# The Prudential Assurance Company Limited 

## Annual FSA Insurance Returns for the year ended 31 December 2009

(Appendices 9.4 and 9.4A valuation reports)

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## VALUATION REPORT ON THE PRUDENTIAL ASSURANCE COMPANY LIMITED AS AT 31 DECEMBER 2009

## Structure of the long term business

## 1. Overview

The Prudential Assurance Company Limited (PAC) carries on Ordinary Branch and Industrial Branch business within its long-term fund. The Industrial Branch was closed to new business on 1 January 1995.

The long-term business of Scottish Amicable Life Assurance Society (SALAS) was transferred into PAC on 1 October 1997, and the long term business of Scottish Amicable Life plc (SAL) was transferred into PAC on 31 December 2002. The business transferred from SAL itself included business previously transferred into SAL from M\&G Life Assurance Company Limited (M\&G Life) and M\&G Pensions and Annuity Company Limited (M\&G Pensions).

The long term business is contained within the following four sub-funds:
(a) Non-Profit Sub-Fund (NPSF)
(b) Scottish Amicable Insurance Fund (SAIF)
(c) Defined Charge Participating Sub-Fund (DCPSF)
(d) With-Profits Sub-Fund (WPSF)

## 2. Non-Profit Sub-Fund

The business in this sub-fund comprises:
(1) Long term sickness and accident business, namely the directly written permanent health business in respect of which the directors have determined that profits should accrue $100 \%$ to shareholders.
(2) The linked business written directly by PAC, including linked business issued in France, in respect of which the directors have determined that profits should accrue $100 \%$ to shareholders.
(3) The loan protection business transferred into PAC from SAL on 31 December 2002 and such business subsequently written directly by PAC, in respect of which the directors have determined that profits should accrue $100 \%$ to shareholders.
(4) Defined Charge Participating business issued by PAC in France, and Defined Charge Participating business reassured into PAC by Prudential International Assurance plc (PIA) and Canada Life (Europe) Assurance Ltd, excluding the accumulated investment content of premiums paid, which is transferred to the DCPSF (see below).
(5) Ex-SAL business, namely the with-profits, non-participating and linked business (including internal linked funds) transferred into PAC from SAL on 31 December 2002 and any new premiums arising on those products, excluding Prudential Protection business written between 1 January 2003 and 25 July 2004 and the accumulated with-profits premiums which are held in the WPSF (see 5 below).
(6) Reassurance of the accumulated investment content of linked business written in Prudential (AN) Limited.
(7) Reassurance of $15 \%$ of the liabilities in respect of non-profit annuity business in Prudential Retirement Income Limited.

All profits from this business in the NPSF accrue $100 \%$ to shareholders.

## Structure of the long term business (continued)

(8) PruProtect business which is administered and distributed by Prudential Health Services Limited (PHSL) on behalf of PAC. Profits from this business are passed to PHSL via the PAC shareholder fund under a whitelabel agreement. PHSL is wholly owned by PruHealth Holdings (PHH). PHH is $50 \%$ owned by PAC and $50 \%$ by Discovery, a South African insurer.

## 3. Scottish Amicable Insurance Fund

PAC acquired the business of Scottish Amicable Life Assurance Society (SALAS) on 1 October 1997. As a consequence a closed sub-fund SAIF and a memorandum account within the WPSF, the Scottish Amicable Account (SAA), were created. SAIF contains the pensions business, annuities and traditional with-profits life business transferred from SALAS and the accumulated investment content of with-profits business in SAA.

All profits in SAIF accrue to holders of with-profits contracts in SAIF and SAA.
The accumulated investment content of linked premiums is invested in the linked funds that were transferred from SAL to the NPSF on 31 December 2002.

The WPSF provides financial support to SAIF through a memorandum account, the Scottish Amicable Capital Fund (SACF), some of which may be drawn upon in adverse investment conditions to support the smoothing of bonuses within SAIF. No such drawings have yet been necessary. The WPSF receives an annual charge from SAIF for providing this financial support.

## 4. Defined Charge Participating Sub-Fund

The business in this sub-fund comprises:
(1) The accumulated investment content of premiums paid in respect of the Defined Charge Participating withprofits business issued in France, and the Defined Charge Participating with-profits business reassured into PAC from Prudential International Assurance plc and Canada Life (Europe) Assurance Ltd.

A bonus smoothing account is maintained in the WPSF so that whenever a claim payment is made from the DCPSF any excess of the claim amount over the policy's underlying asset share is transferred from the WPSF to the DCPSF and any shortfall is transferred from the DCPSF to the WPSF. It is intended that these smoothing transfers should generate neither profit nor loss to either fund over the long term.
(2) With-profits annuities transferred from Equitable Life Assurance Society to PAC on 31 December 2007. A separate bonus smoothing account for this business is also maintained in the WPSF. It is intended that transfers to and from this account should generate no net gain or loss to either the WPSF or DCPSF over the long term.

All profits in this fund accrue to policyholders in the DCPSF.

## 5. With-Profits Sub-Fund

The WPSF contains all other long term business, comprising:
(1) With-profits, non-participating and linked business (other than the categories defined above) written directly by PAC. This includes the Prudential Protection business written between 1 January 2003 and 25 July 2004.
(2) With-profits, non-participating and linked life business transferred to SAA from SALAS, excluding the accumulated investment content of with-profits premiums, which is held in SAIF, and also excluding the accumulated investment content of linked premiums, which is invested in the linked funds transferred from SAL to the NPSF on 31 December 2002.
(3) The accumulated with-profits premiums in respect of business transferred into the NPSF from SAL on 31 December 2002 and any new premiums arising on those products.

## Structure of the long term business (continued)

(4) Reassurance of accumulating with-profits business written in Prudential (AN) Limited.

Divisible profits from this business accrue to both shareholders and with-profits policyholders in the WPSF (other than with-profits policyholders in SAA who share in the profits of SAIF).

Transfers not exceeding $5 \%$ of divisible profits may be made to a common contingency fund. Not less than $90 \%$ of the remainder is allocated to the with-profits policyholders, and the balance to shareholders.

## 6. Reinsurance of linked business

Much of the linked business in PAC was transferred either from SALAS on 1 October 1997 or from SAL on 31 December 2002.

Most of the property-linked business issued by PAC is linked, via reinsurance treaties, to the internal linked funds of other life assurance companies.

## 7. Reinsurance of annuity business

(1) Most of the non-profit and index-linked annuities in payment issued by PAC are ceded to Prudential Annuities Limited, a wholly-owned subsidiary of the WPSF, or to Prudential Retirement Income Limited. Most of the non-profit annuities in payment written in SAIF are ceded to Prudential Retirement Income Limited.
(2) PAC insures $15 \%$ of the liabilities in respect of the non-profit annuity business in Prudential Retirement Income Limited (PRIL) under a quota share arrangement effected on 31 December 2008. The reinsurance arrangement includes deposit back of reserves with PRIL.

## VALUATION REPORT

## 1. Introduction

1.(1) The investigation relates to 31 December 2009.
1.(2) The previous investigation related to 31 December 2008.
1.(3) No interim valuations have been carried out for the purposes of IPRU(INS) 9.4 since 31 December 2008.

## 2. Product range

(a) New products

The following new products were launched during the year.
PruProtect Guaranteed 50+ Plan

The PruProtect Guaranteed 50+ Plan is a whole of life product that provides limited levels of life cover to those aged between 50 and 80 at the time of sale. Acceptance is guaranteed (i.e. there is no underwriting). The 50+ Plan provides a lump sum payment on death of the life insured, except on non-accidental death within the first two years when the benefit is a return of premium.

The product was launched in September 2009 and is sold in ASDA stores.

## PruProtect Income Protection

Income Protection is an insurance plan which pays an income if the policyholder is unable to work because of long-term sickness, accident or injury. The plan also provides optional unemployment cover, which will also pay out if the policyholder is made redundant.

Two versions of the Income Protection products were launched in April 2009. The Primary Cover version offers affordable income protection and the Comprehensive Cover version offers enhanced cover for maximum income protection.

## PruProtect Essentials Plan

The Essentials Plan is a new life and serious illness protection plan launched in November 2009. It is a simplified version of PruProtect Plan. This plan does not include guaranteed insurability options, automatic children's serious illness cover, free cover limits or the reductions in premiums dependant on vitality status.

## Income Choice Annuity

Income Choice Annuity, a conventional with profits annuity policy purchased with the proceeds of a maturing pension scheme, was launched in March 2009. It allows customers to choose an income between a defined minimum and maximum level (these levels are defined by Prudential) with an option to re-set every two years. The actual income payable depends on smoothed returns declared but is guaranteed never to fall below a Secure Level. The Secure Level increases by $50 \%$ of the amount of any increase in actual paid income but can never decrease.

## PRUsave Express (Hong Kong)

This is a limited offer period single premium with-profits endowment plan with a 5 year term. Benefits include a death benefit equal to the sum of $101 \%$ sum assured and a non-guaranteed special bonus, a maturity benefit equal to the sum of guaranteed cash value and non-guaranteed special bonus, surrender benefit equal to guaranteed cash value, and a free accidental death benefit of HK\$ 100,000.

## 2. Product range (continued)

## PRUcrisis Cover Multiple (Hong Kong)

This is a critical illness rider attaching to existing PRUcrisis cover smartchoice or PRUcrisis cover smartchoice extra, which were launched in 2007 and 2008 respectively. The rider covers the second and third claims (among 37 major diseases), a waiver of future premiums upon the first claim in the basic plan, and the second medical opinion service.

## Golden Harvest (Hong Kong)

This is a limited offer period single premium 5-year endowment plan with annual guaranteed return of $3.0 \%$ (first tranche) or $2.6 \%$ (second tranche) at maturity. Benefits include a death benefit equal to the higher of $101 \%$ of the sum assured or guaranteed cash value, and a maturity or surrender benefit equal to guaranteed cash value.

## Galaxy Lifelong Income Savings Plan (Hong Kong)

This is a whole life with-profits plan with guaranteed coupons of $15 \%$ of sum assured payable every 5 years, annual cash dividends and terminal dividends. A number of premium payment options are available. Benefits include i) a death benefit equal to the higher of guaranteed death benefit and surrender benefit, where the guaranteed death benefit is the higher of sum assured and total premium paid; ii) a coupon payment; iii) non-guaranteed cash dividends declared annually from the third policy anniversary; and iv) a surrender benefit equal to guaranteed cash value plus non-guaranteed terminal dividend, which is payable from the third policy anniversary.

## Yearly Renewable \& Convertible Term Plan (Hong Kong)

This is a pure term life plan which provides a death benefit only. It is renewable automatically every year until age 75 and premiums increase annually with age. It may be attached to other basic plans as a rider. The product allows policyholders to convert the benefit into a new policy (with cash value) without providing further evidence of health before the life assured reaches age 66.

## Refundable Crisis Cover Multiple Plan (Hong Kong)

This is a critical illness plan allowing the insured person to make up to 3 major disease claims within 15 years. Benefits include i) a multiple crisis cover benefit covering 37 major diseases for up to 3 claims; ii) a premium waiver benefit upon the 1 st claim; iii) a special bonus equal to a refund $70 \%$ of total premium paid at the end of the premium term if no multiple crisis cover benefit has been paid; iv) a death benefit equal to a refund of total premium paid less any special bonus paid regardless of claims, and $v$ ) a surrender benefit equal to a refund of a percentage of the total premium within the premium term (i.e. first 10 years) if no multiple crisis cover benefit has been paid.
(b) Products withdrawn

Homemaker Plan, Synergy Mortgage Plan and NDF Synergy Plan were closed to new business in October 2009.

PRUsaver Series (Hong Kong) was withdrawn on $1^{\text {st }}$ January 2009.

## 2. Product range (continued)

(c) New bonus series

New bonus series were added during the year as a result of the introduction of the PruFund Protected Cautious Fund. Separate bonus series were added in respect of PAC investment bonds, PAC pensions and PIA investment bonds.

New bonus series were also added for Income Choice Annuity and Galaxy Lifelong Income Savings Plan (Hong Kong).
(d) Changes to options or guarantees under existing products

## Flexible Investment Plan, Prudential Investment Plan, Flexible Retirement Plan, Trustee Investment Plan

The PruFund Protected Growth Fund was closed to new business in 2009. Prior to closure the guarantee charge was increased to 100bps p.a. from 60bps p.a. The PruFund Protected Growth Fund was replaced by the PruFund Protected Cautious Fund. The rolling guarantee feature of the Protected Growth Fund was not included on the Protected Cautious Fund i.e. the guarantee is a 5 year spot guarantee only. The asset mix underlying the Cautious Fund also has 70\% nominal assets. The guarantee charge for the Protected Cautious Fund was set at 75 bps p.a. There was a special launch offer reducing the guarantee charge to 50bps p.a. for all Protected Cautious business written in 2009.

## International Prudence Bond

The PruFund Protected Growth Fund was closed to new business in 2009. Prior to closure the guarantee charge was increased to 130bps p.a. from 95 bps p.a. The PruFund Protected Growth Fund was replaced by the PruFund Protected Cautious Fund. The rolling guarantee feature of the Protected Growth Fund was not included on the Protected Cautious Fund i.e. the guarantee is a 5 year spot guarantee only. The asset mix underlying the Cautious Fund also has $70 \%$ nominal assets. The guarantee charge for the Protected Cautious Fund was set at 125 bps p.a.

HIV cover on PruProtect Plan

Life Cover on the PruProtect Plan was extended in April 2009 to include people living with HIV. The HIV cover benefit provides up to $£ 250,000$ of life cover over a maximum period of ten years. There are strict eligibility criteria and overall exposure will be limited by introducing a maximum capacity level.
(e) With-profits sub-funds

The With-Profits Sub-Fund and the Defined Charge Participating Sub-Fund are both open to new withprofits business.

The Scottish Amicable Insurance Fund is closed to new business except by increment

## 3. Discretionary charges and benefits

## 3.(1) Market value reduction

Market value reductions have been applied throughout 2009. The policy years of entry to which market value reductions were applied during 2009 are summarised below:

| Product | Policy years of entry |
| :--- | :--- |
| SAIF | $1985,1987-1998,2002,2004-2005$, <br> $2007-2009$ |
| SAL pensions | $1997-2009$ |
| Prudence Bond | $1991-2009$ |
| PSA/PIB | $1994-2009$ |
| Personal Pensions | $1987-2001,2004-2009$ |
| Corporate Pensions | $1973-2009$ |
| International Prudence Bond | $2002-2009$ |
| PruWealth (US dollar) | $2002-2009$ |
| PruWealth (Hong Kong dollar) | $2007-2009$ |

For the Corporate Pension business noted above not every policy year within the range of products offered will have a market value reduction applied.

## 3.(2) Reviewable protection policies

There was a review of premium rates for PRUmed Series (including PRUmed better care, PRUmed care and PRUmed health care) during 2009. Premiums were increased by $2-7 \%$ (or on average $4 \%$ ) for plans with annual in force premiums of HK $\$ 134 \mathrm{~m}$. An increase in premiums was permitted but did not occur for plans with annual in force premiums of HK $\$ 294 \mathrm{~m}$.

## 3.(3) Non-profit deposit administration benefits

There are no non-profit deposit administration contracts.

## 3.(4) Service charges on linked policies

Policy/member fees increased by $5.00 \%$ in 2009 for those linked products where the fees increase in line with Retail Price Index (RPI) inflation, based on the increase in RPI from September 2007 to September 2008.

## 3.(5) Benefit charges on linked policies

There have been no changes to benefit charges on linked policies during the financial year.

## 3. Discretionary charges and benefits (continued)

## 3.(6) Unit management charges and notional charges on accumulating with-profits policies

For accumulating with-profits business, changes to notional charges are shown in the table below:

|  | Reserves <br> $£ \mathrm{~m}$ | New charge <br> $\%$ | Old charge <br> $\%$ |
| :--- | :---: | :---: | :---: |
| Prudence Bond - Pre Mk9 and Establishment Charge <br> new business and top ups to this business up to 30/09/02 | 6,797 | 0.797 | 1.018 |
| Prudence Bond - Top ups to pre Mk7 and all <br> Establishment Charge options made after 30/09/02 | 370 | 1.097 | 1.168 |
| Prudence Bond - Mk9 new business and top ups to Mk7, <br> Mk8 and Mk9 after 30/09/02 | 288 | 0.947 | 1.268 |
| Prudence Bond - Pre NIC3 new business and top ups to <br> pre NIC up to 30/09/02 | 372 | 1.047 | 1.318 |
| Prudence Bond - NIC3 new business and top ups to <br> NIC1, NIC2 and NIC3 after 30/09/02 | 892 | 1.347 | 1.568 |
| Prospects Bond | 44 | 1.747 | 1.968 |
| Prudential Investment Bond (PIB) and Prudence Savings <br> Account (PSA) | 2,666 | 1.160 | 1.250 |

The notional charges for all UK pensions business, Hong Kong policies and DCPSF policies were unchanged.

## 3.(7) Unit pricing of internal linked funds

(a) Hong Kong PruLink policies - Prudential Money Fund

The unit issue price and redemption price are always 1.000. Interest is credited to policies in the form of additional units not less frequently than once per month. The rate to be credited is determined from the value of the fund assets, any surplus being distributed by issuing new units on a pro-rata basis.

## Hong Kong PruLink policies - all funds except the Prudential Money Fund

The funds are wholly invested in similarly named authorised Guernsey unit trusts managed by Prudential Fund Managers Guernsey. Units are allocated or cancelled on the next weekly valuation date at the prices determined by the unit trust manager. There is no bid/offer spread. PruLink policies provide that the fund unit prices may be varied from the corresponding unit trust price if a variation would be justified by, for example, a change in the basis of Hong Kong life office taxation.

Other business written and retained by PAC
The company operates its internal linked funds on a forward pricing basis. The daily unit prices used for the allocation of units to and deallocation of units from policies are calculated by a valuation of the internal linked funds. The valuation point of each fund is 12 noon. The allocation and deallocation of units is carried out once the unit prices are available. The unit prices for a fund are determined using either a creation price basis or a cancellation price basis, depending on the net cash flow position of the fund. Creation of asset units is carried out at the creation price, which is based on the purchase cost of the underlying assets plus any associated costs. Cancellation of asset units is carried out at the cancellation price, which is based on the sale value of the underlying assets of the fund less any associated costs.

## 3. Discretionary charges and benefits (continued)

Other
The unit pricing methods for all other contracts are described in the regulatory returns of the companies with which the linked liabilities are wholly reassured.
(b) Unit pricing bases are determined at fund level, so all policies invested in the same fund have the same basis applied.
(c) The price used for collective investment schemes and similar assets is the latest valuation at mid-day; deals placed before mid-day receive that price.

## 3.(8) Capital gains tax deductions from internal linked funds

Tax deductions are made on net realised gains as they arise, as well as for net unrealised gains on directly held assets. For holdings in collective investment schemes, allowance is made for the spreading over seven years of deemed disposals of net unrealised gains. Withdrawals from the fund for the payment of tax are made quarterly, the same frequency at which the company makes payments to the Inland Revenue.

Each unit fund is treated in principle as though it were a stand-alone taxable entity, so no credit is given for a net loss position, but no carry-back of losses is applied. Instead, credit is given for losses that would fall into the company's actual tax computation in a future year to the extent that they do not exceed the amount of deemed gains carried forward to that particular year. Net unrealised gains of directly held assets are not set off against any realised or deemed losses in the same fund, nor is credit given for net unrealised losses.

Allowance is made in determining the tax charge and provision for the time delay until the assets are assumed to be sold (for unrealised gains and losses) and between the date of calculation of the provision and the tax payment being made.

The tax rates applied in 2009 were as shown in 3.(9) below.

## 3.(9) Capital gains tax provisions for internal linked funds

Linked contracts in France and Hong Kong
The funds are not subject to capital gains tax.
Contracts with linked liabilities wholly reinsured

A full description of the capital gains tax provisions for these contracts can be found in the regulatory returns of the companies with which the linked liabilities are wholly reinsured.

## Other business written by PAC - life business

As described in 3.(8) above, in determining the price of units in the internal linked funds relating to life business, the value of assets is adjusted by a provision to reflect, on a fund by fund basis, the capital gains tax on indexed gains on the assets held within the funds. On certain funds some credit has been given in respect of chargeable losses. The provision for tax is calculated on a daily basis allowing for the movement in unrealised gains, after any indexation, and losses, using a tax rate reflecting the expected tax payable by the Company as these gains and losses are realised. For investments in non-loan relationship unit trusts and OEICs, the tax rate used allows for the deemed disposal of the investments at the end of the year and the spreading of the tax payable over 7 years.

The mathematical reserves make allowance for the losses for which no credit is currently given but are carried forward and offset against future gains or deemed disposals in future years.

## 3. Discretionary charges and benefits (continued)

The following percentages were deducted or provided for during the year:

|  | Realised gains/losses | Unrealised gains/losses |
| :--- | :---: | :---: |
| Equities and properties | $20 \%$ | $17 \%$ to $18.5 \%$ |
| Unit trusts and OEICS | $20 \%$ | $15 \%$ to $20 \%$ |
| Gilts and bonds | $20 \%$ | $20 \%$ |

For policies linked directly to unit trusts, a terminal deduction from benefits payable to policyholders is made in respect of any past or potential liabilities to corporation tax on chargeable gains relating to the units allocated to the policy.

## Other business written by PAC - pensions business

The funds are not subject to capital gains tax.

## 3.(10) Discounts and commission on buying and selling units

## Linked contracts in France

The company receives rebate commission of $0.6 \%$ per annum of funds under management from the Réactif and Carmignac external unit-linked funds. Corresponding rebate commission of $0.4 \%$ and $0.3 \%$ respectively is payable to distributing agents. Policyholders do not benefit from this rebate.

## Linked contracts in Hong Kong

No special terms apply when units are purchased from the unit trust manager.

## Business written by PAC

For investment in unit trusts and OEICs the Company receives a discount equal to the managers' initial charge. The internal linked funds also benefit from the rebate of the annual management charge. All of the benefits of annual management charge rebates are passed on to policyholders.

## Other

The unit pricing methods for all other contracts are described in the regulatory returns of the companies with which the linked liabilities are wholly reassured.

## 4. Valuation methods and bases (other than for special reserves)

## 4.(1) Valuation methods

Unless specified to the contrary in 4.(1). 6 on page 14 , the following valuation methods apply.
4.(1). 1 The mathematical reserve for assurances and annuities reported in Form 51 is the difference between the present value of the benefits and the present value of the future valuation net premiums (a net premium valuation (NPV) method), both calculated with provision for immediate payment of claims. Policies where negative reserves could arise have been valued individually and the mathematical reserves increased to zero so that no policy is treated as an asset. Otherwise, contracts with a common attained age and number of years to run to maturity or premium cessation are grouped together.

## 4. Valuation methods and bases (continued)

4.(1). 2 The mathematical reserve for accumulating with-profits business in SAIF and SAA, and for accumulating with-profits business previously written in SAL and in respect of new business on those products, is taken as the lower of:
(a) the value at the bid price, excluding terminal bonus, of the notional number of units allocated to policyholders, and
(b) the surrender or transfer value which, having regard to the duty to treat customers fairly, would be payable at the valuation date,
or, if greater, the value of the guaranteed liabilities, excluding final bonus, calculated on a gross premium bonus reserve method making no allowance for future annual bonus interest.

A further non-unit reserve is held in respect of mortality or morbidity, as appropriate, and expenses (including investment management expenses and other outgo associated with payments to third parties).

The comparison of the value of units allocated, the surrender or transfer value and the bonus reserve liability is carried out on a policy-by-policy basis.

For contracts where actuarial funding is used, the value of the units is net of the present value of future annual establishment charges, recurrent management charges or additional management charges that are used to recoup initial expenses.

The surrender or transfer value is taken as the accumulated fund, including final bonus and less a market value reduction where appropriate, at the valuation date, less any explicit charge that would apply on immediate surrender.

The non-unit reserves are adequate, on the valuation basis, to eliminate any future negative cash flows which would otherwise arise.

Section 32 Buy Out contracts include a specific provision for the Guaranteed Minimum Pension.
4.(1).3 The mathematical reserve for all other accumulating with-profits business is the lower of:
(a) the accumulated fund or the value at the bid price of the notional number of units allocated to policyholders, in both cases excluding final bonus, and
(b) the surrender or transfer value which, having regard to the duty to treat customers fairly, would be payable at the valuation date,
or, if greater, the value of the guaranteed liabilities, excluding final bonus, calculated on a gross premium bonus reserve method making no allowance for future annual bonus interest.

The comparison of the accumulated fund or value of units allocated, the surrender or transfer value and the bonus reserve liability is carried out on a policy-by-policy basis.

For contracts where initial expenses are recouped by an annual cancellation of units allocated in the first year, the number of units valued is reduced appropriately. In cases where a higher benefit would be payable on early death, due allowance has been made.

