

**Embedded value of long-term business operations**

	30 Jun 2013 £m				31 Dec 2012 £m			
	Asia operations	US operations	UK insurance operations	Total long-term business operations	Asia operations	US operations	UK insurance operations	Total long-term business operations
<b>Shareholders' equity</b> <sup>note 10</sup>	10,921	6,638	7,096	24,655	9,462	6,032	6,772	22,266
Discount rates – 1% increase	(999)	(255)	(486)	(1,740)	(879)	(209)	(482)	(1,570)
Interest rates – 1% increase	(229)	(110)	(332)	(671)	(218)	(124)	(328)	(670)
Interest rates – 1% decrease	48	56	411	515	85	49	399	533
Equity/property yields – 1% rise	370	238	206	814	328	230	202	760
Equity/property market values – 10% fall	(195)	12	(275)	(458)	(159)	(69)	(309)	(537)
Statutory minimum capital	123	170	4	297	108	89	4	201
Long-term expected defaults – 5 bps increase	–	–	(120)	(120)	–	–	(112)	(112)
Liquidity premium – 10 bps increase	–	–	240	240	–	–	224	224

The sensitivities shown above are for the impact of instantaneous changes on the embedded value of long-term business operations and include the combined effect on the value of in-force business and net assets at the balance sheet dates indicated. If the change in assumption shown in the sensitivities were to occur, then the effect shown above would be recorded within two components of the profit analysis for the following year. These are for the effect of economic assumption changes and, to the extent that asset value changes are included in the sensitivities, within short-term fluctuations in investment returns. In addition to the sensitivity effects shown above, the other components of the profit for the following period would be calculated by reference to the altered assumptions, for example new business contribution and unwind of discount, together with the effect of other changes such as altered corporate bond spreads. In addition for Jackson, the fair value movements on assets backing surplus and required capital which are taken directly to shareholders' equity would also be affected by changes in interest rates.

**(b) Effect of changes in future UK corporation tax rate enacted in July 2013**

The Finance Bill 2013, which was substantively enacted on 2 July 2013, includes reductions in the UK corporation tax rate from 23 per cent to 21 per cent effective 1 April 2014 and from 21 per cent to 20 per cent effective 1 April 2015. Had the half year 2013 EEV results been prepared on the basis of these new tax rates, the net of tax value of in-force business of UK insurance operations at 30 June 2013 would have been higher by £95 million.

**15 Assumptions****Deterministic assumptions**

The tables below summarise the principal financial assumptions:

Assumed investment returns reflect the expected future returns on the assets held and allocated to the covered business at the valuation date.

**(i) Asia operations**<sup>notes (a),(b)</sup>

	30 Jun 2013 %										
	China	Hong Kong notes (b),(d)	India	Indonesia	Korea	Malaysia notes (c),(d)	Philippines	Singapore note (d)	Taiwan	Thailand	Vietnam
Risk discount rate:											
New business	10.1	4.3	13.0	11.1	7.3	6.0	10.6	4.5	3.8	10.5	16.1
In force	10.1	4.2	13.0	11.1	7.4	6.0	10.6	5.2	3.7	10.5	16.1
Expected long-term rate of inflation	2.5	2.25	4.0	5.0	3.0	2.5	4.0	2.0	1.0	3.0	5.5
Government bond yield	3.6	2.5	8.0	7.3	3.4	3.6	3.9	2.4	1.4	3.8	9.3

## Notes on the EEV basis results continued

## 15 Assumptions continued

	30 Jun 2012 %										
	China	Hong Kong	India	Indonesia	Korea	Malaysia	Philippines	Singapore	Taiwan	Thailand	Vietnam
	notes (b),(d)					notes (c),(d)		note (d)			
Risk discount rate:											
New business	9.9	3.7	13.35	11.15	7.05	6.3	12.4	3.9	4.9	10.3	17.0
In force	9.9	3.5	13.35	11.15	7.1	6.4	12.4	4.6	5.0	10.3	17.0
Expected long-term rate of inflation	2.5	2.25	4.0	5.0	3.0	2.5	4.0	2.0	1.0	3.0	5.5
Government bond yield	3.4	1.7	8.35	6.25	3.65	3.5	5.6	1.6	1.2	3.5	10.3

	31 Dec 2012 %										
	China	Hong Kong	India	Indonesia	Korea	Malaysia	Philippines	Singapore	Taiwan	Thailand	Vietnam
	notes (b),(d)					notes (c),(d)		note (d)			
Risk discount rate:											
New business	10.1	3.8	13.2	9.4	7.4	5.8	11.1	3.6	3.25	10.3	17.2
In force	10.1	3.5	13.2	9.4	7.2	5.8	11.1	4.3	3.4	10.3	17.2
Expected long-term rate of inflation	2.5	2.25	4.0	5.0	3.0	2.5	4.0	2.0	1.0	3.0	5.5
Government bond yield	3.6	1.8	8.2	5.3	3.2	3.5	4.35	1.3	1.2	3.5	10.5

