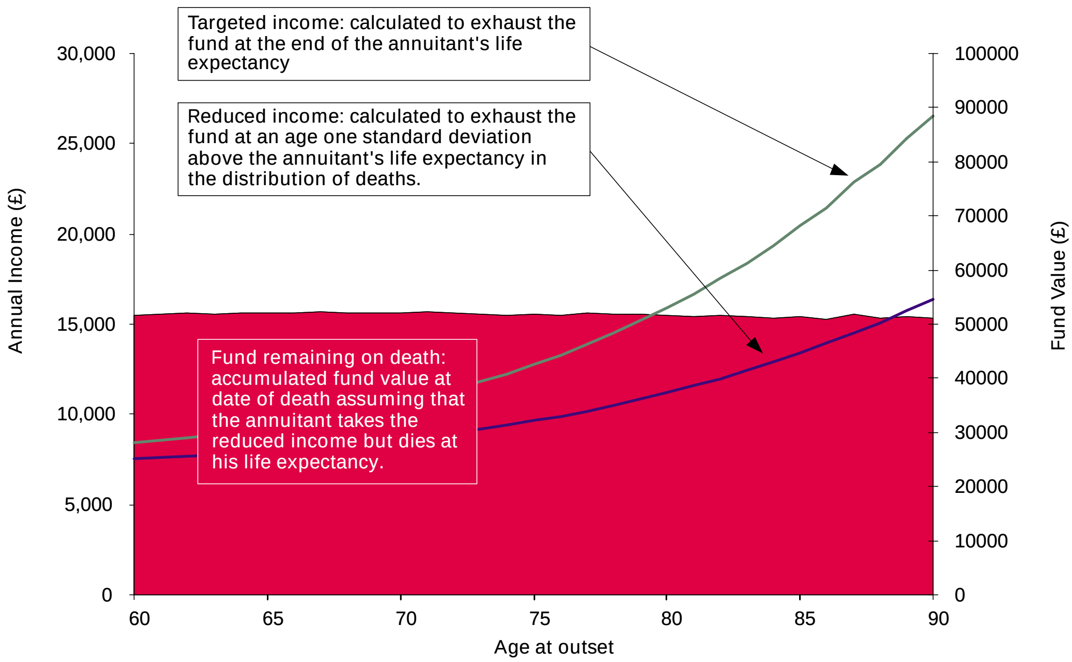
## Standard deviation of deaths, as a proportion of life expectancy



# The Financial Planning Dilemma: income supportable by an investment fund

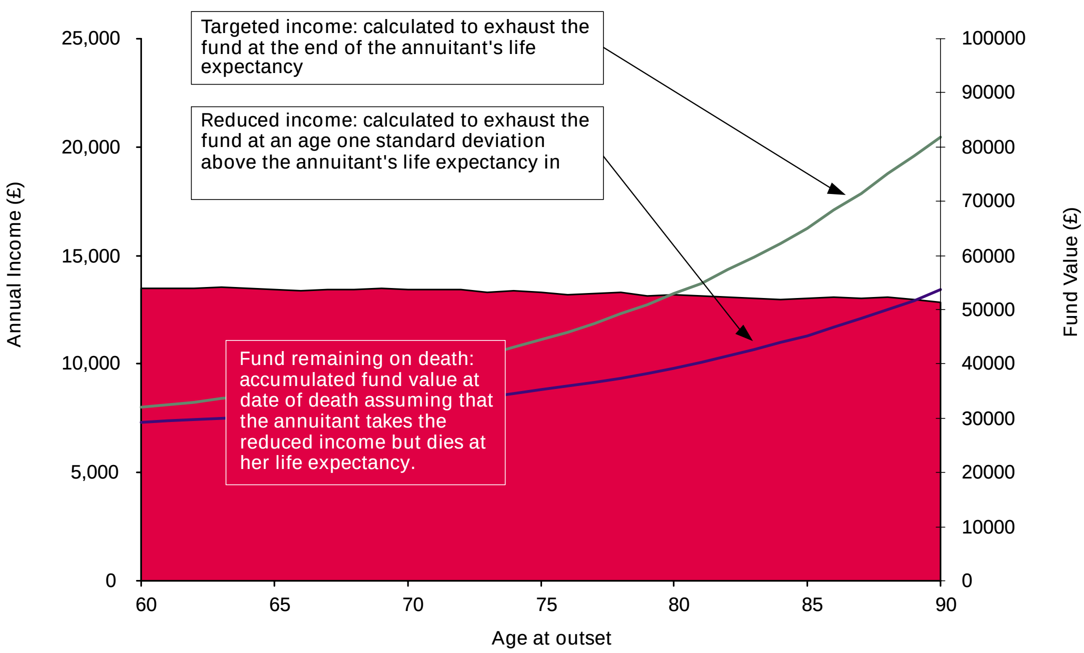
# Appendix 5.4

## Male life




For a fund of £100,000 at outset, assuming 7% per annum interest
Mortality: PMA92 Year of use 2001

## Female life

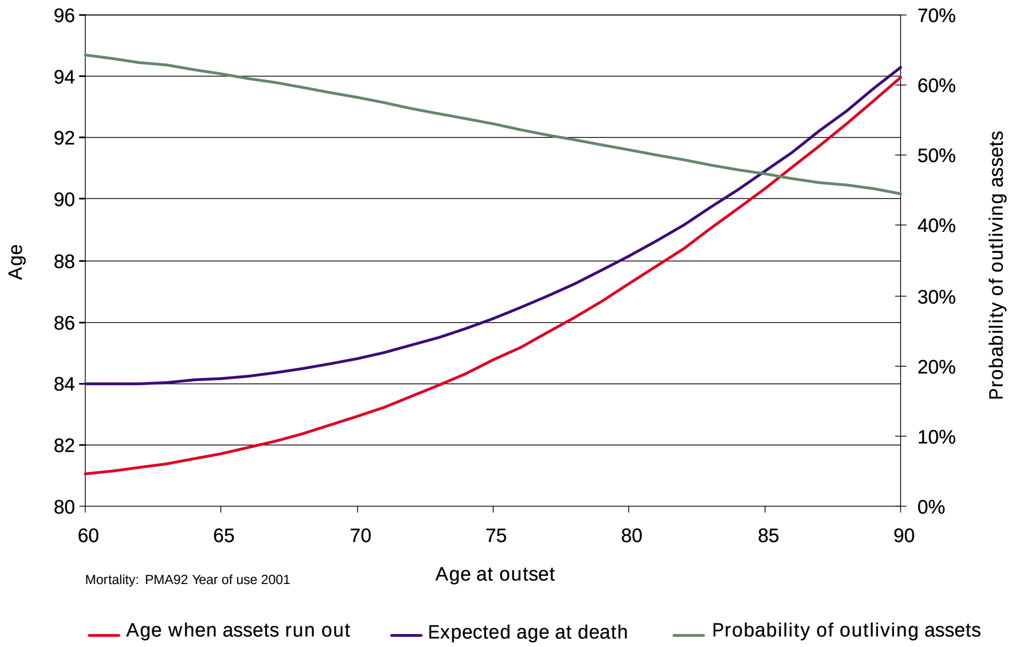



For a fund of £100,000 at outset, assuming 7% per annum interest
Mortality: PFA92 Year of use 2001

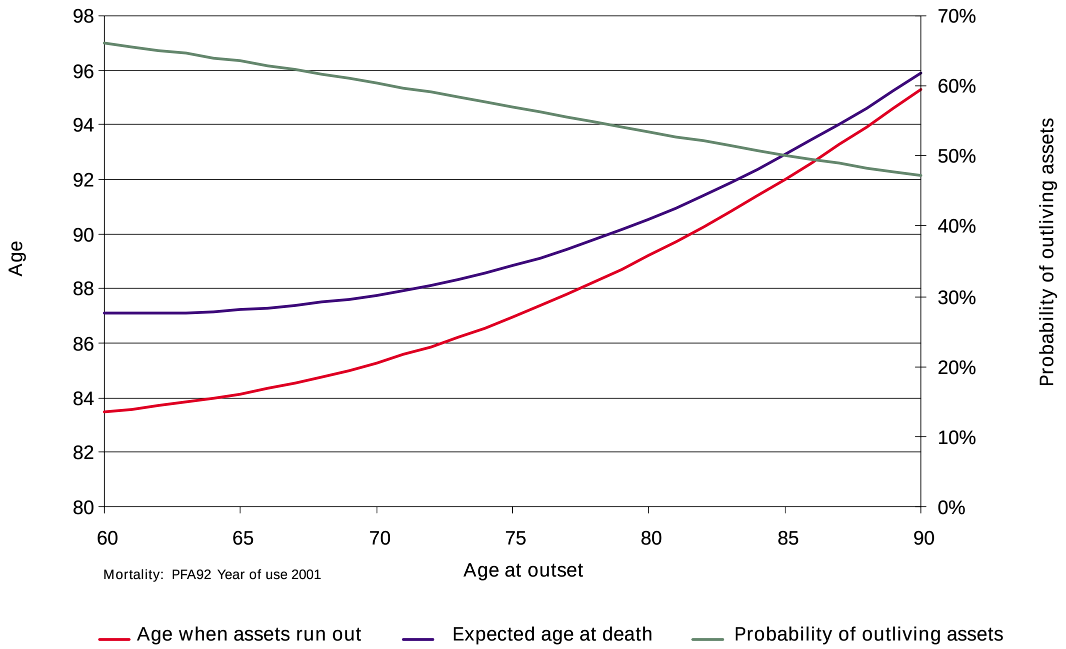
## Likelihood of outliving assets in a non-annuitised fund