The surrender or transfer value is taken as the accumulated fund, including final bonus and less a market value reduction where appropriate, at the valuation date, less any explicit charge that would apply on immediate surrender.

## 4. Valuation methods and bases (continued)

4.(1).4 The mathematical reserve for property-linked contracts is the unit liability together with a non-unit liability (a "sterling reserve") to cover expenses, mortality, morbidity, options and guarantees and, where appropriate, capital gains tax.

The unit liability is based on the value at the date of valuation of the units allocated to policyholders. For contracts where actuarial funding is used, the value of the units is net of the present value of future annual establishment charges, recurrent management charges or additional management charges that are used to recoup initial expenses.

A non-unit liability for mortality and expenses is determined for each policy using a discounted cash flow method. For UK property-linked contracts in the NPSF the non-unit liability provides only for attributable expenses and an additional reserve for non-attributable expenses is calculated at a homogeneous risk group level as described in section 6.(6) on page 31. The total non-unit liability is adequate on the valuation basis to ensure that any future negative cash flows which would otherwise arise are eliminated, including ensuring that the reserve for an individual policy both currently and at any future date is at least equal to the surrender value. Provision is also made for tax on capital gains, for outstanding premiums and, where relevant, for premiums received in respect of policies not yet accepted.
4.(1).5 The mathematical reserve for RPI-linked annuities is determined without an explicit allowance for future increases in annuity payments, which is consistent with the treatment of the matching assets. The treatment of RPI-linked annuities which are subject to maximum and/or minimum percentage increases, is as follows:
(a) RPI-linked annuities subject to a minimum annual increase of 0\% and a maximum annual increase of 5\% are, for valuation purposes, treated as being identical to normal RPI-linked annuities.
(b) RPI-linked annuities subject to a minimum annual increase of 3\% and a maximum annual increase of 5\% are, for valuation purposes, treated as annuities with fixed $5 \%$ annual increases. They are, however, included in these returns as linked business.
4.(1). 6 Exceptions to the above:

Mathematical reserves for with-profits whole life assurances issued by the Company before 1978 are calculated on the assumption that each policy is converted on its next anniversary to an endowment assurance maturing after ten years, this being the most onerous option.

Specific provision is made for guaranteed early maturity options under Flexidowment and certain other miscellaneous assurances and deferred annuities in SAIF, and for early maturity options and annuity options under Flexipension (Series 1) contracts, by valuing them at the earliest maturity option date and holding additional reserves for maturity options thereafter.

Specific provision is made for guaranteed cash options under pension assurance and pure endowment contracts in SAIF by valuing the greater of the cash option and the present value of the annuity benefit.

Prudential Protection policies sold from 1 August 2000 and PruProtect Plan are valued using a gross premium valuation method. For policies written in the NPSF, prudent lapse assumptions are allowed for in reserve calculations. Policies are valued individually. Negative mathematical reserves for Prudential Protection policies are increased to zero so that no policy is treated as an asset. During 2009 a revised valuation methodology was introduced allowing negative reserves to be held for PruProtect Plan business. These negative reserves, and the positive cashflows expected to repay them, are offset against positive reserves required to fund negative cashflows emerging from NPSF annuity policies.

Mortgage Protection (Home Protect/Synergy Protect) policies are valued using a gross premium valuation method with no allowance for lapses. Any negative mathematical reserves are increased to zero.

Individual permanent health insurances are valued using the claims inception and disability annuity (CIDA) gross premium method.

## 4. Valuation methods and bases (continued)

The mathematical reserve for some individual deferred annuities is the accumulation of the premiums paid at the greater of a rate of interest guaranteed at the date of issue and a concessionary rate of interest declared for each year. The concessionary rates are the interest rates used in determining the benefits payable.

For non-profit immediate annuities and some deferred annuities the mathematical reserve is the value of future annuity payments plus the value of future expenses, allowing for expense inflation.

For deferred annuities where benefits include revaluation in deferment in line with RPI, followed by fixed escalation in payment, the revaluation in deferment is generally subject to a minimum annual increase of $0 \%$ and a maximum annual increase of $5 \%$. For valuation purposes these are treated as annuities with fixed $3.5 \%$ annual revaluation throughout the remaining deferred period followed by the actual fixed escalation in payment.

For single premium loan protection policies the reserve is the sum of the unearned premium reserve, any accrued profit commission and reserves for claims incurred but not reported and claims in payment. The unearned premium is net of initial commission but gross of all other loadings for expenses and profit. The reserve for regular premium loan protection policies is taken as three times the monthly premium. For the life and critical illness elements of loan protection business, a reserve is held to provide for the reduction of future tax relief on commission where premiums would be rebated based on prudent assumptions for future policy lapses. A check is carried out to assess whether the unearned premium reserve will be sufficient given claims experience to date and, if necessary, a further unexpired risk reserve is held.

For linked life annuities transferred from M\&G Pensions, the reserve is taken as the number of units payable per annum multiplied by an annuity factor and by the valuation unit price.

Policy reserves equal to the claim value are held for Industrial Branch whole life and endowment assurances where the policy benefit has not been claimed in the 15 years following the maturity date or (for whole life policies) the policy anniversary after age 90 . The policy reserves for endowment assurances also include interest between the maturity date and the valuation date.

## 4.(2) Valuation interest rates

Valuation interest rates are reported in the tables in Appendix 1 on page 46.
The FSA, on the application of the firm, made a direction under section 148 of the Financial Services and Markets Act 2000 in December 2008. The effect of the direction is to modify the provisions of INSPRU 3.1.35R and IPRU (INS) Appendix 9.3 in relation to fixed and index-linked immediate and deferred annuity business in the NPSF, so that a more appropriate rate of interest is used for assets taken in combination.

## 4.(3) Risk-adjustments to yields

## 4.(3). 1 Fixed interest securities

Yields have been adjusted to allow for the risk of default on fixed interest securities (other than approved securities assessed as risk-free by the firm's investment manager).

The allowance for defaults is calculated as the long-term expected level of defaults plus the long-term credit risk premium and an allowance for the impact of additional short-term defaults and credit rating downgrades reflecting the market conditions at the valuation date.

The long-term expected level of defaults is determined from data supplied by the firm's investment manager, which itself is based upon research carried out by one of the major rating agencies. This analysis, based on actual default experience over a 35 -year period, produces mean default rates according to credit quality and term to redemption.

## 4. Valuation methods and bases (continued)

## 4.(3). 1 Fixed interest securities (continued)

In the event of default it may be possible to recover some capital, especially if the loan is secured. The allowance for recovery (or partial recovery) of the loan varies according to the level of security and the following recovery rates are assumed:

|  | $\%$ |
| :--- | :---: |
| First Mortgage Debenture/Senior Secured | 75 |
| Senior Unsecured | 45 |
| Subordinated Debt | 20 |

To calculate the long-term default provision, the corporate bond portfolio is broken down according to credit rating and level of security. The default rate for each category is assumed to vary between $100 \%$ and $200 \%$ of the appropriate mean default rate, reduced by the expected recovery, plus a further amount for credit risk.

The default rates for each category of credit rating and level of security, in basis points per annum, are set out below:

| Term to <br> Redemption | Seniority | AAA | AA | A | BBB | BB | B <br> and <br> lower |
| :--- | :--- | ---: | ---: | ---: | ---: | ---: | :---: |
| 0 to 10 years | Senior Secured | 8.5 | 8.5 | 11.4 | 24.9 | 136.6 | 276.0 |
|  | Senior Unsecured | 18.6 | 18.6 | 25.0 | 54.8 | 300.4 | 607.3 |
|  | Subordinated | 27.1 | 27.1 | 36.4 | 79.7 | 437.0 | 883.4 |
| 10 to 20 years | Senior Secured | 6.4 | 6.4 | 10.2 | 28.5 | 97.4 | 196.8 |
|  | Senior Unsecured | 14.2 | 14.2 | 22.4 | 62.7 | 214.2 | 433.0 |
|  | Subordinated | 20.6 | 20.6 | 32.6 | 91.3 | 311.6 | 629.9 |
| 20 to 30 years | Senior Secured | 5.9 | 8.9 | 15.7 | 30.3 | 97.4 | 196.8 |
|  | Senior Unsecured | 13.0 | 19.6 | 34.5 | 66.7 | 214.2 | 433.0 |
|  | Subordinated | 18.9 | 28.5 | 50.2 | 97.0 | 311.6 | 629.9 |
| Over 30 years | Senior Secured | 5.6 | 10.1 | 17.8 | 30.4 | 97.4 | 196.8 |
|  | Senior Unsecured | 12.4 | 22.3 | 39.1 | 66.8 | 214.2 | 433.0 |
|  | Subordinated | 18.1 | 32.4 | 56.9 | 97.1 | 311.6 | 629.9 |

The long-term credit risk premium is determined as the excess over the best estimate level of default, of the $95^{\text {th }}$ percentile of historic cumulative defaults, reduced to allow for the excepted recovery of capital and subject to a minimum margin over best estimate of $50 \%$.

The allowance for short-term defaults and downgrades at 31 December 2008 was taken to be $25 \%$ of the increase in credit spreads over swaps that had occurred since 31 December 2006 based on a set of externally published indices weighted to reflect the assets held in each sub-fund. At 31 December 2009, the allowance for short-term defaults and downgrades has been updated as follows:

- The allowance for credit rating downgrades has been reduced to reflect the impact of downgrades incurred on the long-term assumptions.
- The allowance for short-term defaults has been increased by the experience profits emerging over the year.
- The allowance for short-term defaults has been adjusted to reflect changes in the asset mix over the year.


## 4. Valuation methods and bases (continued)

## 4.(3). 1 Fixed interest securities (continued)

Aggregate yields on the backing assets have been adjusted by the rates shown in the table below to allow for potential credit risk within the bond portfolios. These credit risk adjustments include margins for prudence. Further implicit margins for prudence are held in the difference between the risk adjusted yields and the relevant valuation interest rates.

| Sub-Fund | Credit risk adjustment <br> (in basis points) |
| :--- | :---: |
| With-Profits Sub-Fund | 94 |
| SAIF | 93 |
| Defined Charge Participating Sub-Fund | 83 |
| Non-Profit Sub-Fund (except annuities <br> accepted from PRIL) | 77 |
| Non-Profit Sub-Fund - annuities accepted <br> from PRIL | 71 |

## 4.(3). 2 Property

Yields on individual properties were subjected to a cap equal to the risk-adjusted yield on the Merrill Lynch over 10 years corporate bond index. The risk adjustment was calculated by applying the methodology described in 4.(3). 1 to the constituents of the index.

## 4.(3). 3 UK equities

Yields on individual equities were subjected to a cap equal to $90 \%$ of the yield on the Merrill Lynch over 10 years corporate bond index less a risk adjustment calculated by applying the methodology in 4.(3).1 to the constituents of the index.

## 4.(3). 4 Overseas equities

Yields on individual equities were subjected to the same cap used for property.

## 4.(4) Mortality rates

Mortality rates are reported in the tables in Appendix 2 on pages 48 to 50.
Specimen expectations of life for deferred and immediate annuities are shown in the table in Appendix 3 on pages 51 to 52 .

## 4.(5) Morbidity rates

Morbidity rates are shown in Appendix 4 on pages 53 to 57.

## 4.(6) Valuation expense bases

Expense assumptions except for the DCPSF are shown in Appendix 5 on pages 58 to 60 . Expenses for UK life products are assumed to attract tax relief at $20 \%$.

A third party administers the accumulating with-profits and unit-linked business in the DCPSF and the renewal expenses allowed for in the valuation are based on the actual tariff in the service agreement. The expenses for with-profits annuities in the DCPSF are met by the NPSF.

## 4. Valuation methods and bases (continued)

## 4.(7) Unit growth and inflation rates

4.(7). 1 Unit growth rates for linked business before management charges (net of tax for UK life business)

|  | 31 December 2009 | 31 December 2008 |
| :--- | :---: | :---: |
|  | $\%$ | $\%$ |
| UK - Life | 4.60 | 4.00 |
| UK - Pensions | 5.75 | 5.00 |
| Overseas - Hong Kong | 6.47 | 4.97 |
| Overseas - other | 4.50 | 4.50 |

4.(7). 2 Expense inflation assumptions and future increases in policy charges

|  | 31 December 2009 | 31 December 2008 |
| :--- | :---: | :---: |
|  | \% per annum | $\%$ per annum |
| UK | 4.25 | 3.50 |
| Overseas - Hong Kong | 2.50 | 2.50 |
| Overseas - other | 4.50 | 3.50 |

## 4.(8) Future bonus rates

The gross premium method is not used to value conventional with-profits business.
For unitised with-profits business the future annual bonus rates are assumed to be the higher of zero and any guaranteed rate.

## 4.(9) Lapse, surrender and paid-up assumptions

Prudent discontinuance assumptions are used only in the NPSF and only for some protection assurances on Form 51 and UK linked assurances and pensions on Form 53. We have considered only business in the NPSF to determine whether one product constitutes more than $50 \%$ of the business in force or whether to estimate a weighted average for several products.

| Product |  | Average lapse / surrender / paid-up rate for the policy years |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\begin{gathered} 1-5 \\ \% \end{gathered}$ | $\begin{gathered} 6-10 \\ \% \end{gathered}$ | $\begin{gathered} 11-15 \\ \% \end{gathered}$ | $\begin{gathered} 16-20 \\ \% \end{gathered}$ |
| Level term | lapse | 12.00 | 7.75 | 4.45 | 4.45 |
| Decreasing term | lapse | 12.00 | 7.75 | 4.45 | 4.45 |
| Accelerated critical illness | lapse | 12.00 | 7.75 | 4.45 | 4.45 |
| Income protection | lapse | 12.00 | 7.75 | 4.45 | 4.45 |
| UL savings endowment | surrender | 4.80 | 4.87 | 4.53 | 4.53 |
| UL target cash endowment | surrender | 19.20 | 9.10 | 4.40 | 4.40 |
| UL bond | surrender | 4.88 | 10.24 | 6.80 | 6.80 |
| UL bond | automatic withdrawals | $100 \%$ of current experience |  |  |  |
| UL individual pension regular premium | PUP | 19.20 | 4.80 | 4.80 | 4.80 |
| UL individual pension regular premium | surrender | 2.40 | 2.40 | 2.40 | 2.40 |
| UL group pension regular premium | PUP | 6.80 | 3.80 | 2.10 | 2.00 |
| UL group pension regular premium | surrender | 1.50 | 1.50 | 1.50 | 1.50 |
| UL individual pension single premium | surrender | 7.00 | 3.20 | 3.20 | 3.20 |

## 4. Valuation methods and bases (continued)

## 4.(10) Other material assumptions

There are no other material assumptions.

## 4.(11) Derivatives

In determining the long-term liabilities, allowance has been made for derivative contracts and contracts or assets having the effect of derivative contracts, by adjusting the existing assets attributed to the long-term business to reflect the underlying investment exposure.

SAIF and WPSF hold US dollar/sterling and euro/sterling currency forwards in connection with fixed interest securities denominated in US dollars and euros respectively. Taken in aggregate these combinations of currency forwards and fixed interest securities could be considered to be sterling assets and, as such, the yields should be comparable with sterling yields. To achieve this, the yields on the US dollar and/or euro assets are reduced if the US dollar risk-free yield curve or the euro risk-free yield curve respectively exceeds the sterling risk-free yield curve.

## 4.(12) Effect of change in methodology

The effect on the mathematical reserves at the current valuation date of the changes in valuation methodology arising from changes in INSPRU valuation rules effective from 31 December 2006 arises from an allowance for negative reserves on the valuation of protection business which reduces reserves by $£ 18 \mathrm{~m}$.

## 5. Options and guarantees

## 5.(1) Guaranteed annuity rate options

(a) The mathematical reserves for guaranteed annuity options are calculated assuming a $100 \%$ take-up of available options, and are determined as follows:

## Group cash accumulation contracts

For valuation purposes, it is assumed, in line with current practice, that if the guaranteed rates are higher than current rates on the valuation date, the guarantee will be revised with 6 months' notice from the next scheme renewal date. As a result, it is assumed that retirements for at most a further 18 months will be subject to the guarantee prior to its amendment. Any additional amount of annuity payable as a result of the guarantee is calculated assuming that the recent profile of retirements (age, sex and purchase money) continues. The resulting annuity is valued on the basis used for non-profit group deferred annuities.

## EPP Mark 1

The fund in respect of the first 5 years' premiums for each scheme is calculated. The additional amount of annuity payable as a result of the guarantee is then calculated by age groups assuming that the recent profile of retirements by age and sex continues (all assumed to be at an age at which a guarantee applies). The distribution of long-term interest rates at retirement was provided by the economic scenario generator used to derive market-consistent returns for use in the Peak 2 valuation and market consistent valuation interest rates appropriate to each scenario were used in deferment.

## 5. Options and guarantees (continued)

## SAIF products

Guaranteed annuity options apply to the following products:

- $\quad$ Flexipension (Series 1 and Series 2)
- Series 1 and Series 2 pension contracts written up to and including 26 July 2000 as increments to Flexipension (Series 1) contracts
- Individual Endowment/Pure Endowment - Series 1 and Series 2
- Individual Pension Account

For accumulating with-profits and linked business, an additional reserve is calculated by projecting the existing unit reserve with future premiums to the selected retirement date, and calculating the present value of the excess of the annuity guarantee over the projected fund value. The value of the annuity guarantee at retirement is calculated assuming a mortality basis in possession of 52\% PMA92/61\% PFA92 (c=2004) and a valuation interest rate of $3.5 \%$ p.a. in possession. For linked business, the projected fund is calculated assuming a fund growth rate of $7.125 \%$ (i.e. $8.0 \%$ less an annual management charge). The excess of the annuity guarantee over the projected fund value is discounted at $4.5 \%$ per annum. For accumulating withprofits business, no future bonus is allowed for. The projected fund is calculated assuming a fund growth rate of $4.0 \%$ (representing the $4.0 \%$ guarantee on SAIF pension policies). The present value of the excess of the annuity guarantee over the projected fund value is calculated at a discount rate of $3.15 \%$.

For conventional business, the benefit included in the net premium reserve is the greater of the cash benefit and the value of the annuity guarantee. The mortality basis in deferment is AM92/AF92 +1 for individual endowment/pure endowment and AM92/AF92-4 for Flexipension (Series 1), and in possession is $52 \%$ PMA92/61\% PFA92 (c=2004). The valuation interest rate in deferment is reduced by $0.6 \%$ to allow for mortality improvement in deferment. The valuation interest rate (before the $0.6 \%$ reduction for mortality improvement) is $4.5 \%$ in deferment and $3.5 \%$ in possession.

For the purpose of determining the valuation interest rate, swaptions held were assumed to be non-yielding.
The adequacy of the reserve has been verified using stochastic modelling.

An additional expense reserve of $£ 87.6 \mathrm{~m}$ is held to meet the cost of administering the future annuities in payment under the guaranteed annuity options in SAIF.
(b) See the table on the following page.

## 5. Options and guarantees (continued)

Table 5.(1)(b) - Guaranteed annuity rate options

| Product name | Basic reserve £m | Spread of outstanding durations | $\begin{gathered} \hline \text { Guarantee } \\ \text { reserve } \\ £ m \\ \hline \end{gathered}$ | Guaranteed annuity rate $\%$ for a male aged 65 | Are increments permitted? | Form of the annuity | Retirement ages |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| WPSF <br> Group cash accumulation | 514 | 0-18 months | 10 | 6.22 | No | Single life, monthly in advance, guaranteed for 5 years | 50-70 |
| Executive Pension Plan Mark 1 | 128 | $0-35 \mathrm{yrs}$ | 23 | 10.29 | Yes - in first 5 yrs of scheme | Single life, monthly in advance, without guarantee | $\begin{aligned} & 60-70(\mathrm{M}) \\ & 55-70(\mathrm{~F}) \end{aligned}$ |
| SAIF <br> Flexipension | 721 | $0-40$ yrs; average 10 yrs | 513 | 10.90 | No | Single life, yearly in arrears, without guarantee | 60-75 |
| Individual Endowment/Pure Endowment | 161 | $0-40$ yrs; average 10 yrs | 90 | 10.00 | No | Single life, monthly in advance, guaranteed for 5 years | $\begin{aligned} & 60-70(\mathrm{M}) \\ & 55-70(\mathrm{~F}) \end{aligned}$ |
| Individual Pension Account | 67 | $0-40$ yrs; average 10 yrs | 39 | 10.00 | No | Single life, monthly in advance, guaranteed for 5 years | $\begin{aligned} & 60-70(\mathrm{M}) \\ & 55-70(\mathrm{~F}) \end{aligned}$ |

If the form of annuity taken is different to that shown in the table, by concession an actuarially equivalent rate is given.

## 5. Options and guarantees (continued)

## 5.(2) Guaranteed surrender values and guaranteed unit-linked maturity values

5.(2). 1 There are no guaranteed unit-linked maturity values. The methods and bases used for guaranteed surrender values were as follows.

PruFund Investment Plan
This is a single premium whole-life accumulating with-profits contract written in the WPSF.
At the fifth anniversary of a premium payment, the smoothed fund value is increased by the value of additional units credited, if necessary, to give a total value equal to the guaranteed minimum fund value (the initial premium adjusted for withdrawals). Policies sold up to 31 July 2005 received this guarantee for no extra cost. After that date, policyholders choosing the guarantee pay an additional annual management charge for 5 years.

The reserve for the guarantee was set using the Black-Scholes option pricing formula and is $7.5 \%$ of the current fund value.

## PruFund as a Fund Link

This is a fund choice in a single premium whole-life accumulating with-profits contract written in the WPSF.

At the fifth anniversary of a premium payment, the smoothed fund value is increased by the value of additional units credited, if necessary, to give a total value equal to the guaranteed minimum fund value (the initial premium adjusted for allocation rates and withdrawals). Policyholders investing in the fund pay an additional annual management charge for 5 years.

Policyholders investing between 13 October 2008 and 31 July 2009 invested in the WPSF and have the option, at the fifth anniversary, to rollover their guarantee into a new 5 year guarantee (with the amount guaranteed equal to the fifth anniversary fund value). At this point the amount charged for the guarantee can be changed.

Policyholders investing after 6 July 2009 invest in the Cautious asset mix in the WPSF and do not have the option to rollover the guarantee at the fifth anniversary.

The reserve for the guarantee was set using the Black-Scholes option pricing formula and ranges between $1.5 \%$ and $3.0 \%$ of the current fund value for life business and is $3.5 \%$ of the current fund value for pensions business.

## Prudential Europe Vie

This is a single premium whole-life accumulating with-profits contract denominated in euros and written as overseas life assurance business in the DCPSF.

The surrender value at any time is guaranteed to be no less than $75 \%$ of the initial investment, net of the initial charge, after allowing for any partial surrender and withdrawals made.

As at 31 December 2009, the basic policy reserves exceeded the minimum guaranteed surrender values to the extent that no additional reserve was considered necessary.

## Hong Kong

Conventional with-profits contracts issued in Hong Kong have guaranteed surrender values based on a net premium valuation on specified bases. The valuation reserve is tested against the guarantee surrender value on a policy-by-policy basis and no additional reserve is required.
5. Options and guarantees (continued)

Single premium whole life accumulating with-profits contracts (PRUsaver series) issued in Hong Kong have guaranteed surrender values at the fifth policy anniversary. In addition, in 2008, a 10 year guarantee was added to policies which have passed their fifth anniversary at 30 October 2008. The reserve for the 5 -year guarantee is taken as the excess of the guaranteed capital over the surrender value discounted at a risk-free rate. The reserve for the 10 -year guarantee is the estimated market consistent price of the guarantee.