	Asia total %		
	30 Jun 2013	30 Jun 2012	31 Dec 2012
Weighted risk discount rate: <sup>note (a)</sup>			
New business		7.5	6.8
In force		6.7	6.1

Equity risk premiums in Asia (excluding those for the held for sale Japan Life business) range from 3.5 per cent to 8.7 per cent for half year 2013 (half year 2012: 3.5 per cent to 8.7 per cent; full year 2012: 3.5 per cent to 8.8 per cent).

## Notes

- (a) The weighted risk discount rates for Asia operations shown above have been determined by weighting each country's risk discount rates by reference to the EEV basis new business result and the closing value of in-force business. The changes in the risk discount rates for individual Asia territories reflect the movements in government bond yields, together with the effects of movements in the allowance for market risk and changes in product mix.
- (b) For Hong Kong, the assumptions shown are for US dollar denominated business. For other territories, the assumptions are for local currency denominated business.
- (c) The risk discount rate for Malaysia reflects both the Malaysia life and Takaful operations.
- (d) The mean equity return assumptions for the most significant equity holdings in the Asia operations were:

	2013 %	2012 %	
	30 Jun	30 Jun	31 Dec
Hong Kong	6.5	5.7	5.8
Malaysia	9.6	9.5	9.5
Singapore	8.4	7.7	7.35

**(ii) US operations**

	2013 %	2012 %	
	30 Jun	30 Jun	31 Dec
Assumed new business spread margins: <sup>notes(a),(c)</sup>			
Fixed Annuity business: <sup>*†</sup>			
January to June issues	1.2	1.4	1.4
July to December issues	n/a	n/a	1.1
Fixed Index Annuity business: <sup>†</sup>			
January to June issues	1.45	1.75	1.75
July to December issues	n/a	n/a	1.35
Institutional business	0.75	1.25	1.25
Risk discount rate: <sup>note(d)</sup>			
Variable annuity	7.3	6.5	6.5
Non-variable annuity	4.8	4.4	4.0
Weighted average total: <sup>note(b)</sup>			
New business	7.2	6.3	6.3
In force	6.5	5.7	5.6
US 10-year treasury bond rate at end of period	2.5	1.7	1.8
Pre-tax expected long-term nominal rate of return for US equities	6.5	5.7	5.8
Equity risk premium	4.0	4.0	4.0
Expected long-term rate of inflation	2.5	2.1	2.5

\* Including the proportion of variable annuity business invested in the general account.

† Grading up linearly by 25 basis points to a long-term assumption over five years.

**Notes**

- (a) The assumed new business spread margin shown above are the rates at inception. For fixed annuity business (including the proportion of variable annuity business invested in the general account) and fixed index annuity business, the assumed spread margin grades up linearly by 25 basis points to the long-term assumption over five years.
- (b) The weighted average risk discount rates reflect the mix of business between variable annuity and non-variable annuity business. The increase in the weighted average risk discount rates from half year 2012 to half year 2013 primarily reflects the increase in the US 10-year treasury bond rate of 80 basis points and the effect of an increase in the product allowance for market risk, partly offset by the effect of the decrease in additional allowance for credit risk (as described in note (d) below).
- (c) Credit risk treatment  
The projected cash flows incorporate the expected long-term spread between the earned rate and the rate credited to policyholders. The projected earned rates reflect book value yields which are adjusted over time to reflect projected reinvestment rates. Positive net cash flows are assumed to be reinvested in a mix of corporate bonds, commercial mortgages and limited partnerships. The yield on those assets is assumed to grade from the current level to a yield that allows for a long-term assumed credit spread on the reinvested assets of 1.25 per cent over 10 years. The yield also reflects an allowance for a risk margin reserve which for half year 2013 is 27 basis points (half year 2012: 27 basis points; full year 2012: 28 basis points) for long-term defaults (as described in note 1(b)(iii)), which represents the allowance as at the valuation date applied in the cash flow projections of the value of the in-force business.  
In the event that long-term default levels are higher, then unlike for UK annuity business where policyholder benefits are not changeable, Jackson has some discretion to adjust crediting rates, subject to contract guarantee levels and general market competition considerations.
- (d) For US operations, the risk discount rates shown above include an additional allowance for a combination of credit risk premium and short-term downgrade and default allowance for general account business of 150 basis points (half year 2012: 200 basis points; full year 2012: 150 basis points) and for variable annuity business of 30 basis points (half year 2012: 40 basis points; full year 2012: 30 basis points) to reflect the fact that a proportion of the variable annuity business is allocated to the general account (as described in note 1(b)(iii)).