## Appendix 5.5

### Male life



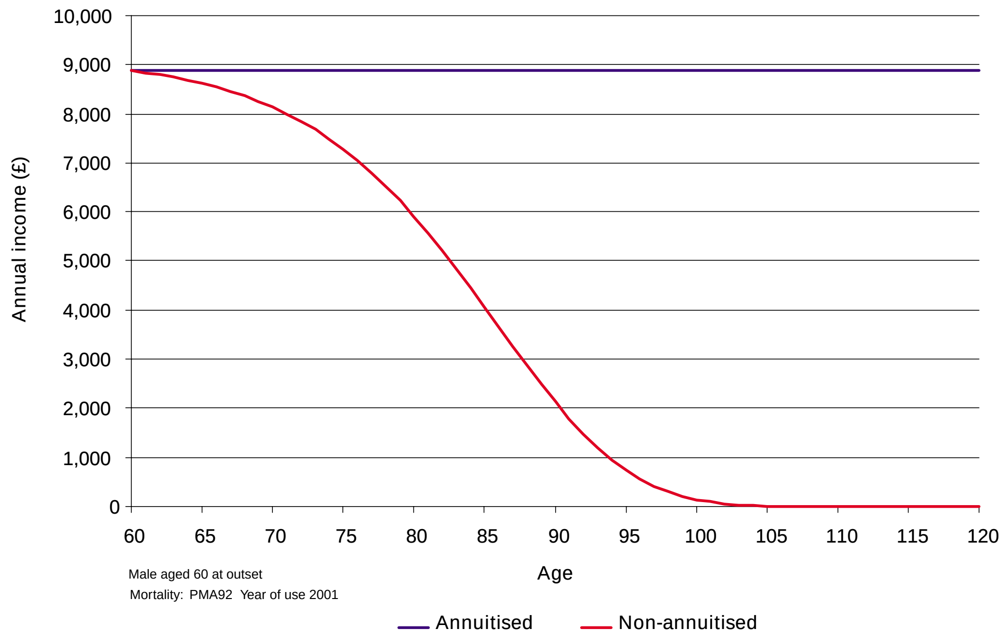

### Female life



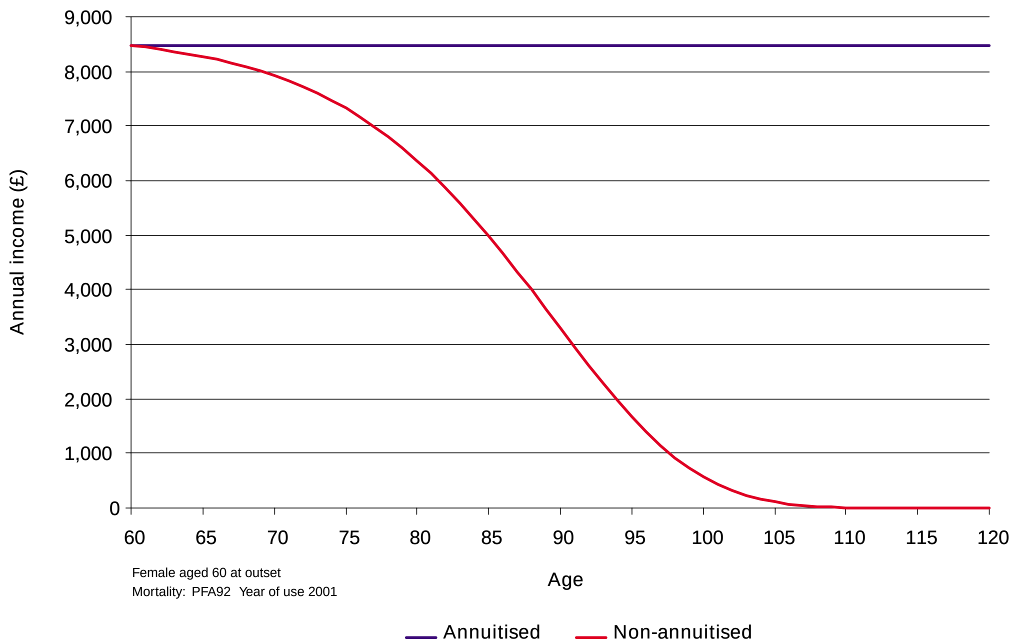
## Progression of income - annuitised fund versus non-annuitised fund

## Appendix 5.6

### Male life



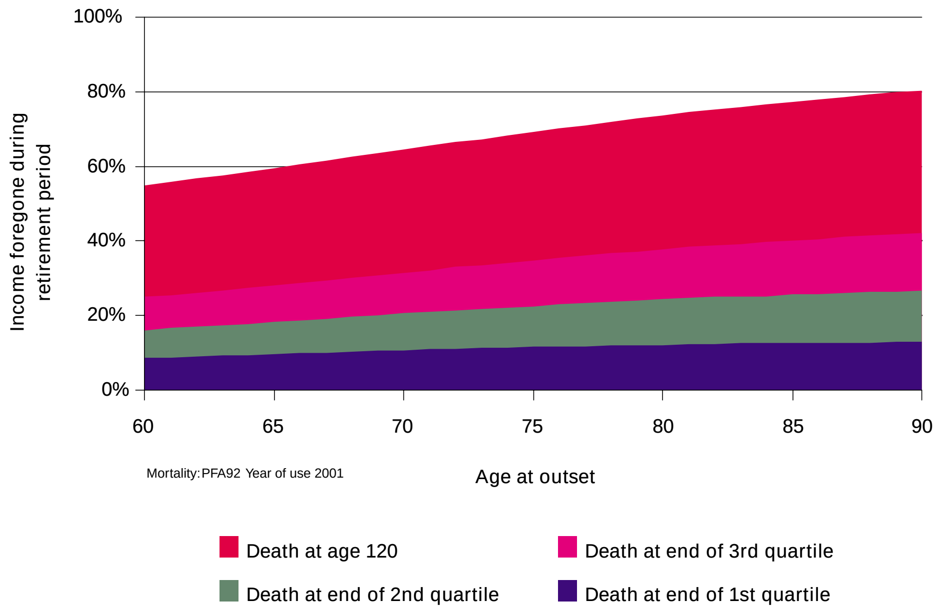

### Female life



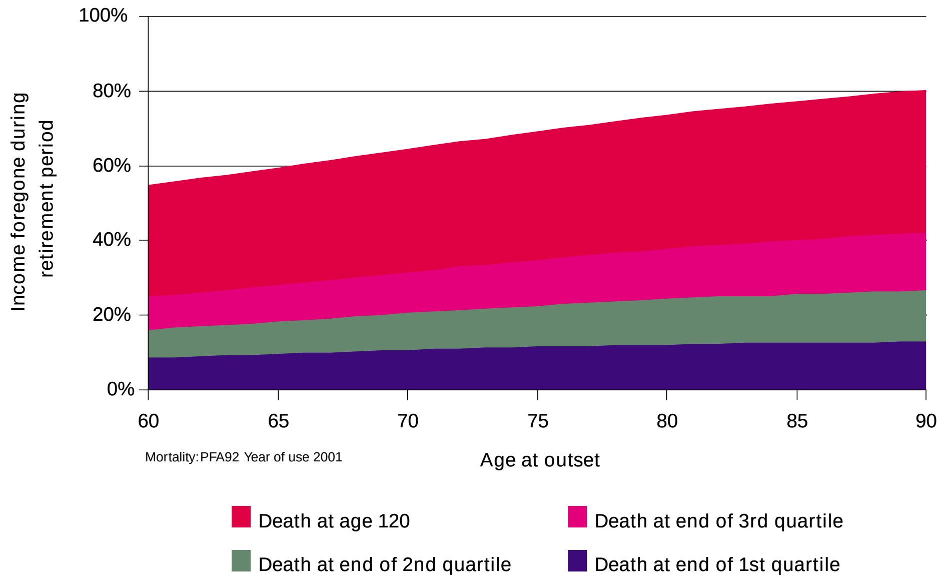
# Income foregone through not annuitising