## 5. Options and guarantees (continued)

5.(2). 2 Guaranteed surrender values and unit-linked maturity values

| Product name | Basic reserve £m | Spread of outstanding durations | Guarantee reserve £m | Guaranteed amount £m | MVA free conditions | In force premiums £m | Are increments permitted? |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| WPSF |  |  |  |  |  |  |  |
| PruFund Investment Plan | 1,260 | $0-5 \mathrm{yrs}$ | 69 | Fund increased to initial premium (adjusted for | N/A | 1,210 | No |
| PruFund as a Fund Link Flexible Investment Plan | 891 | $3.75-5 \mathrm{yrs}$ | 19 | Fund increased to initial premium (adjusted for withdrawals) after 5 years | N/A | 858 | No |
| PruFund as a Fund Link Prudential Investment Plan | 17 | $3.75-5 \mathrm{yrs}$ | - | Fund increased to initial premium (adjusted for | N/A | 16 | No |
| PruFund as a Fund Link Flexible Retirement Plan \& Trustee Investment Plan | 164 | $4-5 \mathrm{yrs}$ | 6 | Fund increased to initial premium (adjusted for withdrawals) after 5 years | N/A | 152 | No |
| DCPSF |  |  |  |  |  |  |  |
| Prudential Europe Vie | 86 | Whole-Life | - | 55 | Regular withdrawals up to $5 \%$ per annum | 84 | Yes |
| Hong Kong |  |  |  |  |  |  |  |
| Better Life | 1,429 | Whole-Life | - | 1,004 | N/A | 132 | No |
| Better Life Assurance II | 282 | Whole-Life | - | 128 | N/A | 122 | No |
| Better Life Plus II | 16 | Whole-Life | - | 10 | N/A | 3 | No |
| With Profit Endowment - $1^{\text {st }}$ $\& 2^{\text {nd }}$ Series | 162 | 0-60 yrs; average 18 yrs | - | 143 | N/A | 5 | No |
| With Profit Whole Life - $1^{\text {st }}$ $\& 2^{\text {nd }}$ Series | 69 | Whole-Life | - | 69 | N/A | 3 | No |
| PruFlexLife | 83 | Whole-Life | - | 49 | N/A | 37 | No |

## 5. Options and guarantees (continued)

5.(2). 2 Guaranteed surrender values and unit-linked maturity values

| Product name | Basic reserve <br> $£ m$ | Spread of <br> outstanding <br> durations | Guarantee <br> reserve <br> $£ m$ | Guaranteed amount <br> $£ m$ | MVA free conditions | In force premiums <br> £m | Are <br> increments <br> permitted? |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Hong Kong - continued | 406 | $0-20$ yrs; <br> average 10 yrs <br> PRUsave Plus | - | 158 | No |  |  |
| PruLife | 67 | - | 18 |  |  |  |  |
| Whole-Life |  |  |  |  |  |  |  |
| Double Treasure Retirement | 33 | -24 yrs; |  |  |  |  |  |
| Income Plan - US\$ |  |  |  |  |  |  |  |

## 5. Options and guarantees (continued)

## 5.(3) Guaranteed insurability options

5.(3).1 There are a number of insurability options for which no additional reserve is considered necessary due to margins in the valuation mortality/morbidity bases. These options are:

## Amicable Savings Plan

Extension Option allows the term of the plan to be extended by a period of at least ten years from the original maturity date.

## Home Purchaser

Mortgage Alteration Option provides a limited facility, subject to conditions, to increase the life cover at ordinary rates of premium for the amount of any increase to the loan. If the term of the loan is also increasing, the term of the existing plan may also be extended to match the maturity date of the new plan.

## Maximum Investment Plan and Flexible Investment Plan (Ex M\&G Life)

Maximum Investment Plans have an option at maturity to extend the term for a further ten years or to convert to a whole life assurance with a nominal premium. Flexible Investment Plans have an option to extend the premium paying term.

## Investment Mortgage Plan (Ex M\&G Life)

There is an option to increase the sum assured without medical evidence if the policyholder increases his or her mortgage.

## Personal Security Plan (Ex M\&G Life)

Most policies have an option to increase the benefits each year in line with the Retail Prices Index without medical evidence either to age 65 or throughout life. Benefits other than Keyman Disability Benefit may also be increased by up to $20 \%$ without medical evidence on marriage, house purchase or birth of children. On some policies the death benefit can be increased without medical evidence following changes in Inheritance Tax legislation. If any of these options is exercised the Company recommends an appropriate increase in premium.

## Prudential Protection

Policies issued at ordinary rates include an option to increase cover without evidence of health in the event of mortgage increase, marriage, childbirth or adoption. The option can be exercised only before the life assured's $50^{\text {th }}$ birthday and within 3 months of the event occurring.

Prufund: Protection Plan
If the original policy was issued on normal terms, a new policy may be effected without evidence of health every 5 years before the attainment of age 50 for a sum assured of up to $50 \%$ of the sum assured under the original policy at the time each option is exercised. The option lapses if it is not exercised in whole or part. The new policy may be a with-profits whole life or endowment assurance.

## Prufund: Savings Plan

At the end of the premium payment term, premiums may be continued for a further 10 years. Under Series 1 plans there is also an option after 10 years to continue the policy for a further 10 years without further payment of premiums.

## Permanent Health Insurance

On payment of an additional premium, individual permanent health insurance policies issued in the United Kingdom between January 1982 and July 1988 carry an option to increase the original benefit by up to $25 \%$ (subject to the total benefit being no greater than $75 \%$ of earnings) on every fifth policy anniversary without medical evidence. This option cannot be exercised whilst incapacitated or within 10 years of the termination date of the policy.

Series A \& Premier Pensions plans with Waiver Benefit or Comprehensive Waiver Benefit
Long Term Care Double Cover benefit entitles the plan holder to buy a Long Term Care Bond from Prudential International (or another contract approved by the PAC Actuary as a reasonable equivalent) at ordinary rates at retirement. Personal Pension and Group Personal Pension Plan holders with Waiver Benefit may increase the contributions covered by the benefit with no additional underwriting provided the increased contribution is no more than twice the previous contribution.

## 5. Options and guarantees (continued)

## Mortgage Protection (Home Protect)

Policies issued at ordinary rates may include an option to increase cover without evidence of health in the event of mortgage increase, marriage, childbirth or adoption. The option can be exercised only before the life assured's 50th birthday and within 3 months of the event occurring. The increase can be up to $50 \%$ of the benefit for the mortgage option or $25 \%$ for the other options both subject to maxima of $£ 150,000$ (life and critical illness) or $£ 1,000$ a month (premium waiver and mortgage payment benefits).

## Mortgage Protection (Ex M\&G Life)

There are options for each life to continue cover for a further 5 years up to a date specified at the outset of the original cover, and, if the life assured increases his mortgage, to increase the benefit by the lower of $50 \%$ of the increase or $£ 50,000$ on rates in force at the time. Neither option requires medical evidence. Two schemes incorporate options for each life to add Critical Illness, Waiver of Contribution and PHI benefits. These options are offered subject to provision of satisfactory medical evidence.

## PruProtect Plan

The Guaranteed Insurability Benefit gives the planholder the option to increase Life Cover, Serious Illness Cover, Disability Cover or Income Protection Cover under certain circumstances without providing any evidence of health. Any increase in cover is subject to the applicable maximum cover limits.

## Other

Some UK policies issued between September 1975 and April 1984 and some policies issued in Hong Kong contain an option, in return for an additional premium, to effect further assurances without evidence of health.

Some assurance policies contain options to effect further assurances without evidence of health at specific ages, on marriage or on the adoption or birth of a child. Under some assurances in Hong Kong, a guaranteed insurability option of up to five times the basic sum assured is offered at the maturity of the pure endowment part of the assurance.

Some assurance policies issued between October 1973 and July 1979 on the life of a parent or guardian for the benefit of a child contain an option to permit the child, after attaining a specified age, to effect a whole life or endowment assurance without evidence of health for a sum assured not exceeding four times that of the original policy. On the marriage of a female child, the option may be exercised on her husband's life if he is under age 45.

Some individual level temporary assurance policies contain an option, in return for an additional premium, to convert wholly or partially to a whole life or endowment assurance for a sum assured not exceeding the original sum assured.

Some individual temporary assurance policies contain an option to renew the assurance every 5 or 10 years without evidence of health subject to a maximum age at renewal of 55 ( 65 in Hong Kong). The sum assured under this option may be increased by up to one half of the sum assured remaining at the end of the 5 or 10 year period. There is also an alternative option to convert at the end of the term to any other Ordinary Branch single life assurance, for a sum assured of up to $150 \%$ of that under the temporary assurance policy.

Under a few group life assurance policies, premium rates are guaranteed for employees in respect of current levels of sum assured. Group life assurance premium rates are generally guaranteed for 2 or 3 years.

Employees leaving group pension schemes, where it has not been possible to remove the option, may replace any temporary life assurance cover with an individual assurance at the relevant rates of premium then in force, based on the original underwriting decision. The continuation option was withdrawn for new schemes during 1988.

## 5. Options and guarantees (continued)

5.(3). 2 Conversion and renewal options where the total sum assured exceeds $£ 1$ bn are as follows:

| Product name | In force premiums (£m) | Sum assured (£m) | Description of option | Guarantee Reserve (fm) |
| :---: | :---: | :---: | :---: | :---: |
| Personal Pension Life Cover | 5.9 | 1,800 | If a member becomes ineligible to continue premiums under a Pensions Term Assurance, they have an option for one month to maintain life cover with a replacement policy, issued without further medical evidence, which has term and sum assured no greater than those under the Scheme benefit when it was cancelled. Any extra premiums on the original policy will also apply on the replacement policy. | Implicit in the basic reserve |

## 5.(4) Other guarantees and options

## 5.(4).1 FSA personal pensions review

The mathematical reserve for guarantees issued under the FSA personal pensions review is calculated by valuing the pension scheme benefits to which the policyholder would otherwise have been entitled and subtracting the value of the personal pension policy. Where relevant, each policyholder is assumed to be in a scheme providing an RPI-linked pension of two thirds of final earnings after 40 years' service with a $50 \%$ continuation to a surviving spouse and equivalent death-in-service benefits.

Stochastic modelling is used to calculate the reserves for these guarantees. The distributions of investment returns over the remaining period to retirement and long-term interest rates at retirement were provided by the economic scenario generator used to derive market-consistent returns for use in the Peak 2 valuation. In deferment, allowance is made where appropriate for salaries to increase by $2 \%$ per annum in excess of RPI and by a further $1 \%$ per annum up to age 50 .

The basic policy reserve held at 31 December 2009 was $£ 328 \mathrm{~m}$ and the guarantee reserve was $£ 446 \mathrm{~m}$.

## 5.(4).2 Guaranteed Minimum Pensions (GMPs) under Section 32 contracts

Under early versions of Section 32 contracts, some or all of the GMP was secured by a non-profit deferred annuity. Those benefits are valued using the methodology described in paragraph 4.(1).1 (page 12). Any remaining GMP was covered by the excess premium not required to purchase the non-profit deferred annuity and this was invested in a cash accumulation or with-profits fund.

Under later versions of Section 32 contracts, the whole of the GMP was covered by the with-profits fund.

The reserves for that part of the GMP covered by with-profits have been calculated using stochastic modelling. The distributions of investment returns over the remaining period to retirement and long-term interest rates at retirement were provided by the economic scenario generator used to derive market-consistent returns for use in the Peak 2 valuation.

The guarantee reserve for a small number of accumulating with-profits contracts (ex-SAL and SAIF) was calculated by a deterministic method, being the excess value on a policy-by-policy basis of the GMP liability (allowing for revaluation) over the basic policy reserve. The GMP liability is valued at a discount rate of 4\%, with future increases in National Average Earnings assumed to be at 5\% per annum.

The total basic reserve for Section 32 contracts is $£ 264 \mathrm{~m}$ and the guarantee reserve was $£ 263 \mathrm{~m}$.

## 5. Options and guarantees (continued)

## 5.(4). 3 PLCE100 - Mortgage endowments

PLCE100, a conventional with-profits low cost endowment assurance written in the WPSF, was designed to repay a mortgage if annual bonuses continued at the rate current at the date of issue. The policies included a provision that if the declared bonus rate were to fall, causing the projected claim value to fall, then the sum assured and premium would be increased accordingly. The Company has guaranteed that, once the premium has been increased to twice its initial level, and provided that the policy has not been assigned absolutely to a third party, then the maturity value will not be less than the mortgage the policy was intended to cover.

The guarantee reserve is determined by projecting current benefits to maturity assuming $4 \%$ growth and discounting any shortfall against the mortgage amount at $3 \%$. If policies are not at their maximum premium level, allowance is made for the present value of additional premiums that could be payable up to twice the initial level.

The basic reserve for these policies is $£ 34 \mathrm{~m}$ and the guarantee reserve is $£ 0.5 \mathrm{~m}$.

## 5.(4).4 Home Purchaser (Second Series)

Home Purchaser (Second Series) is a mortgage endowment product written in SAIF, for which the company has undertaken to guarantee that the maturity value will be no less than the original target amount if the experienced investment growth rate is greater than or equal to the growth rate assumption selected by the investor at outset.

The guarantee reserve is calculated based on a sample of policies by projecting policy benefits to maturity and discounting any shortfall against the mortgage amount at a valuation rate of $3 \%$. The benefits were projected to maturity using a range of future investment returns and a return of $6.5 \%$ p.a. was chosen as a prudent assumption. Prudent allowance was made for an immediate rise/fall in policy values.

The basic reserve for these policies is $£ 524 \mathrm{~m}$ and the guarantee reserve is $£ 1.4 \mathrm{~m}$.

## 6. Expense reserves

6.(1) Expense loadings of $£ 557$ million, grossed up for tax, are expected to arise during the 12 months from the valuation date. This comprises $£ 260$ million of explicit and $£ 297$ million of implicit loadings.

The following table shows a breakdown of the expense loadings by homogeneous risk group where some expenses are treated as non-attributable and total expense loadings for products where all expenses are treated as attributable.

| Homogeneous risk group | Implicit <br> allowances | Explicit <br> allowance <br> (investment) | Explicit <br> allowance <br> (other) | Non- <br> attributable <br> expenses | Total |
| :--- | :---: | :---: | :---: | :---: | :---: |
|  | $£ \mathrm{fm}$ | $£ \mathrm{~m}$ | $£ \mathrm{~m}$ | $£ \mathrm{~m}$ | $£ \mathrm{~m}$ |
| Individual unit-linked life <br> single premium business | - | 5.4 | 1.9 | 2.9 | 10.3 |
| Individual unit-linked life <br> regular premium business | - | 1.1 | 0.8 | 1.2 | 3.1 |
| Individual unit-linked <br> pensions single premium <br> business | - | 3.2 | 0.8 | 1.2 | 5.2 |
| Group unit-linked pensions <br> single premium business | - | 0.4 | 0.1 | 0.2 | 0.7 |
| Individual unit-linked <br> pensions regular premium <br> business | - | 2.3 | 1.8 | 2.5 | 6.6 |
| Group unit-linked pensions <br> regular premium business | - | 1.2 | 0.6 | 0.8 | 2.6 |
| Stakeholder | - | 2.8 | 0.8 | 6.9 | 10.6 |
|  |  |  |  | 187.6 | $\mathrm{n} / \mathrm{a}$ |
| All expenses attributable | 297.1 | 33.5 |  | 518.2 |  |
|  | 297.1 | 50.0 | 194.5 | 15.7 | 557.3 |
| Total |  |  |  |  |  |

6.(2) Implicit allowances are calculated as follows:

- For contracts valued using the net premium method, $90 \%$ of the excess of office over net premiums for Ordinary Branch with-profits contracts and $100 \%$ of the excess for Industrial Branch with-profits contracts and all non-profit contracts.
- A margin between the risk-adjusted yields on assets in the WPSF and DCPSF $(0.169 \%)$ and the NPSF ( $0.07 \%$ for direct written annuities in payment, $0.06 \%$ for annuities accepted from PRIL, $0.1 \%$ otherwise) and that required to support the valuation interest rates to cover fund management expenses.
- A margin in property yields to cover maintenance costs and leases.
6.(3) Maintenance expenses shown at line 14 of Form 43 are $£ 410$ million. The total expense loadings expected to arise in 2010 as calculated in 6.(1) exceed this amount due to the inclusion of prudent margins in the valuation expense assumptions.
6.(4) A new business expense overrun reserve of $£ 11$ million is held in the NPSF. The reserve is calculated on a prudent basis as the excess, if any, of the present value of expenses and commission expected to arise in respect of business written in the 12 months following the valuation date over the present value of the charges available to cover such expenses.


## 6. Expense reserves (continued)

6.(5) In the first instance, expense reserves are calculated on the assumption that Prudential's UK insurance operations will continue to write new business indefinitely and hence that there will be no loss of economies of scale.

For business valued by the net premium method, under which there is no explicit allowance for expenses, the need for a maintenance expense overrun reserve is tested by comparing the present value of the allowances described in sub-paragraph (2) above with the present value of the expenses and commission expected to be incurred over the remaining lifetime of the business. The calculation of the value of future expenses allows for inflation of $4.25 \%$ p.a. An additional reserve is held if the present value of expenses and commission exceeds the present value of the expense allowances. At 31 December 2009 a reserve of $£ 62$ million is held in the WPSF and $£ 65$ million in SAIF.

For all other business, the expense loadings over the remaining lifetime of the contracts in force at the valuation date are included in the reserves reported in Forms 50.

In order to allow for the possibility that the firm will cease to transact new business twelve months after the valuation date, all expense provisions are recalculated on the assumption that, over a two year period, unit costs would be reduced by $15 \%$ (except in SAIF, where no reductions are assumed) and that thereafter the loss of economies of scale would result in overall expenses being cut more slowly than the rate at which policies run off. In addition the costs associated with closing to new business, such as redundancy payments and the costs of terminating management agreements, are estimated. If the sum of the closed fund expense reserves and termination costs exceed the open fund expense reserve, then the excess is held as an additional reserve, to the extent that this excess cannot be offset by projected surplus on prudent assumptions from existing business. At 31 December 2009, an additional reserve of $£ 229$ million is held in the WPSF, $£ 17$ million in SAIF and $£ 15$ million in the NPSF.
6.(6) An additional reserve of $£ 7.8$ million is held in the NPSF to cover non-attributable expenses. The additional reserve for each homogeneous risk group is calculated as the present value of all future expenses less charges, subject to a maximum of the non-attributable expenses, for the policies in that homogeneous risk group. All future charges and expenses are projected allowing for lapses on a prudent basis. Any future valuation strain is removed at the homogeneous risk group level.

The following table shows the reserve for each homogeneous risk group.

| Homogeneous risk group | Additional reserve |
| :--- | :---: |
|  | $\mathbf{~} \mathbf{~}$ |
| Individual unit-linked life single premium business | - |
| Individual unit-linked life regular premium business | 2.8 |
| Individual unit-linked pensions single premium business | - |
| Group unit-linked pensions single premium business | - |
| Individual unit-linked pensions regular premium business | - |
| Group unit-linked pensions regular premium business | - |
| Stakeholder | 5.0 |
|  |  |
| Total | 7.8 |

## 7. Mismatching reserves

7.(1) and (2) No deposits were received from reinsurers in 2009.

An analysis of the mathematical reserves (other than liabilities for property-linked benefits) and backing assets by currency is as follows:

| Currency of liability | Mathematical reserves (excl. property-linked) in $£ \mathrm{~m}$ | \% of reserves | Value of backing assets in currency: |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | £ | US\$ | HK\$ | Euro | Total |
| £ | 63,199 | 90.7 | 63,199 | - | - | - | 63,199 |
| US\$ | 3,396 | 4.9 | - | 3,396 | - | - | 3,396 |
| HK\$ | 1,912 | 2.7 | - | - | 1,912 | - | 1,912 |
| Euro | 1,183 | 1.7 | - | - | - | 1,183 | 1,183 |
| Total | 69,689 | 100.0 |  |  |  |  |  |

7.(3) No reserve is held for currency mismatching.
7.(4) to (6) Not applicable for a realistic firm.
7.(7) The NPSF held a reserve of $£ 56.6 \mathrm{~m}$ in respect of the test for cashflow mismatching under INSPRU 1.1.34R(2).

This reserve was set at a level that was sufficient to ensure that it covered the result of projecting (i) the riskadjusted cashflows of the assets backing the liabilities and (ii) the future liability payments on the valuation assumptions. In carrying out this test, the asset cashflows have been adjusted to reflect an immediate rate of default equivalent to the short-term element of the company's default assumptions followed by a longer-term rate of default equivalent to 33 basis points per annum for directly written business and 36 basis points per annum for accepted business.

In determining the risk-adjusted cashflows of the assets, it has been assumed that in any year where asset income exceeds liability outgo, the excess is invested in a cash asset, and this cash asset is assumed to accumulate at $97.5 \%$ of the maximum reinvestment rate specified in INSPRU 3.1.45R. In any year when asset income is insufficient to meet liabilities, the cash reserve is used to meet the shortfall. In the event that the cash reserve is reduced to zero, then the shortfall is assumed to be borrowed at a rate $2 \%$ higher than $97.5 \%$ of the maximum reinvestment rate.

## 8. Other special reserves

Other special reserves in excess of $£ 10$ million are as follows:

Reserves totalling $£ 171$ million ( $£ 93$ million in the WPSF, $£ 70$ million in SAIF and $£ 8$ million in the NPSF) are held to cover the potential costs of compensating policyholders, and the associated expenses, in respect of complaints about mortgage endowment policies. The reserves are calculated by making prudent assumptions about the number of future complaints received, the proportion of these where compensation will be paid, and the average amount of compensation.

Reserves totalling $£ 149$ million ( $£ 117$ million in the WPSF, $£ 20$ million in SAIF and $£ 12$ million in the NPSF) are held to cover potential additional liabilities in respect of systems and administration errors. The methods used to calculate the reserves vary depending on the nature of the error and take into account data sources alternative to policy valuation systems.

Reserves totalling $£ 56$ million ( $£ 35$ million in the WPSF, $£ 7$ million in SAIF and $£ 14$ million in the NPSF) are held in respect of the UK life insurance operation's share of additional contributions expected to be required to fund future defined benefits in the Prudential Staff Pension Scheme and the Scottish Amicable Pension Scheme, taking into account the expected run-off of the schemes' membership.

Reserves totalling $£ 489$ million ( $£ 349$ million in the WPSF, $£ 52$ million in SAIF, $£ 10$ million in DCPSF and $£ 78$ million in the NPSF) are held to cover general contingencies, taking into account internal assessment of operational risk.

Reserves totalling $£ 34$ million ( $£ 26$ million in the WPSF, $£ 8$ million in the NPSF) are held in respect of extra premiums on individual Hong Kong policies where an extra premium is charged to cover occupational or other extra risks. One half-year's premium is reserved to cover the unexpired extra risk at the valuation date for unit-linked business, while extra premiums accumulated from inception at the valuation interest rate are reserved for other business (with-profit and non-profit non-linked).

A reserve of $£ 29.7$ million is held in the NPSF for the tax credit on losses in the unit-linked funds which will be carried forward and offset against gains in future years.

A reserve of $£ 25$ million is held for the Prudential Personal Retirement Plan (PPRP), a conventional withprofits deferred annuity product written in the WPSF, in respect of any additional cost of policyholders retiring later than age 65 , taking into account current late retirement enhancement factors and a prudent assessment of the distribution of late retirements by age and sex.

Reserves totalling $£ 11$ million ( $£ 5$ million in the WPSF, $£ 5$ million in SAIF and $£ 1$ million in the NPSF) are held in respect of claims that have been incurred but that are not yet reported. These reserves are calculated as a percentage of the retrospective claim amounts based on a prudent assumption about the delay in notification of claims.

## 9. Reinsurance

(1) No premiums were paid in 2009 in respect of reinsurance business ceded on a facultative basis to reinsurers not authorised to carry on business in the United Kingdom.
(2) The reinsurance treaties shown in the table below meet the FSA criteria for being reported in this section and were in force as at 31 December 2009.