## Notes on the EEV basis results continued

## 15 Assumptions continued

## (iii) UK insurance operations

	2013 %	2012 %	
	30 Jun	30 Jun	31 Dec
<b>Shareholder-backed annuity business:</b> <sup>note(d)</sup>			
Risk discount rate:			
New business <sup>note(a)</sup>	7.2	7.3	6.9
In force <sup>note(b)</sup>	8.45	8.4	7.95
Pre-tax expected long-term nominal rate of return for shareholder-backed annuity business:			
New business	3.9	4.6	4.2
In force <sup>note(b)</sup>	4.4	4.25	3.9
<b>Other business:</b> <sup>note(d)</sup>			
Risk discount rate: <sup>note(c)</sup>			
New business	5.8	5.2	5.2
In force	6.2	5.45	5.6
Equity risk premium	4.0	4.0	4.0
Pre-tax expected long-term nominal rates of investment return:			
UK equities	7.0	6.3	6.3
Overseas equities	6.5 to 9.8	5.7 to 9.7	5.8 to 9.6
Property	5.8	5.05	5.1
Gilts	3.0	2.3	2.3
Corporate bonds	4.6	3.9	3.9
Expected long-term rate of inflation	3.3	2.8	2.9
Post-tax expected long-term nominal rate of return for the PAC with-profits fund:			
Pension business (where no tax applies)	5.8	5.0	5.0
Life business	5.0	4.3	4.35

## Notes

- (a) The new business risk discount rate for shareholder-backed annuity business incorporates an allowance for best estimate defaults and additional credit risk provisions, appropriate to the new business assets, over the projected lifetime of this business. These additional provisions comprise of a credit risk premium, which is derived from Moody's data from 1970 to 2009, an allowance for a 1 notch downgrade of the portfolio subject to credit risk and an allowance for short-term defaults.
- (b) For shareholder-backed annuity business, the movements in the pre-tax long-term nominal rates of return and the risk discount rates for in-force business mainly reflect the effect of changes in asset yields.
- (c) The risk discount rates for new business and business in force for UK insurance operations, other than shareholder-backed annuities, reflect weighted rates based on the type of business.
- (d) Credit spread treatment  
For with-profits business, the embedded value reflects the discounted value of future shareholder transfers. These transfers are directly affected by the level of projected rates of return on investments, including debt securities. The assumed earned rate for with-profit holdings of corporate bonds is defined as the risk-free rate plus an assessment of the long-term spread over gilts, net of expected long-term defaults. This approach is similar to that applied for equities and properties for which the projected earned rate is defined as the risk-free rate plus a long-term risk premium.  
For UK shareholder-backed annuity business, different dynamics apply both in terms of the nature of the business and the EEV methodology applied. For this type of business the assets are generally held to maturity to match long duration liabilities. It is therefore appropriate under EEV methodology to include a liquidity premium in the economic basis used. The appropriate EEV risk discount rate is set in order to equate the EEV with a 'market consistent embedded value' including liquidity premium. The liquidity premium in the 'market consistent embedded value' is derived from the yield on the assets held after deducting an appropriate allowance for credit risk. For Prudential Retirement Income Limited, which has approximately 90 per cent of UK shareholder-backed annuity business, the allowance for credit risk for the in-force business at 30 June 2013 is made up of:
- 15 basis points in respect of long-term expected defaults derived by applying Moody's data from 1970 to 2009 and the definition of the credit rating used is the second highest credit rating published by Moody's, Standard & Poor's and Fitch.
  - 49 basis points in respect of additional provisions which comprise a credit risk premium, which is derived from Moody's data from 1970 to 2009, an allowance for a 1 notch downgrade of the portfolio subject to credit risk and an allowance for short-term defaults.
- The credit assumptions used and the residual liquidity premium element of the bond spread over swap rates is as follows:

	New business*† (bps)			In-force business (bps)		
	30 Jun 2013	30 Jun 2012	31 Dec 2012	30 Jun 2013	30 Jun 2012	31 Dec 2012
Bond spread over swap rates	116	163	150	157	191	161
Total credit risk allowance	38	33	35	64	66	65
Liquidity premium	78	130	115	93	125	96

\* The new business liquidity premium is based on the weighted average of the point of sale liquidity premia.

† Specific assets are allocated to the new business for the period with the appropriate allowance for credit risk which was 38 basis points for half year 2013 (half year 2012: 33 basis points; full year 2012: 35 basis points).