# Appendix 5.7

## Male life

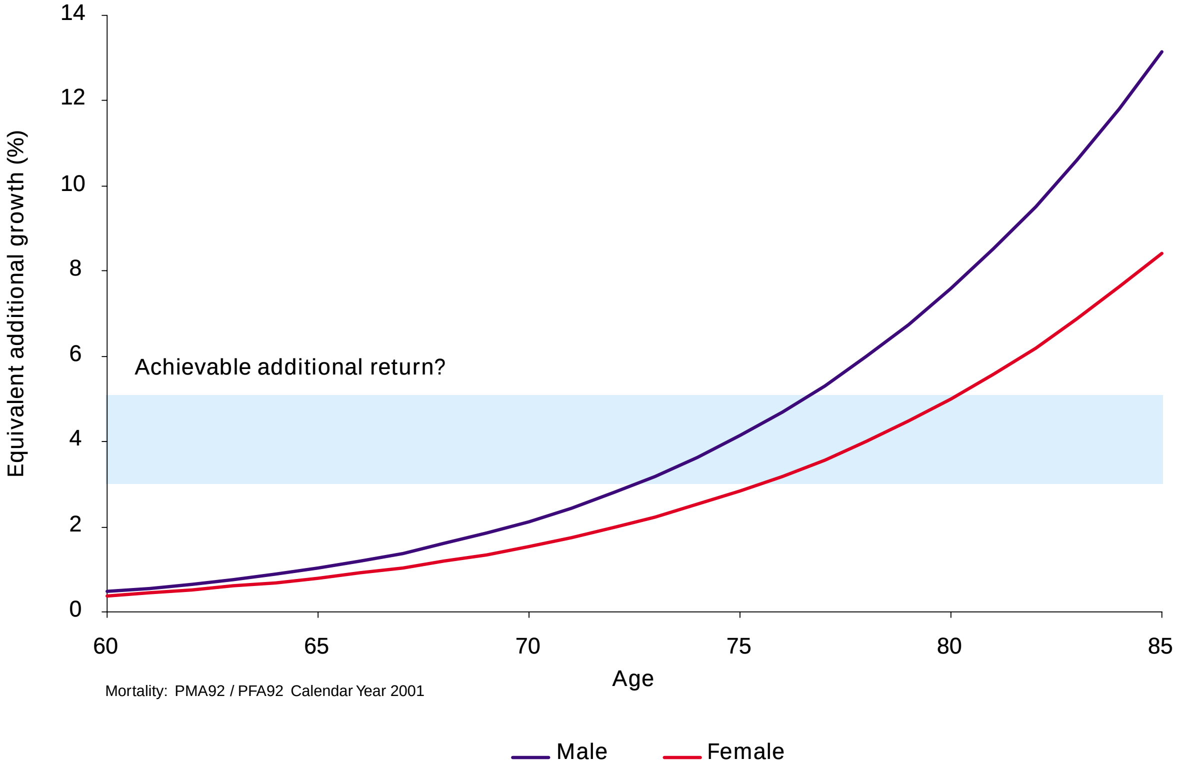



## Female life

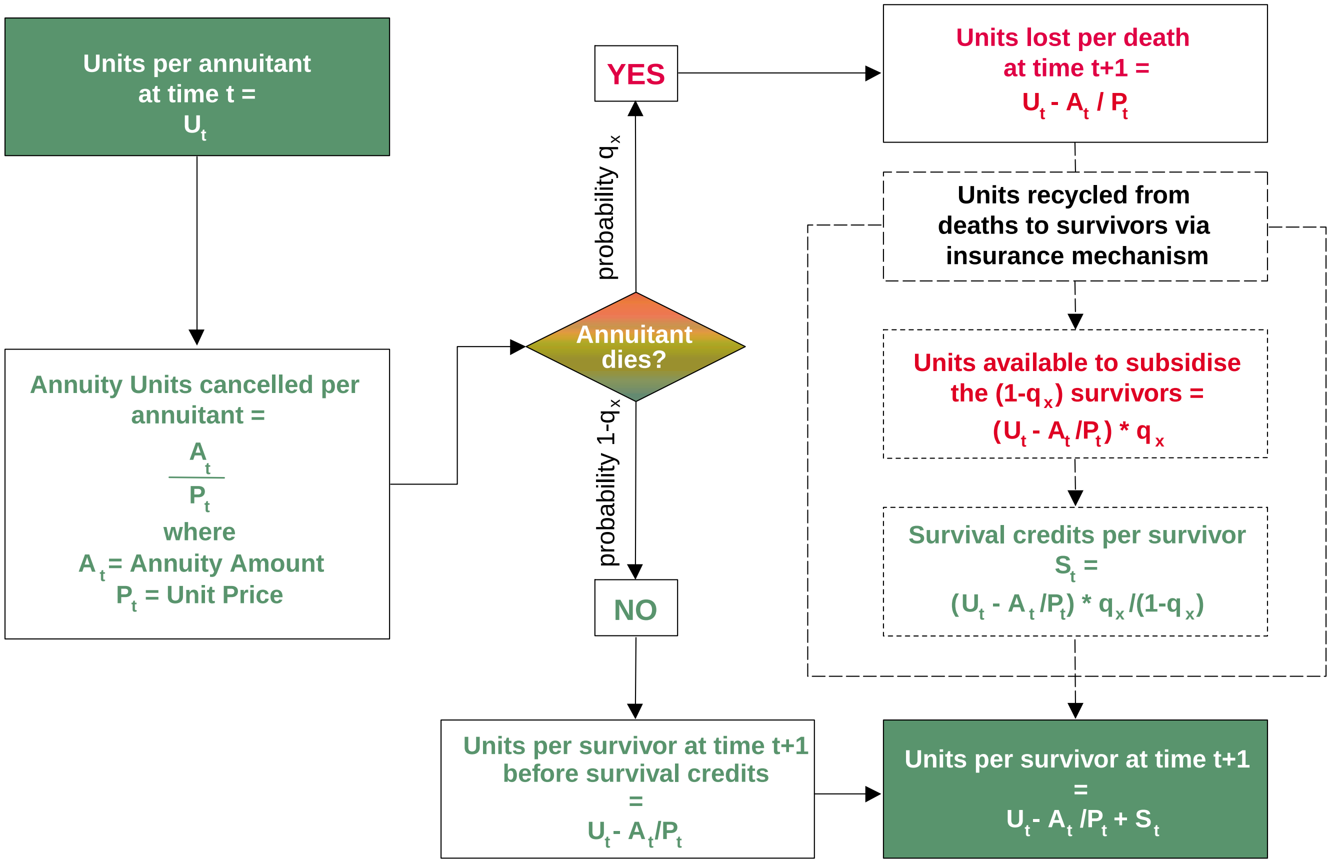


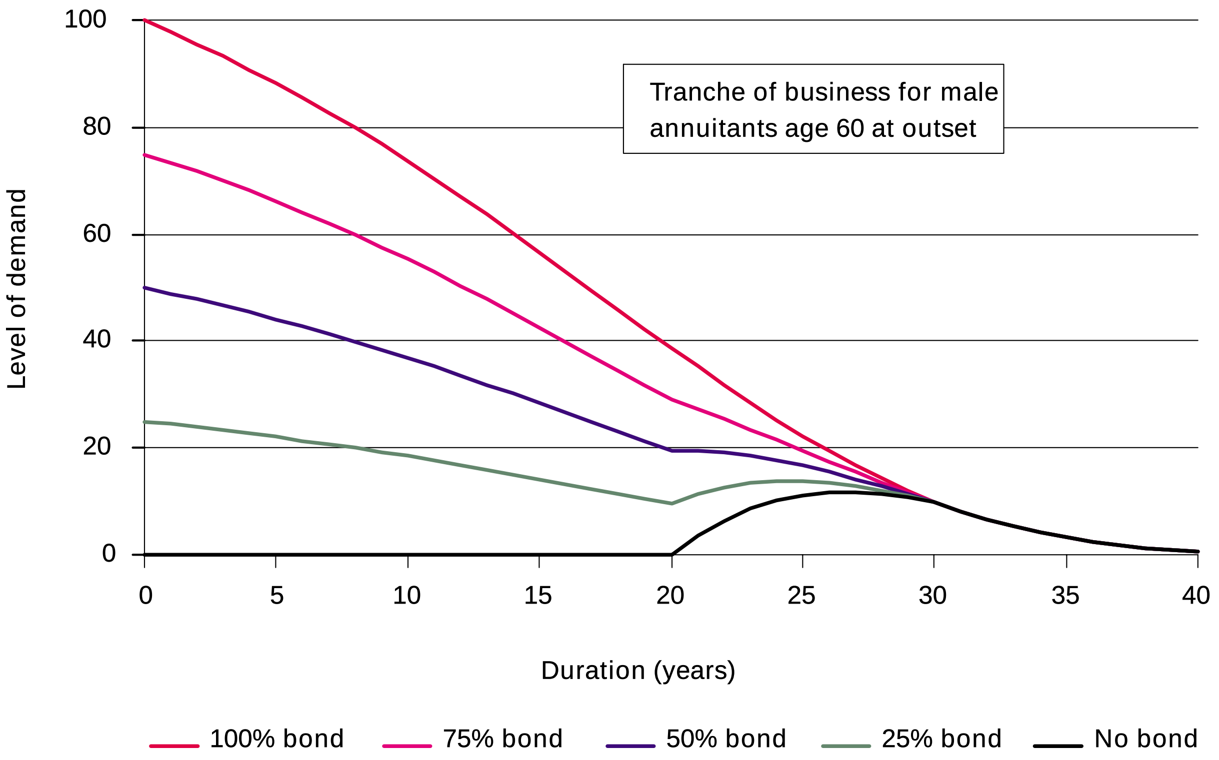
# Progression of income - annuitised fund versus non-annuitised fund