## 9. Reinsurance (continued)

Reinsurance treaties:

| (d) Reinsurer | (e) Nature of cover | $\begin{gathered} \text { (f) Premiums } \\ £^{\prime} 000 \end{gathered}$ | (h) Open / Closed | (j) Reserves Ceded £'000 | (k) Retention |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Barclays Global Investors Pensions Management Ltd | Linked benefits under GPP3, GPP4, MPP3, stakeholder pensions and the Company Pension Transfer Plan (Bulk Section 32 Buy-Out) where the member has chosen to invest in BGIPM's funds, on a $100 \%$ quota share basis. The assets under this treaty are covered by a pari passu charge. | Nil | Open | 18,392 | Nil |
| Aberdeen Asset Management PLC | Linked benefits under unit linked pension contracts where the member has chosen to invest in AAM's funds, on a $100 \%$ quota share basis. The assets under this treaty are covered by a pari passu charge. | 2,065 | Open | 23,960 | Nil |
| Legal \& General Assurance (Pensions Management) Limited | Linked benefits under GPP4, MPP3, stakeholder pensions and the Company Pension Transfer Plan (Bulk Section 32 Buy-Out), where the member has chosen to invest in L\&GA(PM)'s funds, on a $100 \%$ quota share basis. | 9,271 | Open | 121,678 | Nil |
| Munich Reinsurance Company UK Life Branch | Individual UK term insurance issued before 1 January 2000 in surplus form on an original terms basis. | 5,850 | Closed | 24,647 | Nil retention, 100\% reinsured |

## 9. Reinsurance (continued)

| (d) Reinsurer | (e) Nature of cover | $\begin{gathered} \text { (f) Premiums } \\ £^{\prime} 000 \end{gathered}$ | (h) Open / Closed | (j) Reserves Ceded £'000 | (k) Retention |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Munich Reinsurance Company UK Life Branch | Life, critical illness and disability cover sold through arrangements with NDF Administration Limited and Synergy Financial Products Limited. This treaty also includes a financing arrangement. <br> (i) Payments to the reinsurer are a proportion of the reinsurance premium in benefit years three, four, five and six for all in-force benefits. If a policy exits then payments to the reinsurer cease. The total amount paid to the reinsurer in respect of an individual policy is independent of the amount originally advanced by the reinsurer and depends on how long each policy remains in force. There is therefore no undischarged obligation. <br> (ii) Allowance has been made for the repayment of this financing in calculating the level of the reserves required. | 2,132 | Open | 4,968 | Mortality benefits and critical illness (per life) $33.33 \%$ up to $£ 50,000$ Nil above $£ 50,000$ <br> Sickness and accident (per life per month) $33.33 \%$ up to $£ 625$ Nil above $£ 625$ |
| Prudential Annuities Limited* | United Kingdom non-profit pensions annuities in payment on a $100 \%$ quota share basis. This is to a member of the Prudential Group and is covered by a pari passu charge on assets. | $\begin{array}{r} -1,321 \\ \text { (premium } \\ \text { rebate) } \end{array}$ | Closed | 7,157,019 | Nil |
| Prudential Holborn Life Limited * | United Kingdom linked benefits under Prudence Bond, Prudence Managed Bond and Prudence Distribution Bond on a $100 \%$ quota share basis. This business is covered by a pari passu charge on assets. | 123,053 | Open | 1,602,011 | Nil |
| Prudential Pensions Limited * | United Kingdom linked benefits under Group AVC, MPP2, GPP1/2/3/4, SHP and PTP contracts on a $100 \%$ quota share basis. This is to a member of the Prudential Group and is covered by a pari passu charge on assets. | 440,920 | Open | 2,564,333 | Nil |
| Prudential Retirement Income Limited * | Two related treaties for annuity liabilities for relevant annuities issued by PAC. One covers annuities written from 1 July 2004 to 25 November 2004 and the other covers annuities written after 25 November 2004. Under the terms of the agreement Prudential Retirement Income Limited will meet the liability of the Company to pay the benefits due under the reassured policies. This business is covered by a pari passu charge on assets. | 961,346 | Open | 4,560,863 | Nil |

## 9. Reinsurance (continued)

| (d) Reinsurer | (e) Nature of cover | $\begin{gathered} \text { (f) Premiums } \\ £^{\prime} 000 \end{gathered}$ | (h) Open / Closed | (j) Reserves Ceded £'000 | (k) Retention |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Prudential Retirement Income Limited * | Two related treaties for annuity liabilities for relevant annuities issued by the Scottish Amicable Insurance Fund (SAIF). One covers annuities written before 1 January 2006. The other covers annuities written from 1 January 2006 onwards. | 2,064 | Open | 462,712 | Nil |
| Prudential Holborn Life Limited * | Permanent Health Insurance claims in payment at 31 December 2008 | Nil | Closed | 23,067 | Nil |
| Suffolk Life Annuities Limited | Self-Invested Personal Pension (SIPP) option under the Flexible Retirement Plan policy. | 6,444 | Open | 19,864 | Nil |
| Swiss Re Europe S.A., UK branch | Two treaties covering unit-linked bond business on a quota share basis. | Nil | Closed | 51,332 | For certain Flexible Bonds linked to the Extra Yield fund, $89 \%$ of all unit-linked liabilities are reinsured <br> For Managed Income Bonds linked to Managed Income (Series A) units, $90 \%$ of all unit-linked liabilities are reinsured <br> For Managed Income Bonds linked to Managed Income (Series B) units, $25 \%$ of all unit-linked liabilities are reinsured |

9. Reinsurance (continued)

| (d) Reinsurer | (e) Nature of cover | $\begin{gathered} \text { (f) Premiums } \\ £^{\prime} 000 \end{gathered}$ | (h) Open <br> / Closed | (j) Reserves Ceded £'000 | (k) Retention |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Swiss Re Europe S.A., UK branch | Three treaties covering Prudential Protection business over consecutive periods on a quota share basis. The financing agreements with Swiss Re detailed below are connected to this business. | 9,802 | Closed | 43,876 | Mortality Benefits only (per life) <br> $10 \%$ up to $£ 50,000$ <br> Nil above $£ 50,000$ <br> Mortality plus CI and stand alone CI Benefits (per life) <br> $10 \%$ up to $£ 50,000$ <br> Nil above $£ 50,000$ <br> Mortgage Payment Benefits (per life per annum) <br> $25 \%$ up to $£ 5,000$ <br> Nil above $£ 5,000$ <br> Waiver of Premium <br> Benefits (per life per annum) <br> $25 \%$ up to $£ 5,000$ <br> Nil above $£ 5,000$ |

9. Reinsurance (continued)

| (d) Reinsurer | (e) Nature of cover | $\begin{gathered} \text { (f) Premiums } \\ £^{\prime} 000 \end{gathered}$ | (h) Open / Closed | (j) <br> Reserves Ceded £'000 | (k) Retention |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Swiss Re Europe S.A., UK branch | Two financing arrangements in respect of acquisition costs incurred in writing Prudential Protection contracts with a policy proposal date: <br> - prior to 31 December 2002, an acceptance date in 2002 and a policy issue date prior to 31 March 2003 <br> - in the range 6 May 2002 to 30 June 2003, a policy issue date in the range 1 January 2003 to 31 December 2003 <br> (i) Payments to the reinsurer are a proportion of the difference between the office premium and the reinsurance premium net of an allowance for renewal expenses for the time that the policy remains in force. If a policy lapses within the initial commission period the Company pays the reinsurer the amount of the indemnity commission that can be clawed back at that time. If a policy lapses outside of the initial commission period or becomes a mortality or morbidity claim at any time then payments to the reinsurer cease. The total amount paid to the reinsurer in respect of an individual policy is independent of the amount originally advanced by the reinsurer and depends on how long each policy remains in force. There is therefore no undischarged obligation. <br> (ii) Allowance has been made for the repayment of this financing in calculating the level of the reserves required for these contracts. | 2,246 | Closed | - | N/A |

9. Reinsurance (continued)

| (d) Reinsurer | (e) Nature of cover | $\begin{gathered} \text { (f) Premiums } \\ £^{\prime} 000 \end{gathered}$ | (h) Open / Closed | (j) Reserves Ceded £'000 | (k) Retention |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Hannover Rückversicherung AG | Financing and quota share risk reassurance arrangement in respect of Flexible Protection and PruProtect Plans. <br> (i) Payments to the reinsurer are a proportion of the office premium for the time that the policy remains in force. If a policy lapses within the initial commission period the Company pays the reinsurer a proportion of the amount of the indemnity commission that can be clawed back at that time. If a policy lapses outside of the initial commission period or exits due to a mortality claim at any time then payments to the reinsurer cease. The total amount paid to the reinsurer in respect of an individual policy is independent of the amount originally advanced by the reinsurer and depends on how long each policy remains in force. There is therefore no undischarged obligation. <br> (ii) Allowance has been made for the repayment of this financing in calculating the level of the reserves required for these contracts. | 2,109 | Closed | - | Mortality Benefits (per life) <br> $50 \%$ up to $£ 150,000$ <br> Nil above $£ 150,000$ <br> Serious Illness Cover and <br> Disability Cover <br> $50 \%$ up to $£ 150,000$ <br> Nil above $£ 150,000$ <br> Waiver of Premium $50 \%$ up to $£ 15,000$ p.a. <br> Nil above $£ 15,000$ p.a |

(g) There were no deposit back arrangements under the above treaties.
(i) There are no "undischarged obligations of the insurer". Premiums are payable only if the gross business remains in force.
(1) All of the above companies are authorised to carry on insurance business in the United Kingdom.
(m) An asterisk (*) denotes companies connected to the cedant.
(n) In general the treaties are exposed to the credit risk of the reinsurers, against which a reserve is held.
(o) The net liability includes no allowance for the refund of any reinsurance commission.

## 10. Reversionary (or annual) bonus

Table 1 SAIF

| Bonus series | Mathematical reserves | Annual bonus rate for |  | UWP unit price increase during the year | Guaranteed bonus rate during the year |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 2009 | 2008 |  |  |
|  | £m | \% | \% | \% | \% |
| Principal | 2,391 | 0.80/1.50 | 0.80/1.50 |  |  |
| Flexidowment (Second Series) | 239 | 0.70/1.70 | 0.70/1.70 |  |  |
| Net With Profits Fund 1 | 844 | 2.00/2.00 | 2.00/2.00 |  |  |
| Flexipension (First Series) | 648 | 0.40/0.90 | 0.40/0.90 |  |  |
| Superannuation (Second Series) | 154 | 0.40/0.90 | 0.40/0.90 |  |  |
| Group | 101 | 0.90 | 0.90 |  |  |
| Exempt With Profits Funds 1 | 101 | 4.00 | 4.00 | 4.00 | 4.00 |
| Exempt With Profits Funds 2 | 1,149 | 4.00 | 4.00 | 4.00 | 4.00 |
| Exempt With Profits Funds 3A* | 1,195 | 4.00 | 4.00 | $4.00{ }^{*}$ | $4.00{ }^{*}$ |
| Exempt With Profits Funds 3B** | 430 | 4.00 | 4.00 | $4.00{ }^{*}$ | $4.00{ }^{*}$ |
| Exempt With Profits Funds $4 *$ | 14 | 4.00 | 4.00 | $4.00{ }^{*}$ | $4.00{ }^{*}$ |

* Bonus rate for investments made after 1 January 2006 is $2.75 \%$. Guaranteed bonus applies to pre 2006 investments only.


## 10. Reversionary (or annual) bonus (continued)

Table 2 WPSF - UK and, where appropriate, Guernsey, Jersey, and Isle of Man

| Bonus series | Mathematical reserves | Annual bonus rate for |  | UWP unit price increase during the year | $\begin{gathered} \text { Guaranteed } \\ \text { bonus rate } \\ \text { during the year } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 2009 | 2008 |  |  |
|  | £m | \% | \% | \% | \% |
| With-profits Industrial Branch assurances issued before 1 July 1988 | 686 | 1.10/2.30 | 1.10/2.30 |  |  |
| Other conventional with-profits assurances | 2,721 | 1.20/2.50 | 1.20/2.50 |  |  |
| Individual with-profits deferred annuities | 4,357 | 0.25/0.50 | 0.25/0.50 |  |  |
| UWP life assurance bonds |  |  |  |  |  |
|  |  |  |  |  |  |
| Prudence Bond - optimum return | 8,129 | 3.00 | 3.50 | 3.00 |  |
| Prospects Bond - optimum return | 26 | 2.60 | 3.10 | 2.60 |  |
| Prudence Bond - optimum bonus | 596 | 3.75 | 4.25 | 3.75 |  |
| Prospects Bond - optimum bonus | 18 | 3.35 | 3.85 | 3.35 |  |
| Prudential Investment Bond (accounts $£ 6,000$ and over) | 2,666 | 3.00 | 3.50 | 3.00 |  |
| Prudential Investment Bond (accounts under $£ 6,000$ ) | 2,666 | 2.00 | 2.50 | 2.00 |  |
|  |  |  |  |  |  |
| Group cash accumulation (defined benefit) with a 4.75\% guarantee | 220 | - | - | 4.75 | 4.75 |
| Group cash accumulation (defined benefit) with a $2.5 \%$ guarantee | 104 | - | - | 2.50 | 2.50 |
| Group cash accumulation (defined benefit) with a $0.01 \%$ guarantee | 190 | 2.24 | 2.24 | 2.25 | 0.01 |
| Other group cash accumulation with a $4.75 \%$ guarantee | 600 | - | - | 4.75 | 4.75 |
| Other group cash accumulation with a $2.5 \%$ guarantee | 1,625 | 0.25 | 0.25 | 2.75 | 2.50 |
| Other group cash accumulation with a $0.01 \%$ guarantee | 1,376 | 2.74 | 2.74 | 2.75 | 0.01 |

## 10. Reversionary (or annual) bonus (continued)

Table 2 WPSF - UK and, where appropriate, Guernsey, Jersey, and Isle of Man (continued)

| Bonus series | Mathematical reserves | Annual bonus rate for |  | UWP unit price increase during the year | Guaranteed bonus rate during the year |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 2009 | 2008 |  |  |
|  | £m | \% | \% | \% | \% |
| Flexible Retirement Income Account | 46 | 2.00 | 2.75 | 2.00 |  |
| Individual UWP pensions other than FRIA | 6,582 | 3.00 | 3.50 | 3.00 |  |
| Pension Savings Plan | 107 | 2.25 | 2.75 | 2.25 |  |
| Group UWP pensions | 1,230 | 3.25 | 3.75 | 3.25 |  |
| Group UWP pensions with GMP guarantee | 59 | 2.25 | 2.75 | 2.25 |  |
| With-profits pensions annuities in payment | 2,344 | 2.00 | 2.75 | 2.00 |  |
| PCRS/PCPS annuities in payment | 73 | 1.50 | 2.00 | 1.50 |  |
|  |  |  |  |  |  |
| Former SAL products |  |  |  |  |  |
|  |  |  |  |  |  |
| Net With Profits Fund 2 | 223 | 2.75/2.75 | 2.75/2.75 |  |  |
| Exempt With Profits Funds 5 and 6 | 190 | 3.125 | 3.625 | 3.125 |  |
| Exempt With Profits Funds 7 and 8 | 265 | 3.00 | 3.50 | 3.00 |  |
| Exempt With Profits Funds 9 and 10 (or C and C2) | 95 | 3.00 | 3.50 | 3.00 |  |
| Exempt With Profits Fund 13 (F) | 55 | 2.75 | 3.25 | 3.25 |  |

## 10. Reversionary (or annual) bonus (continued)

Table 3 WPSF - Policies issued in Hong Kong

| Bonus series | Mathematical reserves | Annual bonus rate for |  | UWP unit price |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 2009 | 2008 |  |  |
|  | £m | \% | \% | \% | \% |
| Conventional with-profits assurances - First series | 231 | 3.00/3.00 | 3.00/3.00 |  |  |
| Conventional with-profits assurances - Better Life | 1,429 | 2.30/3.30 | 2.50/3.60 |  |  |
| Conventional with-profits assurances - Better Life Assurance II | 282 | 2.30/3.30 | 2.50/3.60 |  |  |
| Conventional with-profits assurances - Better Life Plus II | 16 | 2.50/2.50 | 2.50/2.50 |  |  |
| Conventional with-profits assurances - PRUsave Plus | 406 | 1.30/1.30 | 1.30/1.30 |  |  |
| Double Treasure Retirement Income Plan - US\$ | 33 | 2.20/2.20 | 2.00/2.00 |  |  |
| Double Treasure Retirement Income Plan - HK\$ | 80 | 1.60/1.60 | 2.00/2.00 |  |  |
| Group cash accumulation (HKDF and USDF) | 45 | 3.00 | 4.00 | 3.00 |  |
| PRUsavings Plan | 12 | 1.50 | 2.00 | 1.50 |  |
| Other UWP - US\$ | 149 | 0.50 | 1.75 | 0.50 |  |
| Other UWP - HK\$ | 1,519 | $\begin{gathered} \hline 0.50 \text { to } 1.50 \\ \text { (varies by } \\ \text { cohort) } \\ \hline \end{gathered}$ | 1.95 | 0.50. to 1.50 (varies by cohort) |  |

## 10. Reversionary (or annual) bonus (continued)

Table 4 DCPSF

| Bonus series | Mathematical <br> reserves |  | Annual bonus rate for <br> Guaranteed <br> bonus rate <br> during the year |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
|  |  | UWP unit price <br> increase during <br> the year |  |  |  |
| Contracts expressed in euro | $£ m$ | 2009 | 2008 |  |  |
| Issued in France |  | $\%$ | $\%$ | $\%$ |  |
| External reinsurance accepted | 80 |  |  |  |  |
| International Prudence Bond | 197 | 3.75 | 3.75 | 3.75 |  |
| Contracts expressed in sterling | 851 | 4.10 | 4.60 | 4.10 |  |
| Contracts expressed in US dollars | 527 | 3.00 | 3.50 | 3.00 |  |
| With-profits annuity business transferred from <br> Equitable Life Assurance Society | 284 | 3.50 | 4.00 | 3.50 |  |

10. Reversionary (or annual) bonus (continued)
10.(4) Cash bonus contracts issued in Hong Kong for which mathematical reserves were $£ 148.2$ million on the valuation date vary by product, by age at entry and by duration in force. Rates for the PRUflexilife product vary from $\$ 0.50$ per $\$ 1,000$ sum assured at duration 3 years to $\$ 5.90$ per $\$ 1,000$ sum assured at duration 12 years. Rates for the Galaxy product vary from $\$ 3.20$ per $\$ 1,000$ sum assured at duration 1 year to $\$ 10.90$ per $\$ 1,000$ sum assured at duration 8 years.

Valuation interest rates

| Product group | 2009 | 2008 |
| :---: | :---: | :---: |
|  | \% | \% |
| UK Life - UWP (excluding endowment assurances issued by SALAS) | 1.60 | 1.60 |
| UK Life - CWP and CNP in SAIF | 3.00 | 3.00 |
| UK Life - Prudential Protection, PruProtect and Home/Synergy Protect in NPSF | 3.00 | 3.00 |
| UK Life - CNP in WPSF | 3.00 | 3.00 |
| UK Life - Linked in NPSF | 3.00 | 3.00 |
| UK Life - Linked in WPSF | 3.20 | 3.20 |
| UK Life - UWP issued by SALAS | 3.20 | 3.20 |
| UK Life - CWP in WPSF | 3.50 | 3.50 |
| UK Life \& UK Pensions - Non-profit annuities in WPSF | 4.00 | 4.00 |
| UK Life, UK Pensions \& OS - WP CPAs in DCPSF | 3.00 | 0.00 |
| UK Pensions - Index-linked CPA reinsured to PAL | 1.40 | 1.93 |
| UK Pensions - UWP in WPSF | 2.00 | 2.00 |
| UK Pensions - Deposit Administration with $0.01 \%$ guarantee | 2.00 | 2.00 |
| UK Pensions - Index-linked CPA reinsured to PRIL | 1.59 | 2.12 |
| UK Pensions - Index-linked CPA (excluding Index-linked CPAs valued as fixed) accepted from PRIL | 1.59 | 2.12 |
| UK Pensions - CWP group deferred annuities in WPSF | 3.00 | 3.00 |
| UK Pensions - Group non-profit deferred annuities, term assurance and UWP in SAIF | 3.75 | 3.75 |
| UK Pensions - Linked in SAIF | 4.00 | 4.00 |
| UK Pensions \& OS - Deposit Administration with 2.5\% guarantee | 4.00 | 4.00 |
| UK Pensions - Term assurance | 4.00 | 4.00 |
| UK Pensions - Non-profit deferred annuities in WPSF | 4.00 | 4.00 |
| UK Pensions - Linked in NPSF and WPSF | 4.00 | 4.00 |
| UK Pensions - Group WPDA in SAIF | 4.25/3.75 | 4.25/3.75 |
| UK Pensions \& OS - Deposit Administration with 4.75\% guarantee | 4.25 | 4.25 |
| UK Pensions - With-profits endowments in SAIF | 4.50 | 4.50 |
| UK Pensions - Individual with-profits deferred annuities in SAIF | 4.50/3.75 | 4.50/3.75 |
| UK Pensions - WPDA in WPSF | 4.75 | 4.75 |
| UK Pensions - CPA retained in NPSF | 4.90 | 5.66 |
| UK Pensions - CPA reinsured to PAL | 5.00 | 5.72 |
| UK Pensions - CPA reinsured to PRIL | 5.05 | 5.83 |
| UK Pensions - CPA accepted from PRIL (including Index-linked CPAs valued as fixed) | 5.05 | 5.83 |
| Overseas - Hong Kong - Critical illness policies and riders in NPSF | 3.55 | 0.74 |
| Overseas - Hong Kong - DM refundable products in NPSF | 1.60 | 0.74 |
| Overseas - Hong Kong - Other linked and protection riders in NPSF | 0.70 | 0.74 |
| Overseas - Hong Kong - US\$ currency - Non-profit Limited-Pay Crisis Cover | 3.40 | 2.96 |
| Overseas - Hong Kong - HK\$ currency - Non-profit Limited-Pay Crisis Cover | 2.00 | 2.96 |
| Overseas - Hong Kong - US\$ currency - Non-profit 100\% Refundable Crisis Cover | 3.55 | 2.96 |
| Overseas - Hong Kong - HK\$ currency - Non-profit 100\% Refundable Crisis Cover | 2.70 | 2.96 |
| Overseas - Hong Kong Linked - US\$ currency | 3.60 | n/a |


| Product group | $\mathbf{2 0 0 9}$ | $\mathbf{2 0 0 8}$ |
| :--- | :---: | :---: |
|  | $\%$ | $\%$ |
| Overseas - Hong Kong UWP - HK\$ currency | 2.10 | 1.10 |
| Overseas - Hong Kong CWP - HK\$ currency | 1.90 | 1.10 |
| Overseas - Hong Kong UWP - US\$ currency | 2.70 | 2.10 |
| Overseas - Hong Kong - CWP, term assurance, accelerated CI in WPSF - <br> US\$ currency | 3.25 | 2.90 |
| Overseas - DCPSF offshore bond - sterling currency | 2.00 | 2.00 |
| Overseas - DCPSF offshore bond - euro currency | 2.75 | 2.75 |
| Overseas - DCPSF offshore bond - US\$ currency | 3.00 | 3.00 |

If deferred annuities are valued at the same rate of interest in possession as in deferment, only one rate of interest is shown. Otherwise, two rates are shown, the first being that in deferment. Valuation interest rates shown for UK Life are net of tax.