The overall allowance for credit risk is prudent by comparison with historic rates of default and would be sufficient to withstand a wide range of extreme credit events over the expected lifetime of the annuity business.

### Stochastic assumptions

The economic assumptions used for the stochastic calculations are consistent with those used for the deterministic calculations described above. Assumptions specific to the stochastic calculations, such as the volatilities of asset returns, reflect local market conditions and are based on a combination of actual market data, historic market data and an assessment of longer-term economic conditions. Common principles have been adopted across the Group for the stochastic asset models, for example, separate modelling of individual asset classes but with allowance for correlation between the various asset classes.

Details are given below of the key characteristics and calibrations of each model.

#### (iv) Asia operations

- The same asset return models as described for UK insurance operations below, appropriately calibrated, have been used for Asia operations. The principal asset classes are government and corporate bonds. Equity holdings are much lower than in the UK whilst property holdings do not represent a significant investment asset;
- The stochastic cost of guarantees is primarily only of significance for the Hong Kong, Korea, Malaysia and Singapore operations; and
- The mean stochastic returns are consistent with the mean deterministic returns for each country. The expected volatility of equity returns ranges from 18 per cent to 35 per cent for all periods throughout these results, and the volatility of government bond yields ranges from 0.9 per cent to 2.3 (half year 2012: 0.9 per cent to 2.4 per cent; full year 2012: 0.9 per cent to 2.3 per cent).

#### (v) US operations (Jackson)

- Interest rates are projected using a log-normal generator calibrated to historical US treasury yield curves;
- Corporate bond returns are based on treasury securities plus a spread that has been calibrated to current market conditions and varies by credit quality; and
- Variable annuity equity returns and bond interest rates have been stochastically generated using a log-normal model with parameters determined by reference to historical data. The volatility of equity fund returns ranges from 19 per cent to 32 per cent for all periods throughout these results, depending on the risk class and the class of equity, and the standard deviation of interest rates ranges from 2.2 per cent to 2.5 per cent for all periods throughout these results.

#### (vi) UK insurance operations

- Interest rates are projected using a two-factor model calibrated to the initial market yield curve;
- The risk premium on equity assets is assumed to follow a log-normal distribution;
- The corporate bond return is calculated as the return on a zero-coupon bond plus a spread. The spread process is a mean reverting stochastic process; and
- Property returns are modelled in a similar fashion to corporate bonds, namely as the return on a risk-free bond, plus a risk premium, plus a process representative of the change in residual values and the change in value of the call option on rents.

Mean returns have been derived as the annualised arithmetic average return across all simulations and durations.

For each projection period, standard deviations have been calculated by taking the square root of the annualised variance of the returns over all the simulations. These have been averaged over all durations in the projection. For equity and property, the standard deviations relate to the total return on these assets. The standard deviations applied for all periods are as follows:

	%
Equities:	
UK	20
Overseas	18
Property	15

## Notes on the EEV basis results continued

### 15 Assumptions continued

#### (vii) Demographic assumptions

Persistence, mortality and morbidity assumptions are based on an analysis of recent experience but also reflect expected future experience. Where relevant, when calculating the time value of financial options and guarantees, policyholder withdrawal rates vary in line with the emerging investment conditions according to management's expectations.

#### (viii) Expense assumptions

Expense levels, including those of service companies that support the Group's long-term business operations, are based on internal expense analysis investigations and are appropriately allocated to acquisition of new business and renewal of in-force business. Exceptional expenses are identified and reported separately. For mature business, it is Prudential's policy not to take credit for future cost reduction programmes until the savings have been delivered. For businesses which are currently sub-scale (China, Malaysia Takaful and Taiwan) and India (where the business model is being adapted in response to the regulatory changes introduced in recent years), expense overruns are permitted where these are expected to be short-lived.

For Asia operations, the expenses comprise costs borne directly and recharged costs from the Asia regional head office, that are attributable to covered business. The assumed future expenses for these operations also include projections of these future recharges. Development expenses are charged as incurred.

Corporate expenditure comprises:

- Expenditure for Group head office, to the extent not allocated to the PAC with-profits funds, together with Solvency II implementation and restructuring costs, which are charged to the EEV basis results as incurred; and
- Expenditure of the Asia regional head office that is not allocated to the covered business or asset management operations is charged as incurred. These costs are primarily for corporate related activities and are included within corporate expenditure.

#### (ix) Taxation and other legislation

Current taxation and other legislation have been assumed to continue unaltered except where changes have been announced and substantively enacted in the period.

The sensitivity of the embedded value as at 30 June 2013 to the effect of the reductions in the UK corporate tax rate enacted in July 2013 is shown in note 14(b).