# Operation of an annuitised fund






Policies start with the specified percentage invested in bonds, and then switch gradually to 100% bond between 20 and 30 years from outset.

# Appendix 7.1

## Permissible personal pension annuities

### Income and Corporation Taxes Act 1988

*Section 634 – annuity to member*

(1) The annuity must be payable by an authorised insurance company which may be chosen by the member.

(2) Subject to subsection (3) below, the annuity must not commence before the member attains the age of 50 or after he attains the age of 75.

(3) The annuity may commence before the member attains the age of 50 if -

(a) it is payable on his becoming incapable through infirmity of body or mind of carrying on his own occupation or any occupation of a similar nature for which he is trained or fitted; or

(b) the Board are satisfied that his occupation is one in which persons customarily retire before that age.

(4) Subject to subsection (5) below, the annuity must be payable to the member for his life.

(5) The annuity may continue for a term certain not exceeding ten years, notwithstanding the member's death within that term; and for this purpose an annuity shall be regarded as payable for a term certain notwithstanding that it may terminate, after the death of the member and before expiry of that term, on the happening of any of the following -

(a) the marriage of the annuitant;

(b) his attaining the age of 18;

(c) the later of his attaining that age and ceasing to be in full-time education.

(6) The annuity must not be capable of assignment or surrender, except that an annuity for a term certain may be assigned by will or by the annuitant's personal representatives in the distribution of his estate so as to give effect to a testamentary disposition, or to the rights of those entitled on an intestacy, or to an appropriation of it to a legacy or to a share or interest in the estate.

## Appendix 7.1 continued

### Income and Corporation Taxes Act 1988

*Section 636 – annuity to spouse or dependant*

(1) The annuity must be payable by an authorised insurance company which may be chosen by the member or by the annuitant.

(2) The annuity must be payable to the surviving spouse of the member, or to a person who was at the member's death a dependant of his.

(3) The aggregate annual amount (or, if that amount varies, the aggregate of the initial annual amounts) of all annuities to which this section applies and which are payable under the same personal pension arrangements shall not exceed -

(a) where before his death the member was in receipt of an annuity under the arrangements the annual amount (or, if it varied, the highest annual amount) of that annuity; or

(b) where paragraph (a) does not apply, the highest annual amount of the annuity that would have been payable under the arrangements to the member (ignoring any entitlement of his to commute part of it for a lump sum) if it had vested [subsequently amended to "been purchased"] on the day before his death.

(4) Subject to subsections (5) to (9) below, the annuity must be payable for the life of the annuitant.

(5) Where the annuity is payable to the surviving spouse of the member and at the time of the member's death the surviving spouse is under the age of 60, the annuity may be deferred to a time not later than -

(a) the time when the surviving spouse attains that age; or

(b) where the member's annuity is payable to the surviving spouse for a term certain as mentioned in section 634(5) and the surviving spouse attains the age of 60 before the time when the member's annuity terminates, that time.

(6) The annuity may cease to be payable on the marriage of the annuitant.

(7) Where the annuity is payable to the surviving spouse of the member, it may cease before the death of the surviving spouse if -

(a) the member was survived by one or more dependants under the age of 18 and at the time of the member's death the surviving spouse was under the age of 45; and

(b) at some time before the surviving spouse attains that age no such dependant remains under the age of 18.

## Appendix 7.1 continued

(8) Where the annuity is payable to a person who is under the age of 18 when it is first payable, it must cease to be payable either -

(a) on his attaining that age; or

(b) on the later of his attaining that age and ceasing to be in full-time education.

(9) The annuity may continue for a term certain not exceeding ten years, notwithstanding the original annuitant's death within that term; and for this purpose an annuity shall be regarded as payable for a term certain notwithstanding that it may terminate, after the death of the original annuitant and before expiry of that term, on the happening of any of the following -

(a) the marriage of the annuitant to whom it is payable;

(b) his attaining the age of 18;

(c) the later of his attaining that age and ceasing to be in full-time education.

(10) The annuity must not be capable of assignment or surrender, except that an annuity for a term certain may be assigned by will or by the annuitant's personal representatives in the distribution of his estate so as to give effect to a testamentary disposition, or to the rights of those entitled on an intestacy, or to an appropriation of it to a legacy or to a share or interest in the estate.

## Appendix 7.2

# Permissible personal pension annuities

## IR76 (2000)

### Part 9: Member's Benefits

9.1 At *pension date* the member may opt under an *arrangement*

- to purchase an immediate annuity (see paragraphs 9.2 - 9.8)
- to defer purchasing an annuity for a period and instead take income withdrawals (see paragraphs 9.9 - 9.33)
- to purchase an immediate annuity with part of the *arrangement's* assets *(annuitisation)* and continue to take income withdrawals from the residual fund (see paragraphs 9.34 - 9.38)
- to take benefits from part of the *arrangement* under section 638ZA, in which case that part will be treated as a separate *arrangement* from the *relevant date* (see paragraphs 9.39 - 9.40)
- to take part of the benefits as a lump sum (see paragraphs 9.41 - 9.56).

### Purchase of annuity

9.2 The immediate annuity must be

- payable for life
- non-assignable and non-surrenderable except if it is subject to a *pension sharing order* (but see paragraph 9.6)
- paid at least once a year either in advance or in arrears
- purchased from an *insurer* (see paragraph 9.4).

9.3 The immediate annuity may be

- level, variable, escalating or index-linked
- reduced at age 60 (see paragraph 9.5)
- reduced if it is subject to a *pension sharing order*
- guaranteed for up to 10 years (even if the member dies within that period)
- assigned (on the death of the individual during the guarantee period) by will or by the member's legal personal representatives (see paragraph 9.6).

## Appendix 7.2 continued

9.6 Where an annuity is guaranteed payable for up to 10 years (even if the member dies within that period), it may be assigned by will or in the distribution of the estate to give effect to

- a bequest under a will
- any rights on intestacy
- a legacy or a share or interest in the estate.

In this event, the remaining annuity payments continue to be paid to the assignee.

### Amount of annuity

9.7 There is no Inland Revenue limit on the amount of the annuity which may be paid to the member from an approved *personal pension scheme* at *pension date*. This is because contributions to the scheme have already been limited to either the *earnings threshold* or the *relevant percentage* of *net relevant earnings* for each year.

### Part 10: Death Benefits

### Death on or after pension date

10.10 On the death of a member on or after *pension date* after an annuity has been purchased, an annuity may be paid to a *survivor* if provided under the terms of the member's *arrangement*. Income withdrawal will not be available in these circumstances.

### Purchase of annuity

10.12 The immediate annuity must be

- payable for life unless guaranteed or paragraph 10.19 applies
- non-assignable, non-commutable and non-surrenderable (but see paragraph 10.15)
- paid at least once a year either in advance or in arrears
- purchased from an *insurer* (see paragraph 10.14).

10.13 The immediate annuity may be

- level, variable, escalating or index-linked
- guaranteed for up to 10 years from the date it is purchased (even if the *survivor* dies within that period).

## Appendix 7.2 continued

10.15 Where an annuity is guaranteed to be paid for up to 10 years (even if the *survivor* dies within that period), it may be assigned by will or in the distribution of the estate to give effect to

- a bequest under a will
- any rights on intestacy
- a legacy or a share or interest in the estate.

In this event, the remaining annuity payments continue to be paid to the assignee.

### Amount of survivor's annuity

10.16 The aggregate annual amount of all *survivors*' annuities under an *arrangement* cannot exceed the annual amount of the annuity

- actually being paid to the member from that *arrangement* at the date of death, or
- potentially payable to the member on the day before his death, where the member has died before *pension date*.