Valuation mortality bases

|  | 2009 | 2008 |
| :---: | :---: | :---: |
| UK Life - UWP and linked regular premium endowment assurances (Home Purchaser) | 85\% AM80 / 85\% AF80 | 85\% AM80 / 85\% AF80 |
| Industrial Branch assurances | A1967/70 rated up 1 year | A1967/70 rated up 1 year |
| UK Life - linked Prudence Bond UK Pensions NPSF - group stakeholder, personal and money purchase pensions UK Pension WPSF - linked | AM92 / AF92 both rated down 3 years | AM92 / AF92 both rated down 3 years |
| UK Life WPSF - conventional assurances except Prudential Protection, UWP assurances except those issued by SAL or SALAS <br> UK Pensions WPSF - group deposit administration | AM92 / AF92 both rated up 1 year | AM92 / AF92 both rated up 1 year |
| UK Life - assurances issued by SAL or SALAS, Prudential Protection in WPSF <br> UK Pensions issued by SAL or SALAS | AM92 / AF92 both rated up 1 year plus $1 / 3$ of projection R6A of the Institute of Actuaries AIDS Working Party Bulletin No. 5 | AM92 / AF92 both rated up 1 year plus $1 / 3$ of projection R6A of the Institute of Actuaries AIDS Working Party Bulletin No. 5 |
| UK Life - Prudential Protection in NPSF | $110 \%$ of AM/AF92 plus 1 year plus 1/3 AIDS 'R6A' for both males and females | $110 \%$ of AM/AF92 plus 1 year plus 1/3 AIDS 'R6A' for both males and females |
| UK Life - PruProtect in NPSF | $115 \%$ of AM/AF92 plus 1 year plus 1/3 AIDS 'R6A' for both males and females | $115 \%$ of AM/AF92 plus 1 year plus 1/3 AIDS 'R6A' for both males and females |
| UK Pensions - individual UWP pensions sold by the DSF | AM92 rated up 1 year for men and rated down 3 years for women | AM92 rated up 1 year for men and rated down 3 years for women |
| UK Life NPSF - linked assurances sold by the DSF | Single life: AM92 rated down 3 years for men and rated down 8 years for women <br> Joint lives: AM92 rated up 3 years | Single life: AM92 rated down 3 years for men and rated down 8 years for women Joint lives: AM92 rated up 3 years |
| UK Pensions - group deferred annuities in deferment in WPSF | AM92 / AF92 both rated down 4 years with mortality improvement being allowed by a reduction of $0.60 \%$ p.a. in the valuation interest rate | AM92 / AF92 both rated down 4 years with mortality improvement being allowed by a reduction of $0.55 \%$ p.a. in the valuation interest rate |
| UK Pensions - Flexipension in deferment in SAIF | AM92 / AF92 both rated down 4 years with mortality improvement being allowed by a reduction of $0.60 \%$ p.a. in the valuation interest rate | AM92 / AF92 both rated down 4 years with mortality improvement being allowed by a reduction of $0.60 \%$ p.a. in the valuation interest rate |
| UK Pensions WPSF - group deferred annuities in deferment ceded to PAL (GPDA admin system) | AM92 / AF92 both rated down 4 years with mortality improvement being allowed by a reduction of $0.65 \%$ p.a. in the valuation interest rate | AM92 / AF92 both rated down 4 years with mortality improvement being allowed by a reduction of $0.65 \%$ p.a. in the valuation interest rate |

Valuation mortality bases

|  | 2009 | 2008 |
| :---: | :---: | :---: |
| UK Pensions WPSF - group deferred annuities in possession ceded to PAL (GPDA admin system) | Modified $126 \%$ PNMA00 Modified 117\% PNFA00 | Modified 126\% PNMA00 <br> Modified 117\% PNFA00 |
| UK Pensions WPSF - group deferred annuities in possession ceded to PAL (DAPA admin system) | Modified 105\% PNMA00 <br> Modified 103\% PNFA00 | Modified 105\% PNMA00 <br> Modified 103\% PNFA00 |
| UK Pensions WPSF - WP individual deferred annuities in deferment | AM92 rated down 3 years for men and 7 years for women with mortality improvement being allowed by a reduction of $0.60 \%$ p.a. in the valuation interest rate | AM92 rated down 3 years for men and 7 years for women with mortality improvement being allowed by a reduction of $0.55 \%$ p.a. in the valuation interest rate |
| UK Pensions WPSF - WP deferred annuities in possession | Modified 102\% PNMA00 <br> Modified $88 \%$ PNFA00 | Modified 102\% PNMA00 <br> Modified 88\% PNFA00 |
| UK Pensions - WPSF and SAIF annuities reassured to PRIL | Modified 96\% PNMA00 <br> Modified 88\% PNFA00 | Modified 97\% PNMA00 <br> Modified 88\% PNFA00 |
| UK Pensions - SAIF deferred annuities in possession | Modified 99\% PNMA00 <br> Modified 87\% PNFA00 | Modified 100\% PNMA00 Modified 88\% PNFA00 |
| UK Pensions - NPSF - NP individual immediate annuities accepted from PRIL | Modified 96\% PNMA00 <br> Modified 88\% PNFA00 | Modified 97\% PNMA00 Modified 88\% PNFA00 |
| UK Pensions - NPSF - NP group deferred annuities in deferment accepted from PRIL | AM92 / AF92 both rated down 4 years | AM92 / AF92 both rated down 4 years |
| UK Pensions - NPSF - NP group immediate and deferred annuities (in possession) accepted from PRIL | Modified 102\% PNMA00 <br> Modified 98\% PNFA00 | Modified 102\% PNMA00 Modified 98\% PNFA00 |
| UK Pensions - NPSF annuities | Modified 99\% PNMA00 <br> Modified 87\% PNFA00 | Modified 100\% PNMA00 <br> Modified 88\% PNFA00 |
| UK Pensions - PAC WP annuities in payment | Modified 76\%PNMA00 Modified 72\% PNFA00 | Modified 76\%PNMA00 Modified 79\% PNFA00 |
| UK Pensions \& OS - Equitable Life WP annuities in payment | Modified 78\%PNMA00 Modified 76\% PNFA00 | Modified 78\%PNMA00 Modified 76\% PNFA00 |
| UK Pensions - WPSF individual annuities retained in PAC or reassured to PAL | Modified 102\%PNMA00 <br> Modified 88\% PNFA00 | Modified 102\%PNMA00 <br> Modified 88\% PNFA00 |
| UK Pensions - Flexible Lifetime Annuity | Modified 61\% PNMA00 <br> Modified 62\% PNFA00 | Modified 71\% PNMA00 <br> Modified 70\% PNFA00 |
| Hong Kong assurances except cash bonus and UWP policies | 90\% HKA93M / 90\% HKA93F | 90\% HKA93M / 90\% HKA93F |

## Valuation mortality bases

|  | $\mathbf{2 0 0 9}$ |  |
| :--- | :--- | :--- |
| Hong Kong cash bonus policies | $90 \%$ HKA93M / 90\% HKA93F | $\mathbf{2 0 0 8}$ |
| Hong Kong UWP assurances | $140 \%$ HKA93M / 140\% HKA93F | $90 \%$ HKA93M / 90\% HKA93F |
| DCPSF - Prudential Vie | $102.5 \%$ TV8890 / TD8890 both rated down 3 years | $140 \%$ HKA93M / 140\% HKA93F |
| DCPSF - other | AM92 / AF92 | AM92 / AF982 |

## Annuity mortality bases used at 31 December 2009 and 31 December 2008

Annuities are generally valued using a percentage of the 00 series tables for annuitants and pensioners. In order to allow for mortality improvement, improvement factors are applied from 2001 and the bases in the table above are therefore described as "modified". For males these future improvement factors are in line with $100 \%$ of the CMI medium cohort projections, subject to future improvement factors not being less than $2.25 \%$ p.a until age 90 , tapering linearly to zero at age 120 . For females, future improvement factors are in line with $75 \%$ of the CMI medium cohort projections, subject to future improvement factors not being less than $1.25 \%$ p.a until age 90 , tapering linearly to zero at age 120 .

In practice, some annuities in payment in the NPSF and some deferred annuities in possession have been valued using percentages of single entry tables based on the 92 series tables for annuitants and pensioners, with calendar year 2004 (improvements in line with CMIR17 until 2004). The percentages have been chosen so that the rates used are equivalent to the double entry tables with future improvement factors as described above. For these deferred annuities, a further deduction from the valuation rate of interest has been made during the deferred period, to allow for expected mortality improvements prior to vesting. The deduction is $0.65 \%$ for policies in WPSF ceded to PAL and $0.60 \%$ for all other policies.

## Immediate and deferred annuities: expectations of life at different ages

The table below shows the expectations of life at different ages for the mortality tables reported in Appendix 2 used to value annuities in possession.

| Basis description | Valuation Date | Life expectancy for annuities in payment |  | Life expectancy for deferred annuities |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | At 65 | At 75 | At 65 for current age 45 | At 65 for current age 55 |
| Modified $126 \%$ PNMA00 Modified 117\% PNFA00 | 31/12/2009 |  |  | $\begin{gathered} \text { men: } 25.8 \\ \text { women: } 25.0 \end{gathered}$ | $\begin{gathered} \text { men: } 23.9 \\ \text { women: } 24.0 \end{gathered}$ |
|  | 31/12/2008 |  |  | men: 25.6 women: 24.9 | men: 23.7 <br> women: 23.9 |
| Modified 105\% PNMA00 <br> Modified 103\% PNFA00 | 31/12/2009 |  |  | $\begin{gathered} \text { men: } 27.5 \\ \text { women: } 26.1 \\ \hline \end{gathered}$ | $\begin{gathered} \text { men: } 25.5 \\ \text { women: } 25.1 \end{gathered}$ |
|  | 31/12/2008 |  |  | $\begin{gathered} \text { men: } 27.3 \\ \text { women: } 26.0 \end{gathered}$ | $\begin{gathered} \text { men: } 25.3 \\ \text { women: } 25.0 \end{gathered}$ |
| Modified 102\% PNMA00 <br> Modified 88\% PNFA00 | 31/12/2009 | men: 23.8 <br> women: 25.4 | men: 14.4 women: 16.2 | men: 27.8 women: 27.4 | men: 25.8 women: 26.4 |
|  | 31/12/2008 | men: 23.6 women: 25.3 | men: 14.3 women: 16.1 | $\begin{gathered} \text { men: } 27.6 \\ \text { women: } 27.3 \end{gathered}$ | men: 25.6 women: 26.3 |
| Modified 96\% PNMA00 <br> Modified 88\% PNFA00 | 31/12/2009 | $\text { men: } 24.4$ women:25.4 | men: 14.9 women: 16.2 |  |  |
| Modified 97\% PNMA00 Modified 88\% PNFA00 | 31/12/2008 | $\begin{gathered} \text { men: } 24.1 \\ \text { women:25.3 } \end{gathered}$ | men: 14.6 women: 16.1 |  |  |
| Modified 99\% PNMA00 <br> Modified 87\% PNFA00 | 31/12/2009 | men: 24.1 women: 25.5 | men: 14.7 women: 16.3 | $\begin{gathered} \text { men: } 28.0 \\ \text { women: } 27.4 \end{gathered}$ | $\begin{gathered} \text { men: } 26.0 \\ \text { women: } 26.4 \end{gathered}$ |
| $\begin{gathered} \text { Modified } 100 \% \text { PNMA00 } \\ \text { Modified } 88 \% \text { PNFA00 } \end{gathered}$ | 31/12/2008 | $\begin{gathered} \text { men: } 23.8 \\ \text { women: } 25.3 \end{gathered}$ | men: 14.4 women: 16.1 | men: 27.8 women: 27.3 | men: 25.8 women: 26.3 |
| Modified 102\% PNMA00 <br> Modified 98\% PNFA00 | 31/12/2009 | men: 23.8 women: 24.5 | men: 14.4 women: 15.4 | men: 27.8 women: 26.5 | men: 25.8 <br> women: 25.5 |
|  | 31/12/2008 | $\text { men: } 23.6$ <br> women: 24.4 | men: 14.3 women: 15.3 | $\begin{gathered} \text { men: } 27.6 \\ \text { women: } 26.4 \end{gathered}$ | $\begin{gathered} \text { men: } 25.6 \\ \text { women: } 25.4 \end{gathered}$ |
| Modified 76\%PNMA00 Modified 72\% PNFA00 | 31/12/2009 | men: 26.6 women: 27.2 | men: 16.8 women: 17.7 |  |  |
| Modified 76\%PNMA00 Modified 79\% PNFA00 | 31/12/2008 | men: 26.4 women: 26.2 | men: 16.6 <br> women: 16.9 |  |  |
| Modified 78\%PNMA00 <br> Modified 76\% PNFA00 | 31/12/2009 | men: 26.9 <br> women: 27.1 | men: 16.9 women: 17.6 |  |  |
|  | 31/12/2008 | men: 26.7 <br> women: 27.0 | men: 16.7 <br> women: 17.5 |  |  |
| Modified 61\% PNMA00 Modified 62\% PNFA00 | 31/12/2009 | $\begin{gathered} \text { men: } 28.9 \\ \text { women: } 28.5 \end{gathered}$ | men: 18.7 women: 18.9 |  |  |

## Immediate and deferred annuities: expectations of life at different ages (continued)

The table below shows the expectations of life at different ages for the mortality tables reported in Appendix 2 used to value annuities in possession.

| Basis description | Valuation Date | Life expectancy for annuities in payment |  | Life expectancy for deferred annuities |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | At $\mathbf{6 5}$ | At 75 | At $\mathbf{6 5}$ for current age 45 | At $\mathbf{6 5}$ for current age $\mathbf{5 5}$ |
| Modified 71\% PNMA00 | $31 / 12 / 2008$ | men: 27.1 | men: 17.2 |  |  |
| Modified 70\% PNFA00 |  | women: 27.3 | women: 17.8 |  |  |

## Morbidity bases

## A4.1 Critical illness and total and permanent disability (TPD) business issued in Hong Kong

Annual rates per 10,000 sum assured. The rates were used at both 31 December 2009 and 31 December 2008.

A4.1.1 Contracts that cover 12 critical illnesses. These are closed to new business.

| Age next <br> Birthday | Critical illness rates |  |  | TPD rates |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Male Non <br> Smoker | Male Smoker | Female Non <br> Smoker |  |  |
| 25 | 7.31 | 6.55 | 4.08 | 5.87 | 0.68 |
| 35 | 7.48 | 8.93 | 9.52 | 10.97 | 1.02 |
| 45 | 19.81 | 26.86 | 21.51 | 28.65 | 2.55 |
| 55 | 52.70 | 71.06 | 46.84 | 57.89 | 6.63 |

A4.1.2 Contracts that cover 30 critical illnesses.

| Age next <br> Birthday | Critical illness rates |  |  | TPD rates |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Male Non <br> Smoker | Male Smoker | Female Non <br> Smoker |  |  |
| 25 | 7.31 | 7.23 | 8.25 | 9.86 | 0.68 |
| 35 | 8.67 | 9.86 | 10.37 | 10.71 | 1.02 |
| 45 | 20.32 | 27.12 | 19.30 | 28.56 | 2.55 |
| 55 | 52.53 | 71.23 | 58.40 | 76.16 | 6.63 |

## A4.2 Prudential Protection

The rates were used at both 31 December 2009 and 31 December 2008.
A4.2.1 Life and basic critical illness annual rates per $£ 10,000$ sum assured

| Age next <br> Birthday | Men |  | Women |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Non Smoker | Smoker | Non Smoker | Smoker |
| 25 | 8.95 | 8.95 | 6.90 | 6.90 |
| 35 | 14.07 | 22.08 | 12.59 | 12.59 |
| 45 | 29.28 | 58.03 | 27.26 | 27.26 |
| 55 | 80.51 | 148.44 | 63.77 | 80.79 |

A4.2.2 Top-up critical illness annual rates per $£ 10,000$ sum assured

| Age next <br> Birthday | Men |  | Women |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Non Smoker | Smoker | Non Smoker | Smoker |
| 25 | 4.82 | 4.82 | 5.68 | 5.68 |
| 35 | 9.63 | 14.92 | 11.64 | 11.64 |
| 45 | 23.64 | 46.30 | 26.42 | 26.42 |
| 55 | 68.82 | 125.65 | 61.57 | 77.89 |

For business written after 13 March 2005 the rates are increased by $14 \%$ to cover possible future changes in morbidity.

In the NPSF where prudent lapse assumptions are allowed for in the reserve calculations, the rates are increased by $10 \%$ to allow for the possibility of selective withdrawals.

## Morbidity bases (continued)

## A4.3 Benefits attached to Home Purchaser (Series 3) and Amicable Savings Plan

The rates were used at both 31 December 2009 and 31 December 2008.
A4.3.1 Home Purchaser (Series 3) version 2 issued on or after 29 July 1996
Level top-up critical illness annual rates per $£ 10,000$ sum assured

| Age next <br> birthday | Men |  | Women |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Non Smoker | Smoker | Non Smoker | Smoker |
| 25 | 3.84 | 6.29 | 4.39 | 7.12 |
| 35 | 8.45 | 14.01 | 11.87 | 19.71 |
| 45 | 35.57 | 59.50 | 27.27 | 45.44 |
| 55 | 83.87 | 140.44 | 61.77 | 103.36 |

A4.3.2 Home Purchaser (Series 3) other than those above and Amicable Savings Plan
Level critical illness annual rates per $£ 10,000$ sum assured

| Age next | Men |  | Women |  |
| :---: | :---: | :---: | :---: | :---: |
| Birthday | Non Smoker | Smoker | Non Smoker | Smoker |
| 25 | 2.73 | 4.42 | 3.38 | 5.45 |
| 35 | 6.49 | 10.64 | 8.43 | 14.01 |
| 45 | 27.87 | 46.41 | 17.77 | 29.69 |
| 55 | 47.70 | 79.71 | 37.34 | 62.48 |

A4.3.3 Home Purchaser (Series 3)

Decreasing top-up annual critical illness annual rates per $£ 10,000$ sum assured

| Age next <br> Birthday | Men |  | Women |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Non Smoker | Smoker | Non Smoker | Smoker |
| 25 | 4.14 | 6.79 | 4.74 | 7.68 |
| 35 | 9.11 | 15.11 | 12.80 | 21.26 |
| 45 | 38.36 | 64.17 | 29.41 | 49.00 |
| 55 | 90.45 | 151.46 | 66.61 | 111.47 |

A4.3.4 Home Purchaser (Series 3) and Amicable Savings Plan
Total and permanent disability annual rates per $£ 10,000$ sum assured

| Age next <br> Birthday | Basic | Version 2 <br> Level top-up | Version 2 <br> Decreasing top-up |
| :---: | :---: | :---: | :---: |
| 25 | 0.78 | 0.98 | 1.06 |
| 35 | 0.91 | 0.86 | 0.92 |
| 45 | 2.33 | 2.20 | 2.38 |
| 55 | 7.91 | 8.69 | 9.37 |

## Morbidity bases (continued)

## A4.3 Benefits attached to Home Purchaser (Series 3) and Amicable Savings Plan (continued)

## A4.3.5 Home Purchaser (Series 3)

Annual mortgage interest benefit rates per $£ 1,200$ annual benefit without critical illness, occupation classes 1,2 and 3 , deferred period 6 months

Men

| Age Next <br> Birthday | Policy Term Remaining |  |  |  |  |
| :---: | :---: | ---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 20 | 25 |
| 25 | 2.88 | 3.84 | 4.44 | 4.68 | 4.68 |
| 35 | 4.44 | 6.24 | 7.20 | 7.44 | 7.56 |
| 45 | 11.52 | 16.32 | 18.72 |  |  |
| 55 | 36.36 |  |  |  |  |

Women

| Age Next <br> Birthday | Policy Term Remaining |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | ---: | ---: | ---: | ---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  | 10 |  |  |  |  | 15 | 60 | 25 |
| 25 | 4.32 | 5.88 | 6.72 | 6.96 |  |  |  |  |  |  |  |  |  |  |
| 35 | 6.72 | 9.36 | 10.80 | 11.04 | 11.40 |  |  |  |  |  |  |  |  |  |
| 45 | 17.16 | 24.48 | 27.96 |  |  |  |  |  |  |  |  |  |  |  |
| 55 | 54.48 |  |  |  |  |  |  |  |  |  |  |  |  |  |

No recovery rates are shown as claim inception and recovery are not modelled. Instead an inception annuity approach based on rates from the reinsurer is used. The rates therefore allow implicitly for both the probability of a claim and the expected length of the claim.

## A4.4 Synergy Protect

Synergy Protect 2 was written up to 30 June 2009. Synergy Protect 3 was written from $1^{\text {st }}$ July 2009.
A4.4.1 Synergy Protect 2
Level critical illness annual rates per $£ 10,000$ sum assured
31 December 2009

| Age next <br> Birthday | Men |  | Women |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Non Smoker | Smoker | Non Smoker | Smoker |
| 25 | 10.92 | 15.30 | 7.28 | 10.63 |
| 35 | 15.70 | 23.76 | 15.53 | 23.37 |
| 45 | 44.46 | 76.98 | 38.20 | 64.87 |
| 55 | 130.84 | 243.04 | 88.98 | 163.85 |

31 December 2008

| Age next <br> Birthday | Men |  | Women |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Non Smoker | Smoker | Non Smoker | Smoker |
| 25 | 11.14 | 15.61 | 7.43 | 10.85 |
| 35 | 16.02 | 24.25 | 15.85 | 23.85 |
| 45 | 45.37 | 78.55 | 38.98 | 66.19 |
| 55 | 133.51 | 248.00 | 90.80 | 167.19 |

## Morbidity bases (continued)

## A4.4 Synergy Protect (continued)

A4.4.2 Synergy Protect 3
Level critical illness annual rates per $£ 10,000$ sum assured
31 December 2009

| Age next Birthday | Men |  | Women |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Non Smoker | Smoker | Non Smoker | Smoker |
| 25 | 8.19 | 11.75 | 6.56 | 7.76 |
| 35 | 14.10 | 21.08 | 18.35 | 21.46 |
| 45 | 33.79 | 66.28 | 36.17 | 48.89 |
| 55 | 94.72 | 209.17 | 78.53 | 124.27 |

A4.4.3 Synergy Protect 2
Top-up critical illness annual rates per $£ 10,000$ sum assured
31 December 2009

| Age next | Men |  | Women |  |
| :---: | :---: | :---: | :---: | :---: |
| Birthday | Non Smoker | Smoker | Non Smoker | Smoker |
| 25 | 6.95 | 9.74 | 6.85 | 9.71 |
| 35 | 12.41 | 18.78 | 15.54 | 23.38 |
| 45 | 41.51 | 71.87 | 39.82 | 67.63 |
| 55 | 129.26 | 240.09 | 93.42 | 172.02 |

31 December 2008

| Age next <br> Birthday | Men |  | Women |  |
| :---: | :---: | ---: | :---: | :---: |
|  | Non Smoker | Smoker | Non Smoker | Smoker |
| 25 | 7.09 | 9.94 | 6.79 | 9.90 |
| 35 | 12.66 | 19.16 | 15.85 | 23.86 |
| 45 | 42.36 | 73.34 | 40.64 | 69.01 |
| 55 | 131.89 | 245.00 | 95.32 | 175.53 |

A4.4.4 Synergy Protect 3
Top-up critical illness annual rates per $£ 10,000$ sum assured
31 December 2009

| Age next | Men |  | Women |  |
| :---: | :---: | :---: | :---: | ---: |
| Birthday | Non Smoker | Smoker | Non Smoker | Smoker |
| 25 | 5.27 | 7.53 | 6.21 | 7.33 |
| 35 | 11.58 | 17.30 | 19.98 | 23.37 |
| 45 | 33.78 | 66.29 | 41.50 | 56.13 |
| 55 | 102.22 | 226.10 | 93.09 | 147.58 |

## Morbidity bases (continued)

## A4.4.5 Synergy Protect 2 and Synergy Protect 3

Mortgage payment benefit annual rates per $£ 1,200$ annual benefit without critical illness
The rates were used at both 31 December 2009 and 31 December 2008

Male aggregate lives, non smokers, occupation class 1, deferred period 26 weeks

| Age next <br> Birthday | Policy Term Remaining |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 20 | 25 |
| 25 | 1.82 | 2.55 | 3.03 | 3.36 | 3.57 |
| 35 | 2.16 | 3.32 | 4.07 | 4.57 | 4.90 |
| 45 | 6.95 | 11.24 | 14.08 | 16.07 |  |
| 55 | 23.52 | 39.49 |  |  |  |

Female aggregate lives, non smokers, occupation class 1, deferred period 26 weeks

| Age next <br> Birthday | Policy Term Remaining |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 20 | 25 |
| 25 | 3.19 | 4.46 | 5.30 | 5.88 | 6.25 |
| 35 | 3.78 | 5.81 | 7.12 | 8.00 | 8.58 |
| 45 | 12.16 | 19.67 | 24.64 | 28.12 |  |
| 55 | 41.16 | 69.11 |  |  |  |

Male aggregate lives, smokers, occupation class 1, deferred period 26 weeks

| Age next <br> Birthday | Policy Term Remaining |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 20 | 25 |
| 25 | 2.42 | 3.39 | 4.03 | 4.47 | 4.75 |
| 35 | 2.87 | 4.42 | 5.41 | 6.08 | 6.52 |
| 45 | 9.24 | 14.95 | 18.73 | 21.37 |  |
| 55 | 31.28 | 52.52 |  |  |  |

Female aggregate lives, smokers, occupation class 1, deferred period 26 weeks

| Age next <br> Birthday | Policy Term Remaining |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | 5 | 10 | 15 | 20 | 25 |
| 25 | 4.24 | 5.94 | 7.05 | 7.82 | 8.31 |
| 35 | 5.03 | 7.73 | 9.47 | 10.64 | 11.40 |
| 45 | 16.18 | 26.16 | 32.77 | 37.40 |  |
| 55 | 54.74 | 91.91 |  |  |  |

No recovery rates are shown as claim inception and recovery are not modelled. Instead an inception annuity approach based on rates from the reinsurer is used. The rates therefore allow implicitly for both the probability of a claim and the expected length of the claim.

Valuation expense bases
A5.1 SAIF

|  |  | 31 December 2009 |  | 31 December 2008 |  |  |
| :--- | :--- | :---: | :---: | :---: | :---: | :---: |
| Product <br> code(s) |  | Maintenance <br> expenses | Investment <br> expenses | Maintenance <br> expenses | Termination <br> expenses | Investment <br> expenses |
|  |  | $£$ per annum | basis points pa | $£$ per annum | $£$ | basis points pa |
| 525 | UWP regular premium pension | 42.80 | 16.90 | 38.46 | 65.91 | 12.80 |
| 525 | UWP single premium pension | 37.25 | 16.90 | 32.59 | 65.91 | 12.80 |
| 535 | UWP group regular premium pension | 109.91 | 16.90 | 79.09 | 95.92 | 12.80 |
| 535 | UWP group single premium pension | 59.80 | 16.90 | 67.13 | 95.92 | 12.80 |
| 725 | UL regular premium pension | 42.80 | 25.00 | 38.46 | 65.91 | 25.00 |
| 725 | UL single premium pension | 37.25 | 25.00 | 32.59 | 65.91 | 25.00 |
| 735 | UL group regular premium pension | 109.91 | 25.00 | 79.09 | 95.92 | 25.00 |
| 735 | UL group single premium pension | 59.80 | 25.00 | 67.13 | 95.92 | 25.00 |

Conventional contracts are valued using a net premium method, zillmerised for with-profits contracts and unmodified for term assurances. The zillmer adjustment is $3 \%$ of sums assured for with-profits life business and $2 \%$ for with-profits pensions.

Maintenance expenses have now been split between charges paid under a third party outsourcing agreement and expenses incurred directly by Prudential. Outsourced charges are as set out in the outsourcing agreement plus a $10 \%$ MAD. Along with this change to expenses, termination expenses are no longer applied explicitly.

|  |  | 31 December 2009 |  | 31 December 2008 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Product code(s) |  | Maintenance expenses | Investment expenses | Maintenance expenses | Termination expenses | Investment expenses |
|  |  | £ per annum | basis points pa | £ per annum | £ | basis points pa |
| $\begin{aligned} & \hline 340 \text { to } 355, \\ & 365 \text { and } 385 \end{aligned}$ | Critical illness, income protection in force and income protection claims in payment | 52.75 | 10.00 | 44.50 | 46.06 | 10.00 |
| 400 | Annuity | 21.54 | 6.00 | 19.60 |  | 6.00 |
| 500 | UWP bond | 49.08 | 16.90 | 43.67 |  | 13.00 |
| 510 | UWP savings endowment | 55.30 | 16.90 | 45.11 | 46.06 | 13.00 |
| 515 | UWP target cash endowment | 44.67 | 16.90 | 38.37 | 53.25 | 12.80 |
| 525 | UWP regular premium pension | 40.54 | 16.90 | 41.12 |  | 13.00 |
| 525 | UWP single premium pension | 34.74 | 16.90 | 34.95 |  | 13.00 |
| 535 | UWP group regular premium pension | 118.30 | 16.90 | 117.49 |  | 13.00 |
| 535 | UWP group single premium pension | 37.95 | 16.90 | 23.50 |  | 13.00 |
| 700 | UL bond | 26.22 | 25.00 | 18.76 | 53.25 | 25.00 |
| 715 | UL savings endowment | 44.67 | 25.00 | 38.37 | 53.25 | 25.00 |
| 720 | UL target cash endowment | 44.67 | 25.00 | 38.37 | 53.25 | 25.00 |
| 735 | UL group regular premium pension | 150.41 | 20.00 | 144.28 |  | 20.00 |
| 735 | UL group single premium pension | 30.08 | 20.00 | 28.86 |  | 20.00 |

Conventional contracts are valued using a net premium method, zillmerised for with-profits contracts and unmodified for term assurances. The zillmer adjustment is $3 \%$ of sums assured for with-profits life business and $2 \%$ of the value of the annuity at retirement for with-profits pensions deferred annuities.

Maintenance expenses have now been split between charges paid under a third party outsourcing agreement and expenses incurred directly by Prudential. Outsourced charges are as set out in the outsourcing agreement plus a $10 \%$ MAD. Along with this change to expenses, termination expenses are no longer applied explicitly.

|  |  | 31 December 2009 |  | 31 December 2008 |  |  |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: |
| Product <br> code(s) |  | Maintenance <br> expenses | Investment <br> expenses | Maintenance <br> expenses | Termination <br> expenses | Investment <br> expenses |
|  |  | $£$ per annum | basis points pa | $£$ per annum | £ | basis points pa |
| 325,330, <br> 340 t 355, <br> 365 | Term assurance, critical illness and <br> income protection | 52.75 | 10.00 | 44.50 | 46.06 | 10.00 |
| 400 | Annuity | 30.34 | 7.00 | 26.75 |  |  |
| 700 | UL bond | 15.00 | 18.00 | 5.94 | 15.67 | 18.00 |
| 715 | UL savings endowment | 30.93 | 15.00 | 23.39 | 91.42 | 15.00 |
| 720 | UL target cash endowment | 21.91 | 25.00 | 15.79 | 18.89 | 25.00 |
| 725 | UL regular premium pension | 19.19 | 25.00 | 14.82 | 31.12 | 25.00 |
| 725 | UL single premium pension | 17.05 | 25.00 | 13.10 | 28.26 | 25.00 |
| 735 | UL group regular premium pension | 53.28 | 25.00 | 30.32 |  | 20.00 |
| 735 | UL group single premium pension | 23.42 | 25.00 | 6.06 |  | 20.00 |

For linked business, the figures are for per-policy attributable expenses only.
Maintenance expenses have now been split between charges paid under a third party outsourcing agreement and expenses incurred directly by Prudential. Outsourced charges paid to the third party are $100 \%$ attributable and are as set out in the outsourcing agreement plus a $10 \%$ MAD. Along with this change to expenses, termination expenses are no longer applied explicitly.

## APPENDIX 9.4A

## VALUATION REPORT FOR REALISTIC VALUATION ON THE PRUDENTIAL ASSURANCE COMPANY LIMITED AS AT 31 DECEMBER 2009

Throughout this document the abbreviations "CWP" and "AWP" are used for Conventional With-Profits business and Accumulating With-Profits business respectively.

## 1. Introduction

(1) The investigation relates to 31 December 2009.
(2) The date of the previous valuation related to 31 December 2008.
(3) A valuation was carried out at 30 June 2009 in accordance with IPRU(INS) rule 9.3A.
2. Assets
(1) The economic assumptions used to determine the value of future profits on non-profit business written in the WPSF and SAIF are:

| Description | 31 December 2009 |  | 31 December 2008 |  |
| :--- | :---: | :---: | :---: | :---: |
|  | Gross <br> $\%$ | Net <br> $\%$ | Gross <br> $\%$ | Net <br> $\%$ |
| Investment return | 4.210 | 3.368 | 3.520 | 2.816 |
| Less: Investment expenses | 0.153 | 0.123 | 0.116 | 0.093 |
| Discount rate | 4.057 | 3.245 | 3.404 | 2.723 |
| Inflation (except IB business) |  |  |  |  |
| Inflation (IB business) | 3.7 | 3.7 | 3.0 | 3.0 |

The DCPSF has no non-profit business.
(2) For the WPSF, the economic assumptions used to determine any additional amount arising from the excess of the present value of future profits (or losses) of Prudential Annuities Limited (PAL) in accordance with INSPRU 1.3.33R(3)(b)(iii) are:

| Description | 31 December 2009 <br> $\%$ | 31 December 2008 <br> $\%$ |
| :--- | :---: | :---: |
| Investment return | 5.184 | 6.539 |
| Less: Investment expenses | 0.061 | 0.060 |
| Discount rate | 5.123 | 6.479 |
| Rate of tax on profits | 28 | 28 |

SAIF and the DCPSF have no assets valued under INSPRU 1.3.33R(3)(b)(iii).
(3) Not applicable
(4) Not applicable
(5) Not applicable

## 3. With-Profits Benefits Reserve Liabilities

(1) The methods used to calculate the with-profits benefits reserves are:

| Business class | Method |  | With-profits benefits reserves | Future policy related liabilities |
| :---: | :---: | :---: | :---: | :---: |
| WPSF |  |  | £m | £m |
| Ex-Direct Sales Force (DSF) Industrial Branch (IB) | Retrospective* | Grouped | 1,889 | 120 |
| DSF CWP Ordinary Branch (OB) assurances | Retrospective* | Grouped | 3,727 | 42 |
| DSF PPRP | Retrospective* | Grouped | 4,229 | 436 |
| DSF AWP Life | Retrospective* | Individual | 2,873 | 5 |
| DSF AWP Pensions | Retrospective* | Grouped | 16,113 | 578 |
| Ex-ISC Pensions | Retrospective* | Individual | 1,129 | 241 |
| Group Pensions | Retrospective* | Individual | 6,307 | 207 |
| With profit immediate annuities | Retrospective* | Individual | 2,323 | 116 |
| Prudence Bond | Retrospective | Individual | 11,147 | 219 |
| PruFund | Retrospective | Individual | 1,255 | (1) |
| Ex-SAL AWP | Retrospective | Individual | 1,083 | 22 |
| Hong Kong | Retrospective | Grouped | 4,617 | 396 |
| Malta | Retrospective | Grouped | 9 | - |
| Additional reserve | Other | n/a | - | 552 |
| Sub-total |  |  | 56,702 | 2,933 |
| SAIF |  |  |  |  |
| CWP | Retrospective* | Individual | 4,541 | 74 |
| AWP - Pensions | Retrospective* | Individual | 3,277 | 364 |
| AWP - Life | Retrospective* | Individual | 1,062 | 5 |
| Additional reserve | Other | n/a | 10 | 449 |
| Sub-total |  |  | 8,889 | 892 |
| DCPSF |  |  |  |  |
| PAC France | Retrospective | Individual | 80 | - |
| Canada Life (Germany) | Retrospective | Individual | 192 | - |
| International Prudential Bond | Retrospective | Individual | 1,690 | - |
| With profit immediate annuities | Retrospective | Grouped | 1,267 | - |
| Other | Other | $\mathrm{n} / \mathrm{a}$ | - | (25) |
| Sub-total |  |  | 3,230 | - |
| Total PAC |  |  | 68,820 | 3,801 |

* Adjusted as described in section 5
$99.7 \%$ of SAIF AWP Pensions business has a minimum guarantee attached. Certain Group Pension contracts include minimum rates of guarantee ranging from $2.5 \%$ to $4.75 \%$
(2) The with-profits benefits reserves and future policy related benefits correspond to the amounts shown in Form 19.


## 4. With-Profits Benefits Reserves - Retrospective method

(1)(a)\&(b) The proportions of the with-profits benefit reserve (excluding additional reserves) calculated using individual or grouped methodology as shown in 3.(1) are:

|  | WPSF | SAIF | DCPSF |
| :--- | :---: | :---: | :---: |
|  | $\%$ | $\%$ | $\%$ |
| Individual basis | 46 | 100 | 61 |
| Grouped basis | 54 | 0 | 39 |
| Other | 0 | 0 | 0 |
| Total | 100 | 100 | 100 |

(1)(c)(i) For WPSF DSF CWP, policies are differentiated by benefit type (eg full endowment, low cost endowment, whole life or deferred annuity), sex (but not for IB assurances) and premium status (single, regular, fully paid or partly paid) and then grouped, by age, duration and original policy term. Only policies with the same age, duration and policy term are grouped together (i.e. data is not grouped into bands).

For WPSF DSF AWP pensions business, the approach is the same as for CWP except that policies are not differentiated by sex and paid up policies are grouped only if they had the same curtate duration when they were made paid-up. In addition DWP rebate business is differentiated according to sex, maturity age and curtate duration in force at the valuation date.
(1)(c)(ii) The number of individual contracts and the number of model points used to represent them are:

| Product | Policies | Valuation <br> file records | Number of <br> model points |
| :--- | ---: | ---: | ---: |
| DSF IB | 905,224 | 905,224 | 11,974 |
| DSF CWP OB assurances | 290,479 | 312,952 | 114,717 |
| DSF CWP PPRP | 214,137 | 448,981 | 242,910 |
| DSF AWP pensions - rebates | 319,366 | 426,975 | 9,016 |
| DSF AWP pensions - other | 508,140 | $2,938,407$ | 423,662 |

The number of records in the valuation file can exceed the number of policies because:

- new records are set up for increments to existing policies, and
- for unitised with-profits pensions business, separate records are set up for ordinary rights regular premium, ordinary rights single premium, protected rights and life cover.

The Hong Kong with-profits benefits reserve is calculated by scaling up the results in respect of the modelled business, which represents $97 \%$ of the total Hong Kong withprofits benefits reserve.
(1)(c)(iii) The main classes valued on a grouped basis are the products originally sold through the former Direct Sales Force. The business volumes of the grouped classes are large and homogeneous and the grouping basis used has been designed to separate out any significant attributes that affect the retrospective benefit reserve. The model points lead to an accurate retrospective valuation. An investigation has verified that the asset shares using grouped and ungrouped data are within $0.2 \%$ in aggregate.
(2)(b) Not applicable
(3) Directly attributable expenses are allocated to the products or product groups to which they relate. Other expenses are mostly apportioned by reference to such measures as considered appropriate, for example business volumes, time spent, or mean fund (for investment expenses).
(3)(a) The previous full expense investigation related to 2008.
(3)(b) A full review of the company's cost allocation basis is carried out annually to ensure maintenance of an appropriate allocation of expenses to the with-profit and other parts of the long-term fund. Additional reviews are conducted quarterly.
(3)(c)(i)\&(ii) Expense allocation for 2009

| Description | WPSF | SAIF | DCPSF |
| :--- | :---: | :---: | :---: |
|  |  |  |  |
| Initial expenses including commission |  |  |  |
|  |  | $£ \mathrm{~m}$ | $£ \mathrm{~m}$ |
| Maintenance expenses | 171 | 0 | $£ \mathrm{~m}$ |
| Investment management expenses | 149 | 36 | 16 |
| Total expenses charged to with profits | 210 | 22 | 0 |
| benefit reserve | $\mathbf{5 3 1}$ | $\mathbf{5 7}$ | $\mathbf{1 6}$ |
| Total expenses not charged to with <br> profits benefit reserve | 45 | 6 | $(21)$ |
| Total | 576 | 64 | $(5)$ |

Net of any expenses written off
Investment expenses in respect of property maintenance and PPM Capital are allowed for in the calculation of investment returns credited to asset shares rather than being reflected as an explicit expense charge.

The investment expenses shown above exclude those incurred in respect of the assets backing the free estate.

For the DCPSF Prudential International Bond and ex-Equitable Life with-profit annuity business, explicit charges are specified in the policy and passed to the NonProfit Sub-Fund, which bears the actual costs incurred.
(3)(c)(iii) Expenses charged to the with-profits benefits reserve are expressed as some or all of an amount per policy, a percentage of premium or sum assured, or a reduction in the investment return, with an allowance for tax relief where appropriate.
(3)(c)(iv) Certain expenses are not charged to the with-profits benefits reserve. In particular:

- Expenses related to non-profit or unit-linked business.
- Deductions for initial expenses are restricted to the policy-specific charges used when illustrating benefits at the point of sale.
- For the WPSF, expenses associated with the personal pensions mis-selling review are met by the inherited estate rather than asset shares.
- For a number of pension contracts the net impact of deductions has been limited to $1 \%$ p.a. since April 2001, though this level of charge is not guaranteed to apply in future.

For all other WPSF policies, the current charge for guarantees is $2 \%$ of asset shares.
The with-profits benefits reserves are shown before these charges.
For DCPSF policies, excluding the with-profits annuity business transferred from Equitable Life Assurance Society on 31 December 2007, the charge for guarantees is again expressed as a proportion of asset shares, and the with-profits benefits reserve is shown before this $2 \%$ charge. A $0.20 \%$ pa reduction in the investment return credited to the with-profits benefit reserve also applies in respect of capital support provided by the WPSF.

For the with-profits annuity business in the DCPSF that was transferred from the Equitable Life Assurance Society, the charge for guarantees is expressed as a $0.5 \%$ pa reduction in the investment return credited to the with-profits benefit reserve. A $0.14 \%$ pa reduction in the investment return credited to the with-profits benefit reserve also applies in respect of capital support provided by the WPSF. For SAIF, two charges were made in 2009:

- an annual charge for the cost of guaranteed annuity options of $0.25 \%$ of asset shares. This is the maximum amount that which the Scottish Amicable Board has shares. This is the maximum amount that which the Scottish Amicable Board has
currently determined should be charged directly to asset shares for this cost. Any excess of the guaranteed annuity option costs over the charge made reduces the potential surplus available to enhance claim values under the Scheme of Transfer.
- an annual charge for the capital support provided by the Scottish Amicable Capital Fund (SACF) of $0.15 \%$ of asset shares.

For the WPSF, SAIF and the DCPSF the level of charges deducted during 2008 and 2009 is shown below:

| Fund | $\mathbf{2 0 0 9}$ charges <br> fm | $\mathbf{2 0 0 8}$ charges <br> fm |
| :--- | :---: | :---: |
| WPSF | 96 | 113 |
| DCPSF | 15 | 13 |
| SAIF | 35 | 41 |

For the WPSF, the charge for guarantees for With-Profits Immediate Annuities is expressed as a $0.4 \%$ pa reduction in the investment return credited to the with-profits benefits reserve. For PruFund policies the charge for guarantees is also expressed as a reduction in the credited investment return. The charge is initially $0.6 \%$ pa but this is regularly recalculated within the stochastic modelling in accordance with the prevailing economic conditions.

For the WPSF, shareholder transfers are charged to the with-profits benefits reserve. In 2009 the shareholder transfers amounted to $£ 215 \mathrm{~m}$.

The table below shows the ratio of claims (excluding deaths) paid over each of the last three years to the asset shares for those policies (including the contribution from miscellaneous surplus).

| Fund | $\mathbf{2 0 0 9}$ | $\mathbf{2 0 0 8}$ | $\mathbf{2 0 0 7}$ |
| :--- | :---: | :---: | :---: |
|  | $\%$ | $\%$ | $\%$ |
| WPSF | 112 | 110 | 98 |
| DCPSF | 107 | 109 | 92 |
| SAIF | 109 | 110 | 96 |

(7) The 2009 rates of investment return, before tax and investment management expenses, allocated to the with-profits benefits reserves were as follows:

| Fund | Business | Investment <br> return <br> $\%$ |
| :--- | :--- | :---: |
| WPSF | Prudence Bond Optimum Bonus | 19.88 |
|  | Other UK | 18.75 |
|  | Hong Kong - CWP Hong Kong dollar funds | 14.32 |
|  | Hong Kong - CWP US dollar funds | 13.00 |
|  | Hong Kong - AWP Hong Kong dollar funds | 17.47 |
|  | Hong Kong - AWP US dollar funds | 23.93 |
| SAIF | All | 18.19 |
|  | Sterling funds | 27.75 |
|  | US dollar funds | 22.81 |
|  | Euro funds |  |

The investment return for Prudence Bond Optimum Bonus business reflects a higher fixed interest content than for the main WPSF, in line with the notional investment mix of assets which is appropriate for that product line.

## 5. With-profits benefits reserves - Prospective method

With-profits benefits reserves are primarily based on the retrospective asset shares. However a number of adjustments are made because:

- WPSF DSF CWP whole life policies include significant death benefits that are more appropriately valued using expected future bonus rates rather than aggregate asset shares.
- WPSF IB bonus rates are derived from the corresponding OB rates, as opposed to the IB asset shares, in line with the undertaking given in 1988 when the IB and OB assets were merged. At that time, the Prudential undertook to declare IB bonuses that were equal to $100 \%$ of OB rates for new business issued from July 1988 and at least $90 \%$ of OB rates for business issued prior to July 1988.
- The Company has restricted the future implicit fund charge on many pension contracts to reflect its intention to restrict charges on personal pensions to stakeholder consistent levels, so restricting its ability to target claim values on the underlying asset shares.
- For some product lines the only asset shares available are charges asset shares (where asset shares have been built up using the charges associated with that product line) rather than expenses asset share (where the actual expenses have been charged). The prospective method is used to value the future liabilities (based on bonus rates derived from the charges asset shares) and determine the equivalent (expenses) asset shares required to meet such bonus rates.
- The SAIF asset share liability is increased by the value of the Scottish Amicable Account (SAA) AWP life business, calculated on a charges less expenses basis, that is passed to the WPSF.

These adjustments to the underlying asset share liability are determined using a bonus reserve valuation approach. This is a prospective approach which determines the present value of liabilities allowing for expected rates of future reversionary and terminal bonuses.

A prospective valuation is not performed for the DCPSF, nor SAIF with the exception of the SAA business mentioned above.

The non-economic assumptions largely reflect the realistic component of the regulatory basis excluding the margins for adverse deviation (MADs). The elements of the resulting reserves that represent the bonus glidepath costs and prospective miscellaneous surpluses are identified and deducted from the prospective liability to determine the adjusted with-profits benefits reserves.
(1)(a)(b)\&(c) The economic assumptions for the WPSF and SAA AWP business are:

|  | 31 December 2009 |  | 31 December 2008 |  |
| :--- | ---: | ---: | ---: | ---: |
|  | Gross | Net | Gross | Net |
|  | $\%$ | $\%$ | $\%$ | $\%$ |
| Investment return | 6.92 | 6.03 | 6.60 | 5.79 |
| Less: Investment expenses | 0.15 | 0.12 | 0.12 | 0.09 |
| Discount rate | 6.76 | 5.91 | 6.48 | 5.70 |
| Expense Inflation (except IB business) | 3.7 | 3.7 | 3.0 | 3.0 |
| Expense Inflation (IB business) | 5.7 | 5.7 | 5.0 | 5.0 |
| Annuity interest rate | 5.01 | N/A | 5.47 | N/A |
| (PPRP risk free rate of interest) |  |  |  |  |

The economic assumptions used to value the prospective benefits are the same as those used for European Embedded Value reporting, which represent our best estimate assumptions allowing for prevailing market conditions at the valuation date, thereby complying with INSPRU 1.3 .130 R . The discount rates therefore differ from the risk free rates required by $6 .(4)(a)(i i i)$.
(1)(d) Future annual and final bonus rates for WPSF significant product lines are shown in Appendix 8.
(1)(e) Future expense assumptions for significant product lines are shown below

## PER POLICY EXPENSES (YEAR 1)

| Product | Premium Paying (£) | Single Premium/ <br> Paid Up (£) |
| :--- | :---: | :---: |
| Prudence Bond | N/A | 46.34 |
| CWP Life | 45.24 | 37.17 |
| PPRP | 36.68 | 31.43 |
| Personal Pensions | 36.68 | 31.43 |
| AVCs | 112.27 | 34.81 |

The expense assumptions are the realistic component of the Peak 1 basis i.e. before the application of the margin for adverse deviation (MAD).

Future persistency assumptions for significant product lines are as follows (using the same format as for paragraph 6.(6)):

| Product | Decrement | Average surrender/paid-up rate <br> for the policy years |  |  |  |
| :--- | :--- | :--- | :---: | :---: | :---: |
|  |  | $1-5$ | $6-10$ | $11-15$ | $16-20$ |
| CWP savings endowment | surrender | 3.50 | 5.50 | 3.00 | 3.00 |
| CWP target cash endowment | surrender | 3.50 | 5.50 | 3.00 | 3.00 |
| UWP savings endowment | surrender | N/A | N/A | N/A | N/A |
| UWP target cash endowment | surrender | N/A | N/A | N/A | N/A |
| UWP bond | surrender | 3.28 | 9.12 | 6.00 | 6.00 |
| UWP bond | automatic <br> withdrawals | 0.00 | 0.00 | 0.00 | 0.00 |
| CWP pension regular premium | PUP | 3.50 | 4.00 | 3.00 | 3.00 |
| CWP pension regular premium | surrender | 1.50 | 1.50 | 1.50 | 1.50 |
| CWP pension single premium | surrender | 1.00 | 1.00 | 1.00 | 1.00 |
| UWP individual pension regular premium | PUP | 9.50 | 7.50 | 5.00 | 5.00 |
| UWP individual pension regular premium | surrender | 3.50 | 3.50 | 3.50 | 3.50 |
| UWP individual pension single premium | surrender | 3.00 | 3.00 | 3.00 | 3.00 |

## 6. Cost of guarantees, options and smoothing

(1) Not applicable
(2)(a) For the WPSF and SAIF, the value of guarantees, options and smoothing costs, net of the charge for such guarantees is determined by using market-consistent stochastic models as follows:

- For WPSF business issued in Hong Kong, the HK stochastic asset liability model (HKSALM) is used.
- The reserve in the WPSF for guarantees resulting from the personal pension misselling review is calculated using the Pension Mis-selling Reserve model.
- The reserve in the WPSF for the guaranteed minimum pensions (GMPs) on Section 32 type products is calculated using the Guaranteed Minimum Pension model.
- For all other WPSF business issued in the UK, the Prudential Stochastic Asset Liability Model (PSALM), our in-house model, is used to value product-related guarantees, except for the small volume of guaranteed annuity options (GAOs), for which the realistic reserve is set equal to the regulatory reserve.
- For SAIF business, including SAIF GAOs, PSALM is used.

For the DCPSF, a bonus smoothing account is maintained in the WPSF and credited or debited as appropriate with any difference between claim payments made from the DCPSF and the relevant policies' underlying asset shares. It is intended that these smoothing transfers should generate no net profit or loss over the long term. Claim payouts can be adjusted to cover the cost of guarantees and smoothing. If, however, in extreme circumstances, a shortfall arises in the bonus smoothing account, additional capital support is provided by the WPSF. The WPSF receives an annual charge from the NPSF for this support. Within the WPSF a further reserve is therefore held in line with the cost on similar contracts.
(2)(b)(i)(ii) \&(iii)

The reserves in respect of the personal pension mis-selling review, GMPs and WPSF GAOs are valued on an individual basis.

SAIF GAOs are valued on a grouped basis, under which 61,828 contracts have been represented by 809 model points.

For other product-related guarantees the model points used in the valuation are all grouped data sets generated using one of the following:

- individual policy details
- grouped data from other similar contracts
- a representative set of policies

The business grouped by each method is:

| Business | Valuation <br> method | Model point grouping | Contracts | Model <br> points |
| :--- | :--- | :--- | :---: | :---: |
| WPSF-UK | PSALM | Grouped | $3,769,484$ | 11,120 |
| WPSF-HK | HKSALM | Grouped | 585,555 | 32,185 |
| SAIF | PSALM | Grouped | 648,631 | 2,072 |

Model points used to determine the cost of guarantees and smoothing in the 31 December 2009 FSA return were generated from in-force data extracted at 31 December 2008, 30 June 2009 and 30 September 2009. These model points were then rolled forward to 31 December 2009.

New model points based on data as at 31 December 2008 have been produced for product classes covering $21 \%$ (WPSF) and $100 \%$ (SAIF) of total asset shares. New model points based on data as at 30 June 2009 have been produced for product classes covering $56 \%$ (WPSF) and $0 \%$ (SAIF) of total asset shares. New model points based on data as at 30 September 2009 have been produced for product classes covering $22 \%$ (WPSF) and $0 \%$ (SAIF) of total asset shares. These new model points have been rolled forward to 31 December 2009.