Where the member's pension rights have been the subject of a *pension sharing order*, the amount of all *survivors*' annuities must not exceed the annuity being paid to the member, or payable on the day before his death, after deducting the *pension debit* (section 636(3A)).

### Time of payment

10.17 Payment of an annuity must commence as soon as practicable after the member's death, but purchase of the annuity may be deferred

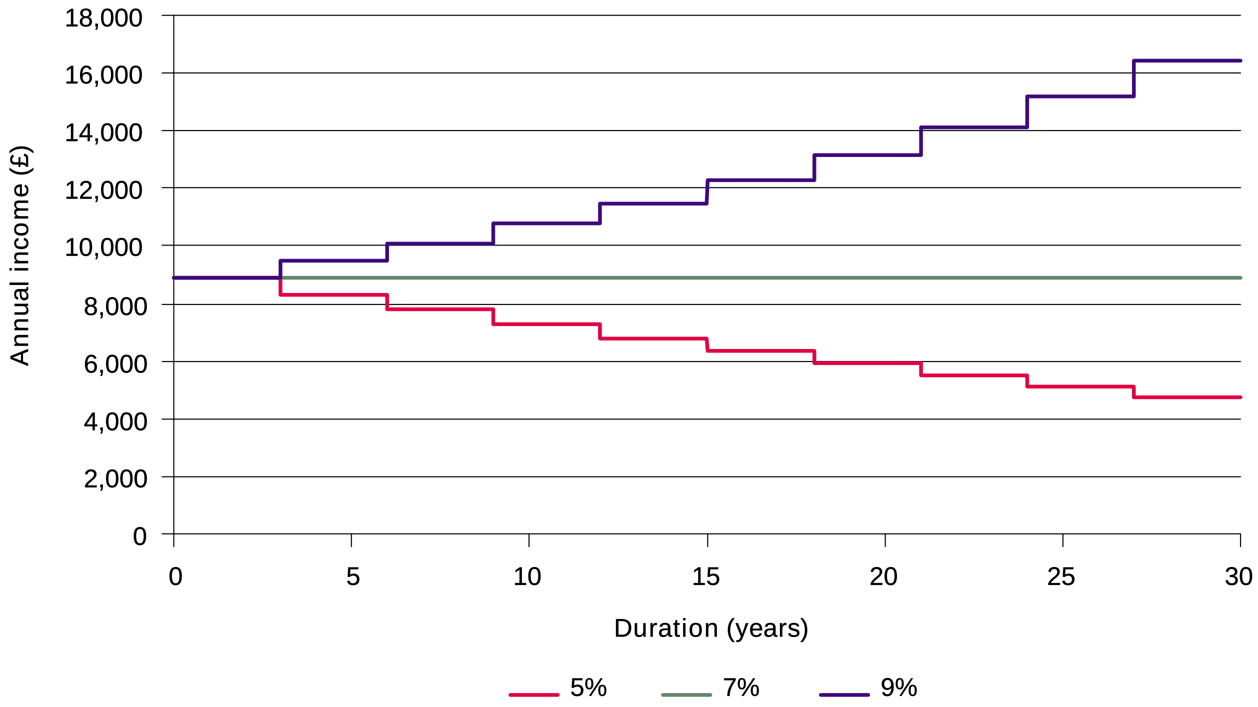
- until the date the surviving spouse reaches age 60, or
- until the date of cessation of any guaranteed annuity.

10.18 Where, on the member's death, his or her annuity continues to be paid for up to 10 years under a guarantee, there is no objection to the member's guaranteed annuity and the *survivor's* own right annuity being paid at the same time.

### Cessation

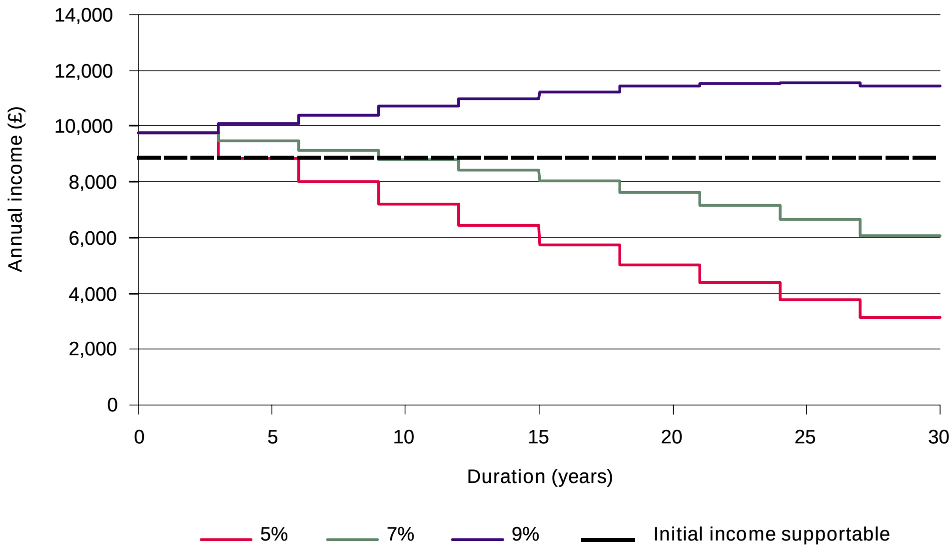
10.19 An annuity may be specified to end when the spouse re-marries, and an annuity for a child must end at age 18 or on finishing full-time education unless the child continues to qualify as a *dependant*.