The Prudential Sourcebook guidance requires that the grouping of policies for valuing the cost of guarantees, options and smoothing should not materially misrepresent the underlying exposure. In particular policies with guarantees "in the money" should not be grouped with policies with guarantees well "out of the money". (The "moneyness" of guarantees describes the extent to which guarantees are biting for a policy.)

To meet this requirement WPSF (excluding Hong Kong) policies have been grouped together where they are subject to the same rate of bonus. This has been done by grouping policies separately for:

- Major product categories
- Single premium policies, regular premium policies, and paid-up policies
- Year of inception
- Year of maturity, where applicable

To more accurately group specific product lines a number of additional fields are also utilised:

- For Prudence Bond: withdrawal option and duration since top-up
- For SAIF and PSA: age
- For Group Pensions and ex-SAL Personal Pensions: initial allocation, commission type and front-end commission

For with-profits annuities, the product type, joint life status, age, sex, anticipated bonus rate, guarantee term and type, have been used as grouping variables.

For ex Equitable Life business, the product type, age, sex entry year, anticipated bonus rate, guarantee term, interest rate and type, have all been used as grouping variables.

Checks were performed to ensure that the model policies suitably reflected the underlying data. The ungrouped policy data and grouped model points were separately projected through the valuation models. Comparisons of revenue and balance sheet items over the projection period were produced to demonstrate that the model points represent the policy data adequately. The key check was to ensure that the run-off of asset share and fund value over the projection period were well matched.

Approximations are necessary for WPSF IB business because IB bonus rates are derived from the corresponding OB bonus rates as a result of the bonus harmonisation undertakings given in 1988 when the assets of the two funds were merged. That is, IB bonus rates are $100 \%$ of the corresponding OB rates for new business issued since July 1988 and at least $90 \%$ for earlier business. The total liability is determined prospectively allowing for the expected OB-related bonuses, but the amount of this liability ascribed to guarantees and smoothing is approximate.

The following changes have been made to the methods for valuing the the costs of guarantees, options and smoothing:

- PSALM has been enhanced during 2009 and now includes stand-alone PruFund business and the with-profit immediate annuities that were transferred to the company from Equitable Life at the end of 2007. Previously these products were valued in separate models.
- Hong Kong's stochastic model (HKSALM) has been amended to project cashflows over a 60 year period (rather than the 40 years previously used) in order to better reflect the long-term nature of the liabilities.
- For SAIF, it has been assumed that a charge will be made to asset shares in the future to cover the excess of the market consistent costs of guarantees and smoothing over the balance on SAIF's bonus smoothing account.
(4)(a) The following paragraphs describe the approach taken in respect of the options and guarantees valued using the PSALM model. The same asset model is used to generate the investment returns assumed in the Pension Mis-selling Reserve and Guaranteed Minimum Pension models. A similar approach is also taken for HKSALM.

For the WPSF and SAIF, the guarantees valued using the full stochastic model include sums assured and projected reversionary bonuses (including any minimum guaranteed rates of reversionary bonus) payable on death, maturity or vesting. For SAIF, guaranteed annuity options are also valued.

The extent to which guarantees are in or out of the money varies greatly across product lines and in particular by duration in force within each product line. The ratio of reversionary bonus funds to asset shares for separate AWP product lines ranged from $70 \%$ to $94 \%$, averaging $83 \%$ overall for the WPSF and $77 \%$ overall for SAIF business.
(4).(a)(ii) The economic scenario generator

Economic scenarios are generated by the GeneSIS model. This is a risk neutral stochastic asset model. The models used for each asset class are as follows:

- Nominal interest rate model

The interest rate model is a Hull and White two-factor model. Current forward rates (the UK gilts instantaneous nominal forward curve) are used to define an initial yield curve. The short rate in the model is assumed to fluctuate around this initial curve. A second random process disturbs the initial curve to which the short rate reverts.

- Equity model

The equity return is generated using a risk-neutral lognormal model. It consists of a drift term and a random process. The drift term is the short rate taken from the nominal interest rate model described above. Equity returns fluctuate about this rate by means of a random process based on an annual volatility and a random number. The volatility assumption is time dependent. The process for dividends is designed to be consistent with the current dividend yield and tends to a defined long-term yield level, whilst being constrained by a total return on equities that is consistent with the risk-neutral framework.

- Corporate bond model

Corporate bond returns are modelled as a gilt return plus additional volatility. This is an approximation to the Merton model which suggests that the return on a corporate bond can be decomposed into the return on a risk-free bond and the return on a put option on the value of a firm.

- Property model

Property returns are modelled as a corporate bond (the lease) and an equity component (the residual price). Property effectively behaves like a lognormal process with annual volatility of $15 \%$.

- Real interest rate and inflation model

Real interest rates are modelled using a one-factor Hull and White model. This model takes current forward rates (the UK gilts instantaneous real forward curve) to define an initial yield curve. The modelled interest rate is assumed to fluctuate around this initial curve. This fluctuation is correlated to the random variables used to derive nominal interest rates. The inflation rate is defined as the difference between the nominal and the real interest rate.

## Calibration of asset model

The GeneSIS model has been calibrated to the market prices of traded derivative instruments as at 31 December 2009. The assumptions used in the calibration are:

- Risk free interest rate

The yield curve used to calibrate the nominal interest rate model is shown below:


A table of the above interest rates is given in Appendix 9.
The risk-free rate has been determined as 10 bps over the gilt rate, reflecting the decrease in yield on gilts arising from their repo abilities and other factors.

It has been assumed the parameters defining the fluctuation in modelled interest rates around this yield curve are obtained by calibrating the model to replicate observed swaption rates.

## - Equity volatility

For UK equities, total return option prices were obtained with exercise dates from 1 to 10 years, and for (forward) strikes $\mathrm{K}=\{0.8,0.9,1.0\}$. The resulting volatility surface (based on moneyness and term) was converted into a structure dependent only on term through determining the moneyness of the policy guarantees. The average strike was 0.82 for the first ten years.

The resulting volatilities for UK equities are shown in the graph below:


A table of the above volatilities is given in Appendix 10.
There is no deep and liquid market for put options on a basket of overseas equities. Thus overseas equity volatility is pegged to that of UK equity to reflect the market data. The peg is set at $90 \%$, reflecting the diversification benefit of overseas equities.

For periods over 15 years, market observation is not possible and we have assumed $20 \%$ volatility for UK equities and $18 \%$ for overseas.

The final volatility term structure for UK equities is shown in the graph below:


A table of the above volatilities is given in Appendix 11.

- Corporate bonds

The annualised additional volatility over the gilt return for corporate bonds was $5.98 \%$. This volatility was determined from a historical index of corporate bond returns.

- Property

Property returns were decomposed into a corporate bond return plus the value of upward only rent increases. Due to scarcity of market data and the serial correlation of published indices, the property parameters were based on expert opinion.

- Real interest rates

The model was calibrated using 5 years of real forward rates data, instantaneous nominal forward rates for 25 years and the RPI inflation rate as at December 2009.

- Correlations

Correlations between asset classes have been determined based on internal expert opinion and analysis of historical values. The correlations implied by the economic scenarios generated for the valuation are as follows:

|  | Cash | Corporate <br> Bonds | UK <br> Equities | Overseas <br> Equities | Property |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Cash | $100 \%$ | $13 \%$ | $5 \%$ | $6 \%$ | $7 \%$ |
| Corporate Bonds | $13 \%$ | $100 \%$ | $39 \%$ | $31 \%$ | $31 \%$ |
| UK Equities | $5 \%$ | $39 \%$ | $100 \%$ | $74 \%$ | $40 \%$ |
| OS Equities | $6 \%$ | $31 \%$ | $74 \%$ | $100 \%$ | $30 \%$ |
| Property | $7 \%$ | $31 \%$ | $40 \%$ | $30 \%$ | $100 \%$ |

(4)(a)(iii) The asset model was used to value the required example options. The same table applies to WPSF UK and SAIF liabilities. The results are set out in Appendix 6.
(4)(a)(iv) The initial and long-term yields assumed for assets backing WPSF UK and SAIF liabilities are shown below:

|  | 31 December 2009 |  | 31 December 2008 |  |
| :--- | :---: | :---: | :---: | :---: |
|  | UK <br> $\mathbf{\%}$ | Overseas <br> $\mathbf{\%}$ | UK <br> $\mathbf{\%}$ | Overseas <br> $\mathbf{\%}$ |
| Equity dividend yield |  |  |  |  |
| Current | 4.73 | 3.19 | 4.43 | 3.94 |
| Long term | 3.25 | 2.50 | 3.25 | 2.50 |
|  |  |  |  |  |
| Property rental yield |  |  |  |  |
| Current | 9.10 | N/A | 8.35 | N/A |
| Long term | 6.75 | N/A | 6.50 | N/A |

All overseas territories for the UK business are treated together; we do not isolate significant territories within these.
(4)(a)(v) When expressed in sterling, the entries would be the same as for UK assets.
(4)(a)(vi) A table of the outstanding mean durations of reversionary bonus claims for material products is:

|  | 31 December 2009 |  |
| :--- | :---: | :---: |
| Product | Proportion of total <br> RB guarantee (\%) | Duration <br> (Years) |
| WPSF Bonds | 16 | 9 |
| WPSF OB/IB | 9 | 8 |
| WPSF Personal Pensions | 5 | 10 |
| WPSF PPRP | 24 | 10 |
| WPSF Group Pensions | 9 | 10 |
| With Profit Annuities | 28 | 11 |
| SAIF | 9 | 10 |
| Total | $\mathbf{9 9}$ | N/A |

A check of the model was carried out to calculate the (Monte Carlo) prices of the equity put options with a strike of $80 \%$ ATM forward. The results are shown below and demonstrate that the GeneSIS model is capable of reproducing market prices.

| Term (yrs) | Strike <br> $(\%)$ | Market Price <br> $(\%)$ | GeneSIS Price <br> $(\%)$ |
| :---: | :---: | :---: | :---: |
| Strike $=80 \%$ ATM forward |  |  |  |
| 1 | 80.8 | 3.2 | 3.2 |
| 2 | 83.2 | 6.5 | 6.4 |
| 3 | 86.6 | 9.3 | 9.2 |
| 4 | 90.5 | 11.7 | 11.8 |
| 5 | 94.9 | 13.9 | 14.0 |
| 6 | 99.6 | 16.0 | 16.0 |
| 7 | 104.5 | 18.0 | 17.9 |
| 8 | 109.9 | 19.9 | 19.8 |
| 9 | 115.6 | 21.4 | 21.3 |
| 10 | 121.6 | 23.0 | 22.7 |

(4)(a)(vii) The model reproduces the current asset values for a wide range of securities, equity options and swaptions when the future income, gains and losses are projected and discounted to the valuation date.
(4)(a)(viii) The PSALM model projects 5000 scenarios over 40 years. We have demonstrated that this produces statistically credible results, both using statistical theory and empirically by running the model several times on randomly different sets of economic scenarios and demonstrating that the results are materially close.
(4)(b) Not applicable
(4)(c) Not applicable

For the WPSF UK business and SAIF, modelled management decisions are consistent with the Principles and Practices of Financial Management (PPFM) available to the public, and with the Financial Condition Reports submitted annually to the PAC Board. Details are given for UK business; a similar approach is used for the Hong Kong business.

In practice, a range of management actions would be considered at any time of stress. The actions taken would depend on the economic outlook and the financial position of the fund at that time. The stochastic model cannot reflect all possible actions and so it includes assumptions to broadly reflect the likely decisions. The assumptions made, as described below, are therefore indicative of the actions that might be taken in practice.

The results are sensitive to the bonus, MVR and investment policy the company employs. The annual bonuses and investment mix are dynamically modelled in PSALM stochastic projections. Dynamic management actions are assumed to depend on the PAC solvency position during the projection. For this purpose a PAC solvency ratio is calculated as (assets/regulatory liability - 1) for the combined with-profits funds, where the regulatory liability includes a notional resilience capital requirement. Two ratios are calculated either including or excluding the cost of personal pension mis-selling costs (accumulated past and potential future costs, run-off in line with relevant policy asset shares) as an additional notional asset. The appropriate ratio is applied when deriving management actions in order to ensure that PAC's bonus and investment policy remain unaffected by the charging of personal pension mis-selling costs to the inherited estate in the WPSF.

Paragraphs (5)(a)(i) to (5)(a)(vii) below set out the key management actions assumed.

## (5)(a)(i) Reversionary bonuses (RB)

The following rules are assumed for WPSF business:

- The initial RB rates are shown in Appendix 7.
- When the solvency ratio (including the cost of personal pension mis-selling) is at or above $8 \%$, RB rates are determined by comparing the projected terminal bonus level with the theoretical terminal bonus level that would be consistent with targeting RB rates on $60 \%$ of expected future investment returns, net of charges. RB rates are increased if the projected terminal bonus level is too high or decreased if the projected terminal bonus level is too low, compared with a target range.
- If (on the RB declaration month) the solvency level is below $8 \%$, then RB rates are reduced by $50 \%$. If solvency recovers back above $8 \%$ then RB rates are assumed to revert back to the full level.


## The following additional rules are assumed for SAIF business:

- The calculated RB rates (ie determined by projecting the terminal bonus level) are assumed to apply when the solvency ratio (including the cost of personal pension mis-selling) is at or above $16.6 \%$.
- If (on the RB declaration month) the solvency ratio is below $8.3 \%$, SAIF RB rates are assumed to reduce by $90 \%$. Between $16.6 \%$ and $8.3 \%$ solvency, SAIF RB rates are reduced linearly. When the solvency ratio rises above $16.6 \%$, RB rates return to the full level.
- If the WPSF RB rates have been cut by $50 \%$, the SAIF RB rates derived above are also assumed to reduce by a further $50 \%$.

Smoothing costs are determined in line with expected company practice to the extent that this can be modelled (given the practical constraints of stochastic modelling).

The stochastic asset liability model does not hold specific final bonus rates; instead the approach used is to determine:

- the opening claim values by applying a ratio of claim value to asset share to each model point asset share, and
- all future claim values as equal to asset shares, subject to the smoothing of claim values and the reversionary bonus underpin (where applicable).

The claim value between year ends is determined by accumulating the previous yearend smoothed claim value at a rate of return, which is equal to the risk-free rate plus a risk premium (which is the weighted average of the risk premiums for each asset class). The risk premiums are set to target an overall fund return of $7.9 \%$ over the long term.
In the RCM scenario, the risk-free rate reduces in line with the interest rate event.
The yearly reviews adjust the claim value towards the asset share, as follows:

- if the claim value (before the application of smoothing) is within $\pm 10 \%$ of the target asset share, the smoothed claim value is set equal to the target asset share,
- if the claim value (before the application of smoothing) is outside $\pm 10 \%$ but within $\pm 20 \%$ of the target asset share, the smoothed claim value is moved $10 \%$ (of the asset share) closer to the asset share,
- if the claim value (before the application of smoothing) is outside $\pm 20 \%$ but within $\pm 33 \%$ of the target asset share, the smoothed claim value is moved to $\pm 10 \%$ of the asset share,
- if the claim value (before the application of smoothing) is outside $\pm 33 \%$ of the target asset share, the smoothed claim value is moved two thirds of the way to the target asset share.

With-profit immediate annuities are constrained such that the year-on-year change in total annuity lies within the range $-5 \%$ to $11 \%$.

In addition to the modelling assumptions described above smoothing is suspended if the solvency ratio (including the cost of personal pension mis-selling) is less than $6 \%$. In these circumstances, for AWP and CWP products, claim values on maturity or death are set equal to the greater of the guaranteed benefit and the asset share. For other decrements, claim values are set equal to the asset share. For with-profit immediate annuities (WPIA), there is no limit to the fall in smoothed annuity that can be applied when smoothing is suspended. The solvency check is carried out monthly for AWP business, and annually for CWP and WPIA business, to reflect practical constraints on when claim values can be revised.

Market value reductions (MVRs)
It is assumed that the MVR-free limit to be applied to all AWP business in the sixth and subsequent policy years varies according to the solvency ratio (including the cost of personal pension mis-selling), as follows:

- When the solvency ratio is above $8 \%$, the MVR-free limit is $£ 25,000$.
- When the solvency ratio is between $6 \%$ and $8 \%$, the MVR-free limit is $£ 10,000$.
- When the solvency ratio is below $6 \%$, the MVR-free limit is zero.
- Once the MVR-free limit has fallen to $£ 10,000$ or zero it does not return to $£ 25,000$ until the solvency ratio is at least $15 \%$.

For personal pensions, our current practice is to apply a reducing scale of MVRs on early retirement within six years of the selected retirement date. The phasing out of MVRs on Prudence Bond and PSA by the later of age 85 and in-force duration of 15 years is also allowed for. For both personal pensions and Prudence Bond/PSA, it is assumed that phased MVRs would be applied only if the solvency ratio (including the cost of personal pension mis-selling) is at or above $8 \%$. Below $8 \%$, full MVRs are assumed to be applied.

The maximum MVR (as a percentage of the pre-MVR claim value) is capped at $15 \%$ providing the solvency ratio (including the cost of personal pension mis-selling) is at or above $6 \%$. When the solvency ratio is below $6 \%$, the MVR is not capped.
(5)(a)(iv) Frequency of bonus declarations

Bonus declarations are assumed to be made annually. Additional mid-year bonus declarations for accumulating with-profits (AWP) business are made if both:

- the solvency ratio (including the cost of personal pension mis-selling) is less than or equal to $15 \%$, and
- the claim value to asset share ratio for AWP business is either greater than $125 \%$ or less than $75 \%$.
(5)(a)(v) Asset re-balancing and switching

The asset allocations are assumed to be re-balanced on an annual basis towards the long-term benchmark asset allocation. There is no assumed limit on the maximum amount that can be re-balanced in any month.

In addition to rebalancing, asset switching (pro rata from UK and overseas equities into corporate bonds) is triggered when the solvency ratio falls below $6 \%$ (including the cost of personal pension mis-selling). The amounts to be switched are determined as follows:

- At $6 \%$ solvency or above, UK and overseas equities are assumed to remain at their long-term benchmark proportions (if switching has not yet taken place). If switching has already taken place in the model, switching from corporate bonds back into equities (in order to return to the long-term benchmark) can only occur when solvency rises above $8 \%$.
- At $2.5 \%$ solvency, UK and overseas equities are assumed to be fully switched into corporate bonds.
- Between $6 \%$ and $2.5 \%$ solvency, the required switch amount is determined by linear interpolation between the limits specified above.

The maximum amount that can be switched in any month is $2 \%$ of total assets.
The SAIF asset share asset allocation is assumed to be the same as the WPSF but with around $6 \%$ more corporate bonds (and around $6 \%$ less in other assets).

The property portfolio is assumed to be illiquid over the short term, so no switching of property assets occurs in the model.
(5)(a)(vi) Tax on shareholders' transfers

If the PAC solvency level (excluding the cost of personal pension mis-selling) is above $8 \%$, tax on shareholders' transfers is assumed to be paid from the WPSF's free assets.
(5)(a)(vii) Operation of SAIF

PSALM contains rules to model the SAIF Principles of Financial Management. As well as the rules set out above, this includes:

- recalculating the enhancement factor applied to SAIF asset shares, with the intention of distributing all SAIF assets (including future profits arising in SAIF) to SAIF policies, and
- merging SAIF into the WPSF when SAIF assets (including the bonus smoothing account but excluding SACF) fall below $£ 1$ bn, increased in line with RPI from the date of commencement of the Scottish Amicable scheme (1997).
(5)(b)

The proportion of equities and level of reversionary bonus rates after 5 and 10 years are shown below, projected by the PSALM model assuming various specific constant rates of return.
(i) Based on forward rates derived from the risk free interest rate curve

| Year | Rate of <br> return | Equity <br> proportion |  | Proportion of initial RB rate |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | WPSF | SAIF | WPSF - <br> Life | WPSF - <br> Pensions | SAIF - Life | SAIF - <br> Pensions |
|  | $\%$ | $\%$ | $\%$ | $\%$ | $\%$ | $\%$ | $\%$ |
| Current | N/A | 42 | 37 | 100 | 100 | 100 | 100 |
| 5 years | 3.19 | 41 | 36 | 67 | 117 | 75 | 33 |
| 10 years | 4.04 | 41 | 36 | 75 | 92 | 0 | 0 |

(ii) Based on forward rates plus $17.5 \%$ of the long-term gilt yield

| Year | Rate of <br> return | Equity <br> proportion |  | Proportion of initial RB rate |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | WPSF | SAIF | WPSF - <br> Life | WPSF - <br> Pensions | SAIF - Life | SAIF - <br> Pensions |
|  | $\%$ | $\%$ | $\%$ | $\%$ | $\%$ | $\%$ | $\%$ |
| Current | N/A | 42 | 37 | 100 | 100 | 100 | 100 |
| 5 years | 3.96 | 41 | 36 | 83 | 133 | 113 | 56 |
| 10 years | 4.81 | 41 | 36 | 100 | 133 | 12 | 11 |

(iii) Based on forward rates less $17.5 \%$ of the long-term gilt yield

| Year | Rate of <br> return | Equity <br> proportion |  | Proportion of initial RB rate |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | WPSF | SAIF | WPSF - <br> Life | WPSF - <br> Pensions | SAIF - Life | SAIF - <br> Pensions |
| Current | N/A | $\%$ | $\%$ | $\%$ | $\%$ | $\%$ | $\%$ |
| 5 years | 2.45 | 41 | 37 | 100 | 100 | 100 | 100 |
| 10 years | 3.28 | 41 | 36 | 42 | 83 | 65 | 14 |

The initial reversionary bonus rates are shown in Appendix 7.
(6)

For SAIF guaranteed annuity options, modelled in PSALM, no decrements are assumed in deferment and $10 \%$ of the annuity is assumed to be taken as cash (i.e. the guarantee cost applies only to the remaining $90 \%$ ). Due to constrained information on the age at vesting and the nature of the annuity, GAO costs are calculated using an annuity certain of 24 years.

A summary of the decrement assumptions is shown in the table below:

| Product | Decrement | Average surrender/paid-up rate <br> for the policy years |  |  |  |
| :--- | :--- | :--- | :---: | :---: | :---: |
|  |  |  |  |  | $6-10$ |

It is assumed that in extreme market scenarios, the group actions of policyholders would serve to increase the costs of guarantees and smoothing. This is modelled by assuming that decrement rates will be $10 \%$ lower than our current best estimate. The same assumptions are used in both the base valuation and the RCM.

## 7. Financing costs

Not applicable

## 8. Other long-term insurance liabilities

No liabilities are shown at line 46 of Form 19. Liabilities shown at line 47 of Form 19 are as follows:

| With-profits <br> fund | $\underline{\text { Description }}$ | $\underline{\text { Amount }}$ |
| :---: | :--- | :---: |
| WPSF | The tax payable from the estate in respect of future shareholder <br> transfers from the fund | 640 |
|  | Pensions mis-selling liabilities | 384 |
|  | Contingency reserve | 100 |
|  | SACF capital support fees receivable from SAIF <br> Reserve for compensation in respect of complaints on mortgage | 47 |
|  | Other | 22 |
| SAIF | SACF capital support fees payable to the WPSF | 77 |
|  | Reserve for compensation in respect of complaints on mortgage <br> endowment policies | 35 |
|  | Other | 15 |

## 9. Realistic current liabilities

Regulatory current liabilities comprise two elements:
(i) a provision for the capital gains tax (CGT) expected to be paid on unrealised investment gains, and
(ii) other current liabilities, as reported within Form 14 lines 17 to 41.

The realistic current liabilities shown at line 51 of Form 19 are the same as the regulatory current liabilities except that:
(a) the unrealised CGT provision is determined assuming a discounted CGT rate of $19.2 \%$ rather than the undiscounted rate of $20 \%$, and
(b) the realistic current liabilities include cash bonuses which had not been paid to policyholders prior to the end of the financial year (as shown at Form 14 line 12).

The reconciliation of realistic to regulatory current liabilities is shown below:

|  | WPSF <br> $\mathbf{f m}$ | SAIF <br> $\mathbf{f m}$ | DCPSF <br> $\mathbf{f m}$ |
| :--- | ---: | ---: | ---: |
| Current liabilities (Form 14 line 49) <br> Unpaid cash bonus (Form 14 line 12) <br> Regulatory current liabilities <br> Impact of discounting CGT rate | 2,830 | 572 | 70 |
|  | 4 | - | - |
|  | 2,834 | 572 | 70 |
|  | $(25)$ | $(3)$ | - |

## 10. Risk capital margin

(a) The risk capital margin is $£ 1,545 \mathrm{~m}$ for the WPSF (plus the DCPSF) and zero for SAIF.