# Income projections: income taken initially = income supportable at 7% pa

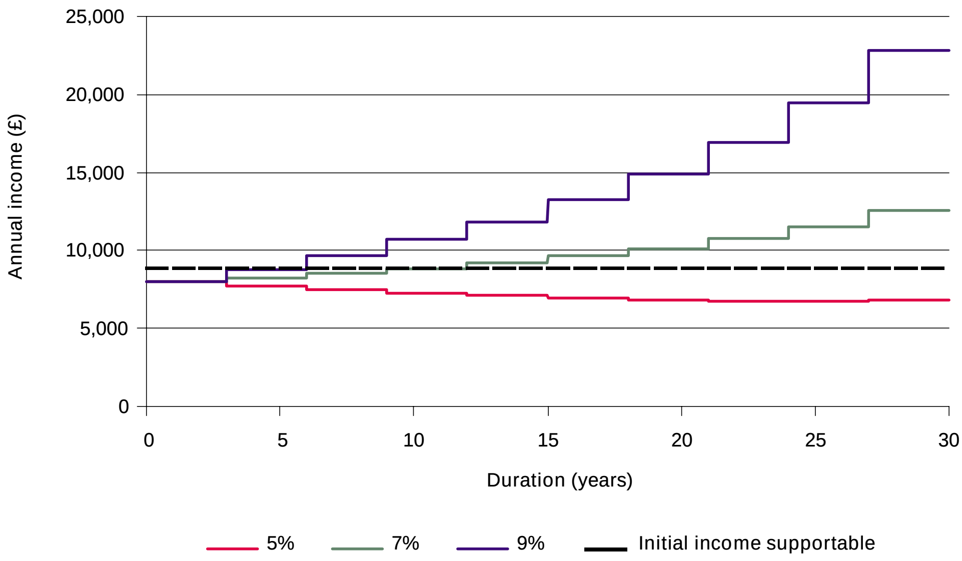


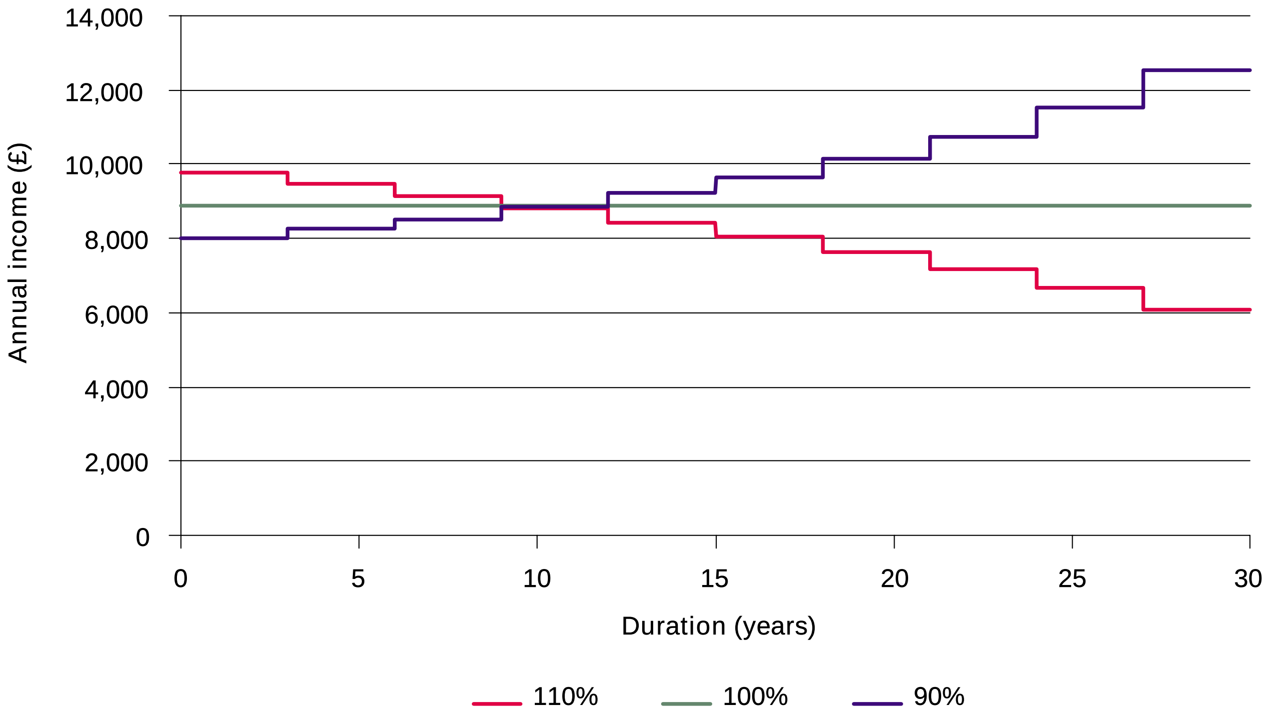
## Appendix 7.4

### Income projections: income taken initially = 1.1 x income supportable at 7%pa

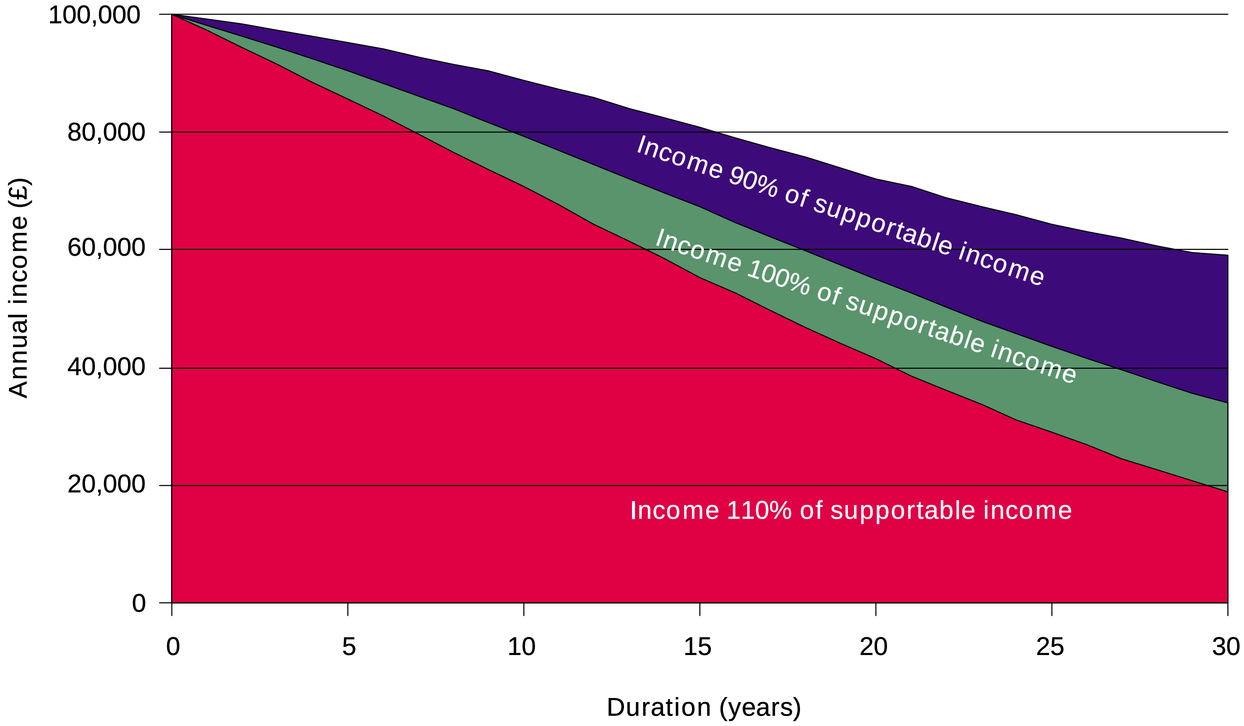



### Income projections: income taken initially = 0.9 x income supportable at 7% pa




14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Annual income (£)
0
5
10
15
20
25
30
Duration (years)
110%
100%
90%

## Fund projections - different income choices at same asset growth



## Annual benefit statement layout

## Appendix 7.7

| | Units | Units price £ | Value £ |
|---|---|---|---|
| Start of Year | 3,372.53 | 25.24 | 85,123 |
| Income Payments | (501.93) | | (13,175) |
| Survival Credits | 174.69 | | 4,585 |
| Effect of Changes in Unit Price | | | 7,779 |
| End of Year | 3,064.79 | 27.51 | 84,312 |
| Target Income for Next Year | | | 14,140 |

[Note: A longer format showing each unit transaction would eliminate the need for the “Effect of Changes in Unit Price” row. ]

## Appendix 8.1

# Profit testing assumptions for conventional annuity

### Policy example

Male aged 60 at outset paying a contribution of £100,000
Income payable monthly in advance, level, with no guarantee period

### Mortality

PMA92 Year of use 2001

*This table was used throughout for rating, reserving and experience.*

### Interest Rates

| | |
|---|---|
| Discount Rate | 9.0% pa |
| Earnings on policy reserves and solvency margin | 6.0% pa |

### Premium Basis

Mortality and interest earnings the same as assumptions used in profit test.
Interest margin equivalent to monthly management charge of 0.2% pa

*For consistency with the annuitised fund product, the "charge" in the product terms is expressed in the form of a management charge on policy reserves.*

### Expenses

| | |
|---|---|
| Initial expenses | £150 |
| Initial commission (as percentage of contribution) | 1.5% |
| Renewal expenses | £36 pa |
| – escalating at | 3.5% pa |
| Renewal commission | none |
| Investment expenses (as % of reserves) | 0.1% pa |