This has been calculated assuming:
(i) a percentage change in market values, in accordance with INSPRU 1.3.68R, of $20.0 \%$ for equities and $12.5 \%$ for real estate. The assumed percentage changes for each significant territory were the same as for United Kingdom assets. A fall in market values is the more onerous.
(ii) a change in the yields of United Kingdom fixed interest securities of 78 bps . For significant territories, the assumed change in yields is 78 bps for the United States and 78 bps for the member states of the European Union that have adopted the euro as their official currency ("euroland"). A fall in yields is the more onerous. The assumed longterm gilt yields or nearest equivalent are shown below:

| Territory | Long-term gilt yield <br> in base valuation <br> $\%$ | Long-term gilt yield <br> in RCM <br> $\%$ |
| :--- | :---: | :---: |
| UK | 4.45 | 3.67 |
| USA | 4.43 | 3.65 |
| euroland | 3.96 | 3.18 |

(iii) in respect of credit risk, average changes in spreads and consequent changes in asset values as follows:
(a) for bonds issued or guaranteed by an organisation which is a credit risk scenario exempt organisation in accordance with INSPRU 1.3.87R, no credit stress is applied. For other bonds, spreads are assumed to increase on average by 190 basis points (assets backing WPSF \& DCPSF asset shares), by 117 basis points (WPSF estate) and by 199 basis points (SAIF). Asset values (including those in respect of credit risk scenario exempt organisations) fall overall by $7.9 \%$ (WPSF and DCPSF asset shares), by $4.7 \%$ (WPSF estate) and by $6.9 \%$ (SAIF).
(b) for debts, it is assumed that spreads increase on average by 146 basis points and asset values fall overall by $13.4 \%$.
(c) no allowance is made for reinsurance credit risk as the volume of reinsured withprofits business is immaterial.
(d) no change is assumed for non-reinsurance financing agreements. These are not considered to present a significant credit risk.
(e) for other debtors reported in lines 78 and 79 of Form 13, it is assumed that asset values fall overall by $1.0 \%$.
(iv) the impact of the persistency risk scenario is equivalent to an increase in the realistic value of liabilities of $0.4 \%$ for the WPSF and $0.7 \%$ for SAIF.
(v) that any change in asset values in (iii) is independent of the change in liability values in (iv).
(b) In the risk capital margin calculation the management actions assumed are the same as those set out in 6.(5)(a).

There are no changes to other assumptions.
(c) (i) The assets allocated to support the WPBR, FPRL and the reserve for unrealised capital gains reflect the actual mix of the assets backing these liabilities. Current assets are used to support current liabilities. The RCM is backed by surplus fixed interest assets.
(ii) For the WPSF and SAIF none of the assets held to cover the risk capital margin are outside the respective fund.

For the DCPSF the assets backing the RCM are held in the WPSF.

## 11. Tax

The treatment of tax is set out below.
(i) The investment returns credited to the with-profits benefits reserves include an allowance for tax deducted during 2009 at the rates shown below. Further adjustments may be made from time to time to bring the tax charged to asset shares into line with the aggregate tax actually paid and expected to be paid in the future. Tax on shareholders transfers is not currently deducted from asset shares.
(ii) The future policy related liabilities include allowance for tax on future investment returns and tax relief on expenses at current rates of tax allowing for any likely deferral of tax on capital gains, as shown in the table below.
(iii) The realistic current liabilities include a reserve for unrealised capital gains which is the regulatory reserve except that a discounted rate of $19.2 \%$ rather than $20 \%$ is applied.

| TAX RATES | WPSF and SAIF $^{\dagger}$ <br> Source |
| :--- | :---: |
| Tax Rate |  |$|$| Franked Investment Income | $20.0 \%$ |
| :---: | :---: |
| Unfranked Investment Income (fixed interest and cash) | $20.0 \%$ |
| Unfranked Investment Income (property) | $19.2 \%$ |
| Capital Gains | $15.0 \%$ |
| Initial Expense Relief | $20.0 \%$ |
| Renewal Expense Relief | $38.9 \%$ |
| Shareholder Transfers (gross business) | $7.2 \%$ |
| Shareholder Transfers (net business) |  |

${ }^{\dagger}$ Tax is not applied to pensions or DCPSF business other than in respect of tax on shareholders' transfers from the WPSF.

## 12. Derivatives

The WPSF and SAIF hold:

- Exchange traded equity index and fixed income futures. Positions are used either:
(a) to reflect tactical asset allocation (short term) views around the strategic (long term) benchmark, or
(b) as part of a delta hedging programme to protect the inherited estate from large falls in equity values.
- Equity index options to protect the inherited estate from large falls in equity values.
- Forward currency contracts primarily to hedge currency risk arising from US and European bond exposures, but also to implement tactical asset allocation positions.
- Over-the-counter (OTC) equity single stock options to increase the equity exposure of the convertible bond sub-fund.
- OTC fixed income derivatives positions to convert floating rate assets into fixed rate assets.
- OTC interest rate swaps to change the average duration of the fixed interest portfolio.
- OTC total return swaps based on the IPD Annual All Property index to adjust tactically the fund's exposure to property.
- Index and single name credit default swaps to increase or decrease credit exposure.
- SAIF holds OTC swaptions to partially hedge its guaranteed annuity liabilities.

13. Analysis of change in working capital

|  | WPSF <br> £m | $\begin{gathered} \text { SAIF } \\ £ \mathrm{~m} \end{gathered}$ |
| :---: | :---: | :---: |
| Working capital at 1 January 2009 | 5,363 | - |
| Reversal of zeroisation by closed funds | - | 169 |
| Working capital at 1 January 2009 prior to zeroisation | 5,363 | 169 |
| Assets: |  |  |
| Investment return on opening working capital (excluding PAL) | 297 | 19 |
| Return on PAL | 172 | - |
| Investment return on assets backing liabilities | (220) | 177 |
| Excess (over expected cost) of 2009 claim values over asset shares | (156) | (166) |
| Change in cost of guarantees, options, and smoothing: |  |  |
| 2009 economic experience | 402 | 81 |
| Economic assumption changes | 602 | 145 |
| Non-economic assumption changes | 12 | - |
| Model enhancements | 138 | - |
| Impact of new business | (148) | - |
| Change in bonus smoothing account charges | - | 69 |
| Other | 19 | (51) |
| Other: |  |  |
| Change in contingency reserve | (100) | - |
| Other | 60 | 21 |
| Working capital at 31 December 2009 prior to zeroisation | 6,441 | 464 |
| Zeroisation by closed funds | - | (464) |
| Working capital at 31 December 2009 | 6,441 | - |

## 14. Optional disclosure

Not applicable

## Appendix 6

|  | Asset type | $K=0.75$ |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | n | 5 | 15 | 25 | 35 |
|  | Annualised compound equivalent of the risk free rate assumed for the period | 3.13\% | 4.77\% | 4.71\% | 4.56\% |
| 1 | Risk-free zero coupon bond | 858,465 | 495,404 | 314,107 | 208,484 |
| 2 | FTSE All Share Index ( $\mathrm{p}=1$ ) | 113,997 | 238,011 | 317,425 | 390,491 |
| 3 | FTSE All Share Index ( $\mathrm{p}=0.8$ ) | 104,129 | 182,571 | 218,675 | 249,180 |
| 4 | Property ( $\mathrm{p}=1$ ) | 34,516 | 104,875 | 173,269 | 247,101 |
| 5 | Property ( $\mathrm{p}=0.8$ ) | 28,840 | 67,947 | 99,670 | 136,109 |
| 6 | 15 year risk free zero coupon bonds ( $\mathrm{p}=1$ ) | 4,737 | 9,205 | 7,986 | 15,621 |
| 7 | 15 year risk free zero coupon bonds ( $\mathrm{p}=0.8$ ) | 3,321 | 2,230 | 734 | 1,392 |
| 8 | 15 year corporate bonds ( $\mathrm{p}=1$ ) | 13,584 | 40,810 | 71,246 | 117,368 |
| 9 | 15 year corporate bonds ( $\mathrm{p}=0.8$ ) | 10,460 | 19,075 | 28,211 | 43,980 |
| 10 | Portfolio of 65\% FTSE All Share and 35\% property ( $\mathrm{p}=1$ ) | 67,163 | 165,423 | 239,034 | 315,325 |
| 11 | Portfolio of 65\% FTSE All Share and 35\% property ( $\mathrm{p}=0.8$ ) | 59,465 | 118,809 | 154,090 | 188,860 |
| 12 | Portfolio of 65\% FTSE All Share and 35\% 15 risk free zero coupon bonds ( $\mathrm{p}=1$ ) | 49,308 | 124,348 | 179,476 | 239,869 |
| 13 | Portfolio of 65\% FTSE All Share and 35\% 15 risk free zero coupon bonds ( $\mathrm{p}=0.8$ ) | 42,097 | 83,745 | 106,706 | 131,200 |
| 14 | Portfolio of $40 \%$ equity, $15 \%$ property, $22.5 \% 15$ year risk free zero coupon bonds and $22.5 \% 15$ year corporate bonds $(\mathrm{p}=1)$ | 26,524 | 80,389 | 128,901 | 186,834 |
| 15 | Portfolio of $40 \%$ equity, $15 \%$ property, $22.5 \% 15$ year risk free zero coupon bonds and $22.5 \% 15$ year corporate bonds $(\mathrm{p}=0.8)$ | 21,732 | 46,648 | 67,603 | 91,790 |
|  |  | $L=15$ |  |  |  |
| 16 | Receiver swaptions | 3.66\% | 6.24\% | 4.95\% | 3.38\% |


|  | Asset type | $K=1$ |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | n | 5 | 15 | 25 | 35 |
|  | Annualised compound equivalent of the risk free rate assumed for the period | X | X | x | X |
| 1 | Risk-free zero coupon bond | X | X | X | X |
| 2 | FTSE All Share Index ( $\mathrm{p}=1$ ) | 248,998 | 401,418 | 496,201 | 582,340 |
| 3 | FTSE All Share Index ( $\mathrm{p}=0.8$ ) | 230,652 | 314,552 | 350,256 | 379,950 |
| 4 | Property ( $\mathrm{p}=1$ ) | 141,665 | 238,447 | 325,069 | 414,367 |
| 5 | Property ( $\mathrm{p}=0.8$ ) | 125,354 | 164,023 | 199,770 | 238,430 |
| 6 | 15 year risk free zero coupon bonds ( $\mathrm{p}=1$ ) | 75,092 | 81,514 | 74,861 | 91,752 |
| 7 | 15 year risk free zero coupon bonds ( $\mathrm{p}=0.8$ ) | 60,237 | 31,879 | 13,912 | 13,479 |
| 8 | 15 year corporate bonds ( $\mathrm{p}=1$ ) | 100,213 | 150,341 | 196,017 | 258,157 |
| 9 | 15 year corporate bonds ( $\mathrm{p}=0.8$ ) | 84,109 | 84,703 | 90,294 | 111,043 |
| 10 | Portfolio of 65\% FTSE All Share and 35\% property ( $\mathrm{p}=1$ ) | 187,850 | 312,600 | 402,324 | 492,884 |
| 11 | Portfolio of 65\% FTSE All Share and 35\% property ( $\mathrm{p}=0.8$ ) | 170,080 | 232,886 | 268,163 | 305,780 |
| 12 | Portfolio of 65\% FTSE All Share and 35\% 15 risk free zero coupon bonds ( $\mathrm{p}=1$ ) | 162,720 | 261,059 | 330,166 | 406,092 |
| 13 | Portfolio of 65\% FTSE All Share and 35\% 15 risk free zero coupon bonds (p=0.8) | 145,640 | 185,260 | 205,813 | 231,371 |
| 14 | Portfolio of $40 \%$ equity, $15 \%$ property, $22.5 \% 15$ year risk free zero coupon bonds and $22.5 \% 15$ year corporate bonds $(\mathrm{p}=1)$ | 125,749 | 204,907 | 266,885 | 345,192 |
| 15 | Portfolio of $40 \%$ equity, $15 \%$ property, $22.5 \% 15$ year risk free zero coupon bonds and $22.5 \% 15$ year corporate bonds $(\mathrm{p}=0.8$ ) | 109,460 | 134,104 | 152,038 | 178,968 |
|  |  | $\mathbf{L}=20$ |  |  |  |
| 16 | Receiver swaptions | 4.73\% | 7.47\% | 5.76\% | 3.94\% |


|  | Asset type | $K=1.5$ |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | n | 5 | 15 | 25 | 35 |
|  | Annualised compound equivalent of the risk free rate assumed for the period | X | X | X | X |
| 1 | Risk-free zero coupon bond | X | X | X | X |
| 2 | FTSE All Share Index ( $\mathrm{p}=1$ ) | 616,092 | 784,625 | 890,301 | 993,871 |
| 3 | FTSE All Share Index ( $\mathrm{p}=0.8$ ) | 579,335 | 631,113 | 646,638 | 665,015 |
| 4 | Property ( $\mathrm{p}=1$ ) | 524,577 | 610,269 | 700,839 | 797,754 |
| 5 | Property ( $\mathrm{p}=0.8$ ) | 483,899 | 455,863 | 463,753 | 489,213 |
| 6 | 15 year risk free zero coupon bonds ( $\mathrm{p}=1$ ) | 499,426 | 477,974 | 454,994 | 443,752 |
| 7 | 15 year risk free zero coupon bonds ( $\mathrm{p}=0.8$ ) | 455,498 | 301,145 | 194,120 | 146,656 |
| 8 | 15 year corporate bonds ( $\mathrm{p}=1$ ) | 514,398 | 538,470 | 576,956 | 638,548 |
| 9 | 15 year corporate bonds ( $\mathrm{p}=0.8$ ) | 471,290 | 371,066 | 329,475 | 328,127 |
| 10 | Portfolio of 65\% FTSE All Share and 35\% property ( $\mathrm{p}=1$ ) | 562,748 | 684,746 | 785,908 | 888,770 |
| 11 | Portfolio of 65\% FTSE All Share and 35\% property ( $\mathrm{p}=0.8$ ) | 524,493 | 532,218 | 546,520 | 571,133 |
| 12 | Portfolio of 65\% FTSE All Share and 35\% 15 risk free zero coupon bonds ( $\mathrm{p}=1$ ) | 541,027 | 628,381 | 704,197 | 790,019 |
| 13 | Portfolio of 65\% FTSE All Share and 35\% 15 risk free zero coupon bonds ( $\mathrm{p}=0.8$ ) | 501,330 | 475,616 | 467,997 | 481,279 |
| 14 | Portfolio of $40 \%$ equity, $15 \%$ property, $22.5 \% 15$ year risk free zero coupon bonds and $22.5 \% 15$ year corporate bonds $(\mathrm{p}=1)$ | 520,295 | 573,880 | 639,687 | 721,608 |
| 15 | Portfolio of $40 \%$ equity, $15 \%$ property, $22.5 \% 15$ year risk free zero coupon bonds and $22.5 \% 15$ year corporate bonds $(\mathrm{p}=0.8)$ | 479,105 | 416,747 | 401,980 | 417,912 |
|  |  | $\mathbf{L}=\mathbf{2 5}$ |  |  |  |
| 16 | Receiver swaptions | 5.71\% | 8.44\% | 6.37\% | 4.36\% |

## Appendix 7

Initial reversionary bonus (RB) rates in stochastic valuation

|  | RB rates <br> \% |
| :---: | :---: |
| Life \& Pensions |  |
| 1. PSA/PIB | 3.00 |
| 2. Personal Pensions | 3.00 |
| 3. OB assurances | 1.2/2.5 |
| 4. IB assurances | 1.1/2.3 |
| 5. PPRP | 0.25/0.50 |
| Annuities |  |
| 6. Annuities | 1.50 |
| Corporate |  |
| 8. Unitised | 3.25 |
| 9a. DC Cash Accumulation | $2.75{ }^{1}$ |
| 9b. DB Cash Accumulation | $2.25{ }^{1}$ |
| 10. AVC Cash Accumulation | $2.75{ }^{1}$ |
| 12. Pension Savings Plan | 2.25 |
| IFA |  |
| 13. Prudence Bond - Standard | 3.00 |
| - High RB | 3.75 |
| 14. Prudential Pensions | 3.00 |
| 15. SAL Life | 2.75 |
| 16. SAL Pensions <br> - Funds 5, 6 | 3.125 |
| SAIF $^{2}$ |  |
| 17. Principal Endowment | 0.80/1.50 |
| 20. Flexipension (series 1) | 0.40/0.90 |
| 21. Life | 2.00 |
| 22. Pensions - Funds 3 \& 4 | 2.25 |

${ }^{1}$ Subject to a guarantee of $4.75 \%, 2.50 \%$ for certain earlier business
${ }^{2}$ SAIF projected rates are reduced by applying the PAC solvency adjustment factor

Where two rates are shown, the first is the rate of RB added to the original sum assured and the second is the rate of RB added to existing RB.

## Appendix 8

The tables below show the Reversionary Bonus (RB) rates and the Terminal Bonus (TB) as a proportion of the Sum Assured.

OB Assurances

| Reversionary Bonus Rates |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | 2009 Actual | 2010 | 2011 | Ultimate |
| RB on SA | $1.2 \%$ | $1.2 \%$ | $1.2 \%$ | $1.2 \%$ |
| RB on RB | $2.5 \%$ | $2.5 \%$ | $2.5 \%$ | $2.5 \%$ |


| TB as a proportion of Sum Assured |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Term | 2009 | 2010 | 2011 | 2012 | 2013 |
| 10 | $15 \%$ | $20 \%$ | $21 \%$ | $21 \%$ | $20 \%$ |
| 15 | $24 \%$ | $25 \%$ | $24 \%$ | $25 \%$ | $34 \%$ |
| 20 | $51 \%$ | $45 \%$ | $42 \%$ | $35 \%$ | $38 \%$ |
| 25 | $65 \%$ | $60 \%$ | $61 \%$ | $61 \%$ | $63 \%$ |
| 30 | $137 \%$ | $117 \%$ | $88 \%$ | $63 \%$ | $56 \%$ |

## PPRP Regular Premium

| Reversionary Bonus Rates |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
|  | 2009 | 2010 | 2011 | Ultimate |
| RB on SA | $0.25 \%$ | $0.25 \%$ | $0.25 \%$ | $0.25 \%$ |
| RB on RB | $0.50 \%$ | $0.50 \%$ | $0.50 \%$ | $0.50 \%$ |


| TB as a proportion of Sum Assured |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Term | 2009 | 2010 | 2011 | 2012 | 2013 |
| 10 | $7 \%$ | $8 \%$ | $16 \%$ | $17 \%$ | $14 \%$ |
| 15 | $9 \%$ | $3 \%$ | $5 \%$ | $8 \%$ | $10 \%$ |
| 20 | $16 \%$ | $14 \%$ | $7 \%$ | $10 \%$ | $11 \%$ |
| 25 | $0 \%$ | $0 \%$ | $0 \%$ | $7 \%$ | $14 \%$ |
| 30 | $47 \%$ | $13 \%$ | $2 \%$ | $0 \%$ | $0 \%$ |

## PPRP Single Premium

| Reversionary Bonus Rates |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
|  | 2009 | 2010 | 2011 | Ultimate |
| RB on SA | $0.25 \%$ | $0.25 \%$ | $0.25 \%$ | $0.25 \%$ |
| RB on RB | $0.50 \%$ | $0.50 \%$ | $0.50 \%$ | $0.50 \%$ |


| TB as a proportion of Sum Assured |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Term | 2009 | 2010 | 2011 | 2012 | 2013 |
| 10 | $0 \%$ | $0 \%$ | $26 \%$ | $38 \%$ | $34 \%$ |
| 15 | $28 \%$ | $11 \%$ | $6 \%$ | $1 \%$ | $0 \%$ |
| 20 | $8 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $43 \%$ |
| 25 | $72 \%$ | $44 \%$ | $33 \%$ | $23 \%$ | $14 \%$ |
| 30 | $199 \%$ | $183 \%$ | $155 \%$ | $133 \%$ | $115 \%$ |

## PP Regular Premium

| Reversionary Bonus Rates |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | 2009 actual | 2010 | 2011 | Ultimate |
| RB rate | $3.00 \%$ | $2.50 \%$ | $2.50 \%$ | $2.50 \%$ |


| TB as a proportion of Sum Assured |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Term | 2009 | 2010 | 2011 | 2012 | 2013 |
| 10 | $9 \%$ | $10 \%$ | $13 \%$ | $13 \%$ | $13 \%$ |
| 15 | $13 \%$ | $13 \%$ | $15 \%$ | $16 \%$ | $17 \%$ |

Appendix 9
The table below shows the instantaneous risk-free forward rates used to calibrate the nominal interest rate model.

| Year | 31 December 2009 | 31 December 2008 |
| :---: | :---: | :---: |
| 0 | 0.61 | 1.54 |
| 1 | 1.48 | 1.20 |
| 2 | 2.95 | 2.82 |
| 3 | 3.84 | 3.58 |
| 4 | 4.48 | 3.89 |
| 5 | 4.96 | 4.04 |
| 6 | 5.32 | 4.12 |
| 7 | 5.55 | 4.17 |
| 8 | 5.68 | 4.23 |
| 9 | 5.71 | 4.32 |
| 10 | 5.68 | 4.45 |
| 11 | 5.60 | 4.61 |
| 12 | 5.49 | 4.78 |
| 13 | 5.36 | 4.91 |
| 14 | 5.22 | 5.00 |
| 15 | 5.08 | 5.04 |
| 16 | 4.94 | 5.02 |
| 17 | 4.81 | 4.94 |
| 18 | 4.69 | 4.80 |
| 19 | 4.58 | 4.62 |
| 20 | 4.48 | 4.42 |
| 21 | 4.39 | 4.20 |
| 22 | 4.31 | 3.97 |
| 23 | 4.24 | 3.76 |
| 24 | 4.17 | 3.57 |
| 25 | 4.11 | 3.41 |
| 26 | 4.11 | 3.41 |
| 27 | 4.11 | 3.41 |
| 28 | 4.11 | 3.41 |
| 29 | 4.11 | 3.41 |
| 30 | 4.11 | 3.41 |
| 31 | 4.11 | 3.41 |
| 32 | 4.11 | 3.41 |
| 33 | 4.11 | 3.41 |
| 34 | 4.11 | 3.41 |
| 35 | 4.11 | 3.41 |
| 36 | 4.11 | 3.41 |
| 37 | 4.11 | 3.41 |
| 38 | 4.11 | 3.41 |
| 39 | 4.11 | 3.41 |
| 40 | 4.11 | 3.41 |

## Appendix 10

The table below shows the UK equity volatilities obtained for the GeneSIS asset model calibration.

| Year | $\mathbf{1 0 0 \%}$ <br> at the money | $\mathbf{9 0 \%}$ <br> at the money | $\mathbf{8 0 \%}$ <br> at the money | Average <br> moneyness |
| :---: | :---: | :---: | :---: | :---: |
| 1 | $22.69 \%$ | $25.54 \%$ | $28.67 \%$ | $27.98 \%$ |
| 2 | $23.93 \%$ | $26.10 \%$ | $28.45 \%$ | $27.93 \%$ |
| 3 | $24.71 \%$ | $26.56 \%$ | $28.50 \%$ | $28.07 \%$ |
| 4 | $25.28 \%$ | $26.87 \%$ | $28.58 \%$ | $28.20 \%$ |
| 5 | $25.70 \%$ | $27.15 \%$ | $28.68 \%$ | $28.34 \%$ |
| 6 | $26.12 \%$ | $27.42 \%$ | $28.82 \%$ | $28.51 \%$ |
| 7 | $26.52 \%$ | $27.74 \%$ | $29.06 \%$ | $28.77 \%$ |
| 8 | $26.84 \%$ | $27.99 \%$ | $29.25 \%$ | $28.97 \%$ |
| 9 | $26.97 \%$ | $28.08 \%$ | $29.25 \%$ | $28.99 \%$ |
| 10 | $27.07 \%$ | $28.15 \%$ | $29.31 \%$ | $29.05 \%$ |

## Appendix 11

The table below shows the final term structure for UK equity volatilities used in the GeneSIS asset model calibration.

| Equity volatilities (\%) |  |  |
| :---: | :---: | :---: |
| Year | UK | Overseas |
| 0 | 27.78 | 25.01 |
| 1 | 27.50 | 24.75 |
| 2 | 27.41 | 24.67 |
| 3 | 27.26 | 24.54 |
| 4 | 27.14 | 24.42 |
| 5 | 27.19 | 24.47 |
| 6 | 27.65 | 24.89 |
| 7 | 27.37 | 24.63 |
| 8 | 25.92 | 23.33 |
| 9 | 25.89 | 23.30 |
| 10 | 25.53 | 22.98 |
| 11 | 24.41 | 21.97 |
| 12 | 23.28 | 20.95 |
| 13 | 22.16 | 19.94 |
| 14 | 21.03 | 18.93 |
| 15 | 20.00 | 18.00 |
| 16 | 20.00 | 18.00 |
| 17 | 20.00 | 18.00 |
| 18 | 20.00 | 18.00 |
| 19 | 20.00 | 18.00 |
| 20 | 20.00 | 18.00 |