### Tax

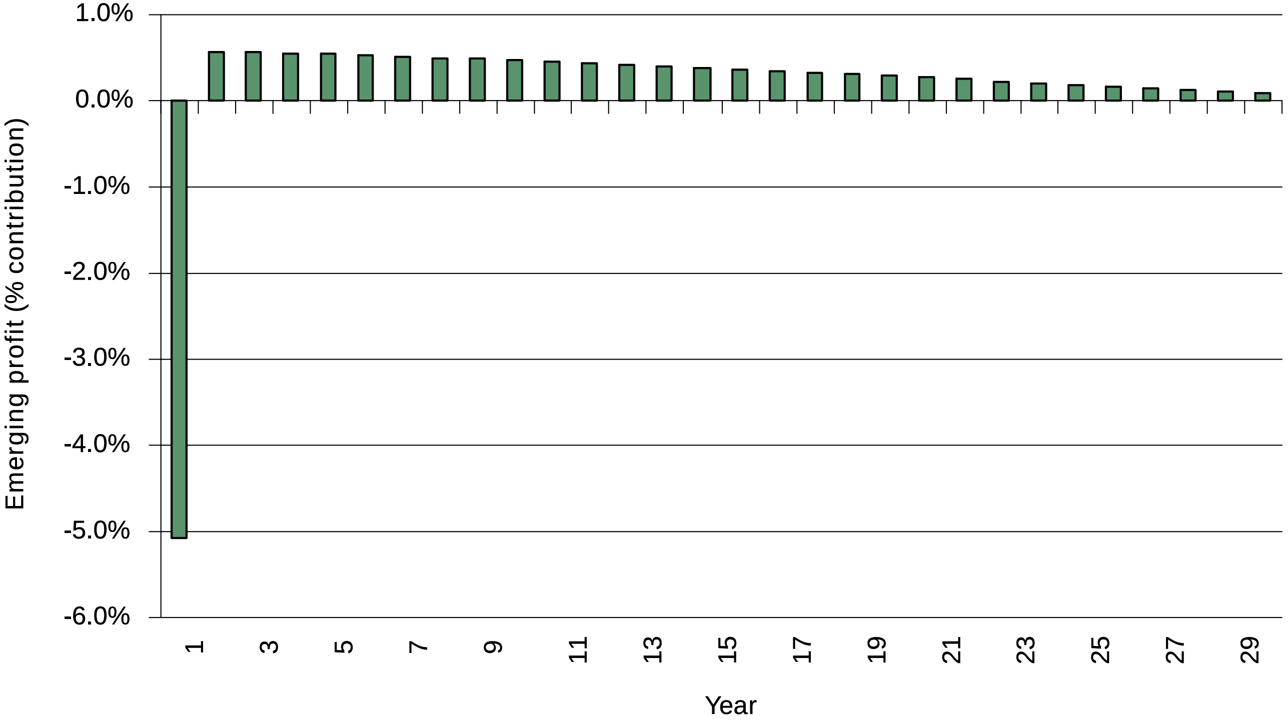
Ignored

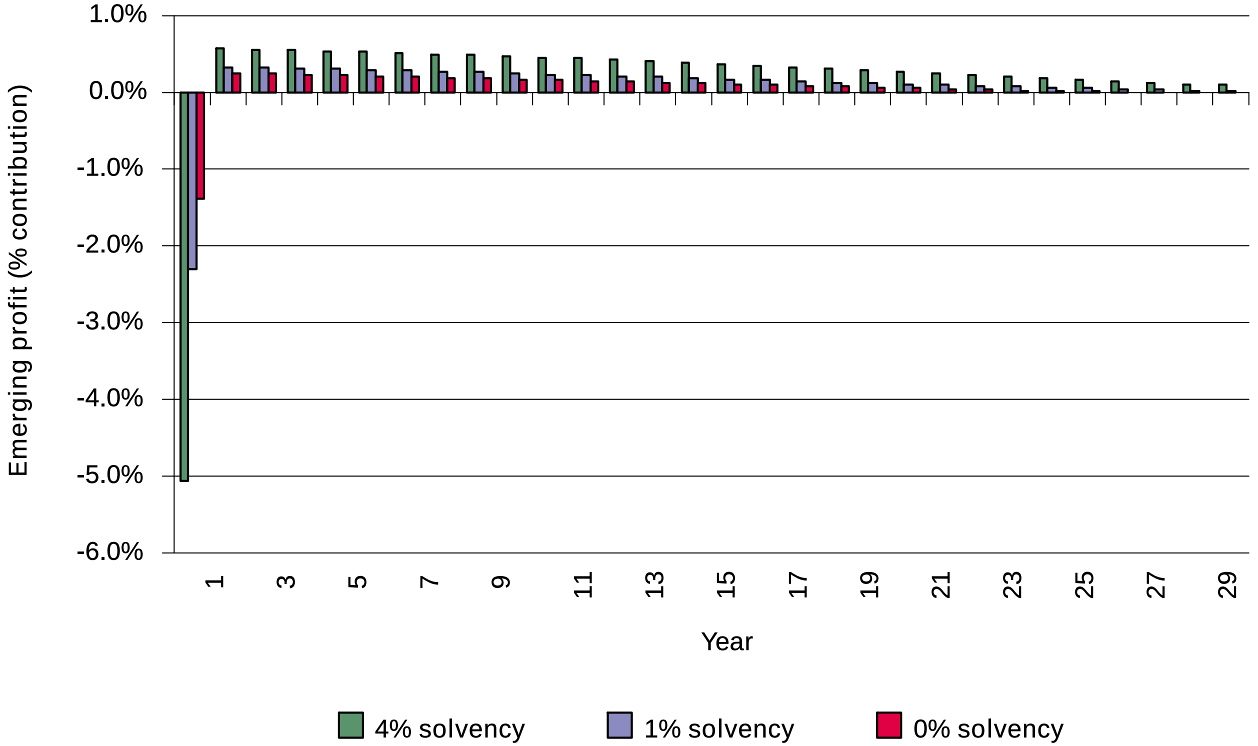
### Solvency margin

4% of reserves*

* Additional capital may be required to satisfy the regulators.

## Profit signature - conventional annuity design




1.0%
0.0%
-1.0%
-2.0%
-3.0%
-4.0%
-5.0%
-6.0%
Emerging profit (% contribution)
1
3
5
7
9
11
13
15
17
19
21
23
25
27
29
Year
4% solvency
1% solvency
0% solvency

# Appendix 8.4

## Profit testing assumptions for annuitised fund

### Policy example

Male aged 60 at outset paying a contribution of £100,000
Income payable monthly in advance, level, with no guarantee period

### Mortality

PMA92 Year of use 2001
This table was used throughout for rating, reserving and experience.

### Interest Rates

| | |
|---|---|
| Discount Rate | 9.0% pa |
| Earnings on policyholder unit funds | 7.5% pa |

### Charges

| | |
|---|---|
| Monthly management charge | 1.0% pa |

### Expenses

| | |
|---|---|
| Initial expenses | £150 |
| Initial commission (as percentage of contribution) | 1.5% |
| Renewal expenses | £36 pa |
| – escalating at | 3.5% pa |
| Renewal commission | none* |
| Investment expenses (as % of reserves) | 0.2% pa |

### Tax

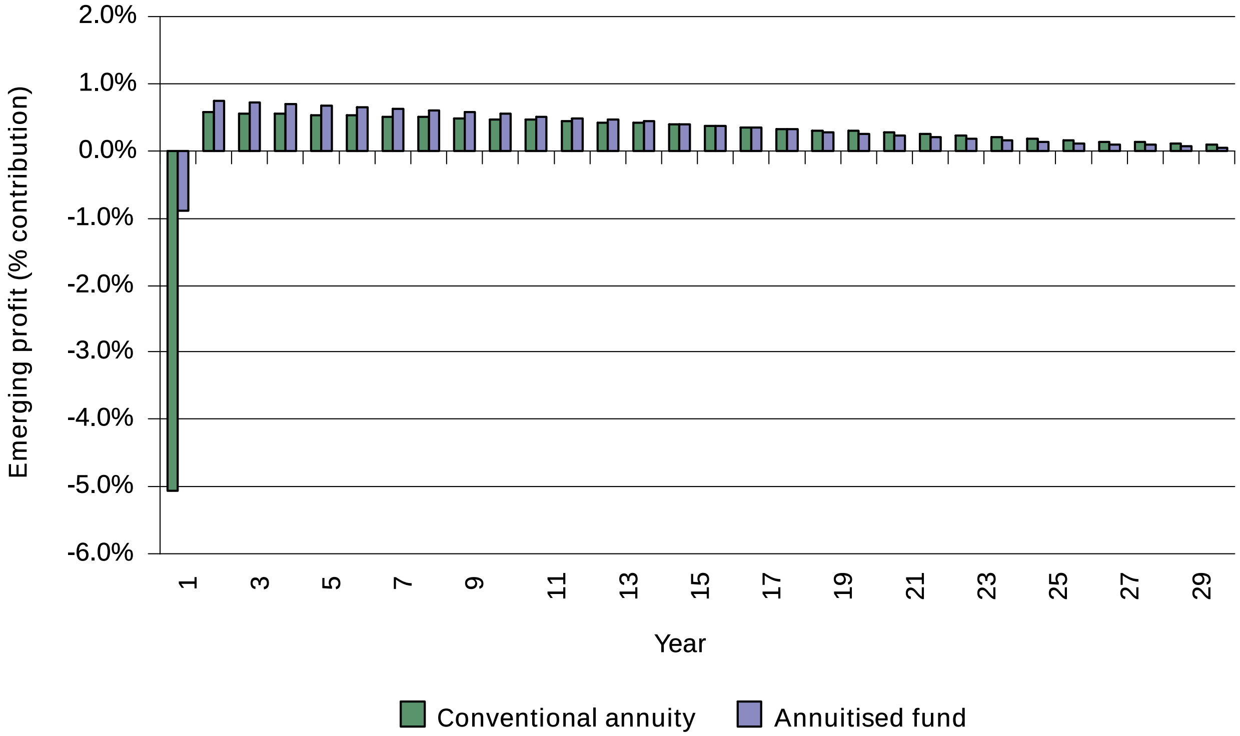
Ignored

### Solvency margin

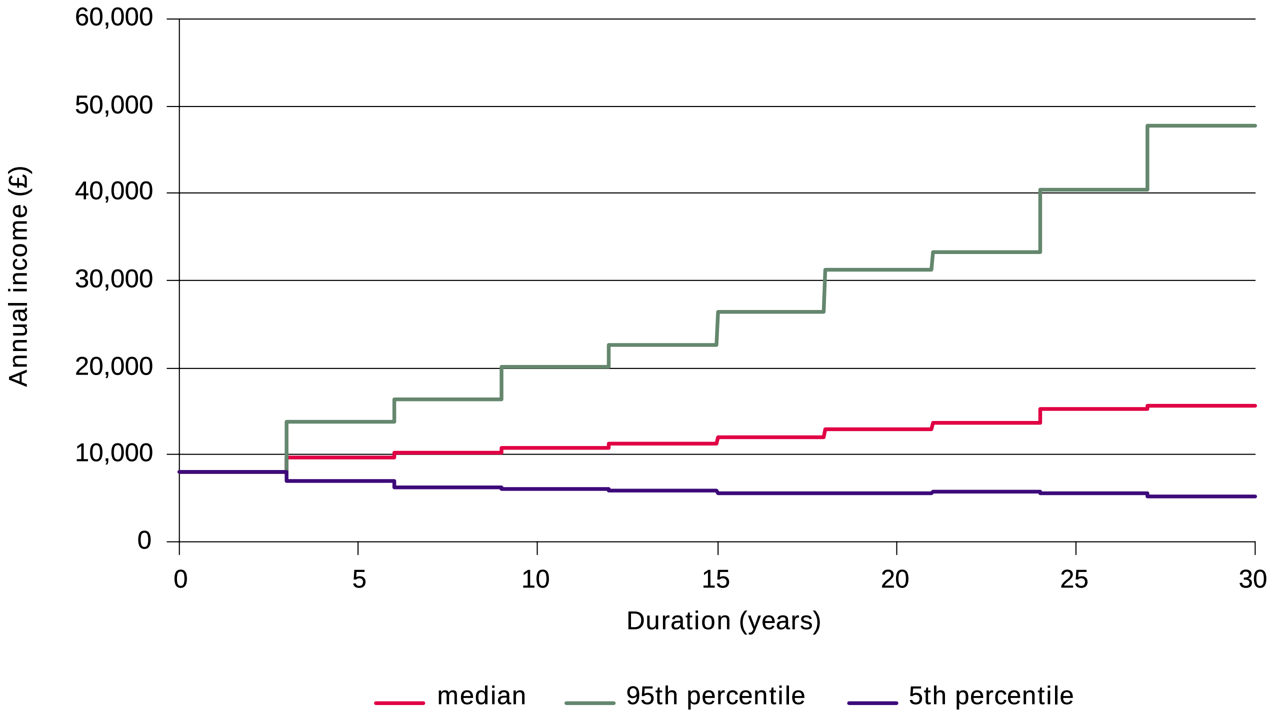
0% of reserves

* Results suggest that scope would exist to pay renewal commission.

## Profit signature - conventional annuity design versus annuitised fund



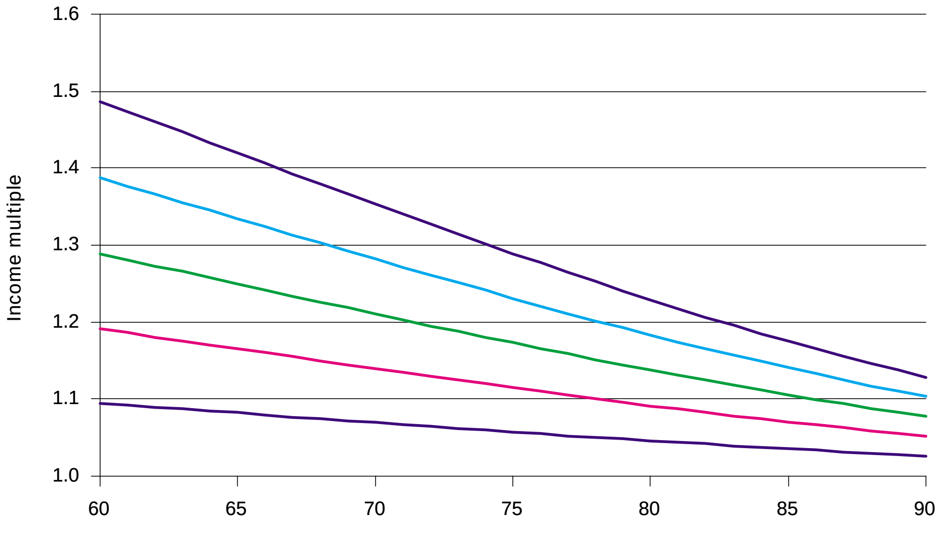
## Income projections: specimen stochastic projection



## Effect of investment growth on supportable income

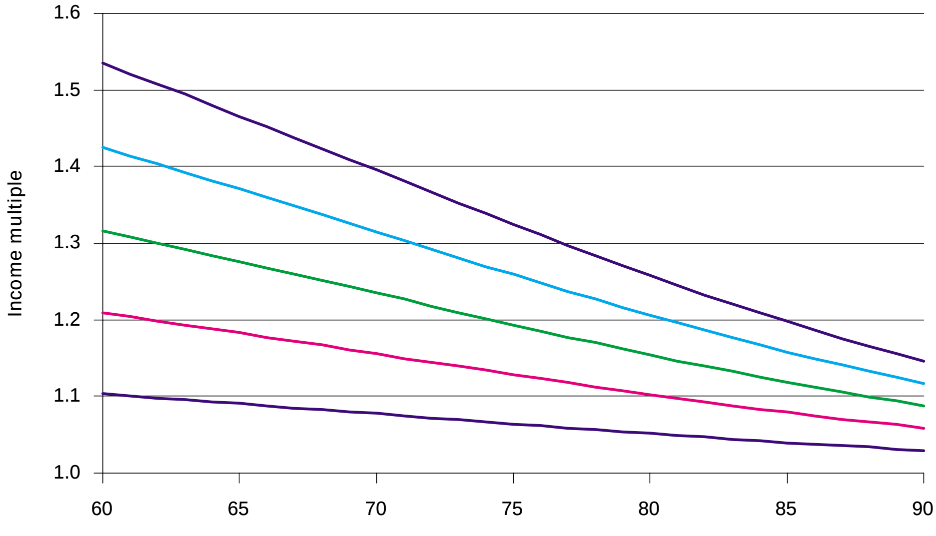
## Appendix 8.7

### Male life




Base income supportable calculated at 5% pa. Enhanced income = income supportable assuming extra investment return of 1, 2, 3, 4 or 5% pa. Income multiple = enhanced income / base income.
Mortality: PMA92 Year of use 2001

### Female life




Base income supportable calculated at 5% pa. Enhanced income = income supportable assuming extra investment return of 1, 2, 3, 4 or 5% pa. Income multiple = enhanced income / base income.
Mortality: PFA92 Year of use 2001

## Bibliography


| | | |
|---|---|---|
| (1) | The History of Individual Annuity Contracts | EJW Dyson FIA et al<br>Insurance Institute of London<br>1969 |
| (2) | New Long-Term Insurance Results | Association of British Insurers |
| (3) | The finances of older people: past, present and future | Richard Disney<br>University of Nottingham<br>1999 |
| (4) | Mortality in the next millennium | Richard Willets FFA<br>SIAS Paper<br>7 December 1999 |
| (5) | Why are Long Gilts the Richest Bonds in the World, and Getting Richer? | Graham Bishop, Salomon Smith Barney, 13 October 1999 |
| (6) | Annuities: the problems | Michael Orszag<br>NAPF Annual<br>Conference 2000 |
| (7) | On the consumer's lifetime allocation process | ME Yaari<br>Review of Economic Studies 1965 |
| (8) | Annuities Markets in Comparative Perspective: Do Consumers Get Their Money's Worth? | James and Vittas<br>World Bank 1999 |
| (9) | Selection effects in the market for individual annuities: new evidence from the United Kingdom | Amy Finkelstein (MIT) and<br>James Poterba (MIT and NBER) |
| (10) | UK annuitants | Banks and Emmerson<br>Institute for Fiscal Studies<br>December 1999 |
| (11) | The value for money of annuities: theory, experience and policy | Murthi, Orszag and Orszag<br>December 1999 |
| (12) | CBQ Annuities | Michael Orszag<br>Birkbeck College |
| (13) | Portfolio choice and annuitisation during retirement | Sandeep Kapur and Michael Orszag<br>Birkbeck College<br>December 1999 |
| (14) | Annuity markets and retirement security | James Poterba<br>MIT |
| (15) | Choices - an independent report to encourage the debate on retirement income | Oonagh McDonald et al<br>Retirement Income Working Party<br>March 2000 |
| (16) | Annuities: the case for change | Donald McCarthy<br>Social Market Foundation |

| | | |
|---|---|---|
| (17) | How should we insure longevity risk in pensions and social security? | Jeffrey R Brown<br>Harvard University<br>Center for Retirement Research<br>August 2000 |
| (18) | Annuity and Insurance Products for Impaired lives | Ross Ainslie FFA<br>SIAS Paper<br>9 May 2000 |
| (19) | Old Age Pensions | Arnold Wilson and GS MacKay<br>Oxford University Press<br>1941 |
| (20) | A Guide to the Records of the British State Tontines and Life Annuities of the 17th and 18th Centuries | Francis Leeson<br>1968 |
| (21) | Inventing retirement | Leslie Hannah<br>London School of Economics<br>1986 |