

MCEV Full year 2012

Directors' report

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The directors submit their Market Consistent Embedded Value (MCEV) financial statements for Aviva plc for the year ended 31 December 2012.

Results

The MCEV results for the year are shown in the consolidated income statement on page 3.

Total MCEV operating profit before tax has decreased to £1,853 million (2011: £3,537 million), primarily reflecting a fall in long-term business profits to £1,828 million (2011: £3,399 million). MCEV operating profit before tax from continuing operations decreased to £2,243 million (2011: £3,019 million) mainly reflecting lower profits in the UK & Ireland and France. The MCEV operating loss from discontinued operations is £390 million (2011: £518 million profit) and mainly reflects adverse impacts in our US business. Further details on the MCEV operating results for the long term business can be found in Note E2.

Total MCEV profit for the year was £1,759 million (2011: £2,701 million loss). In addition to the reduction in operating profit, there were higher restructuring costs as we align our business operations with our strategy, and higher goodwill impairments (which mainly relates to the write-down of goodwill in the US business in the first half of 2012). These reductions were more than offset by positive economic variances from narrowing spreads on Italian government and corporate bonds, and an amount of £1,270 million relating to the positive remeasurement of held for sale operations (including the US) to their expected fair value, as represented by the expected sale proceeds, less cost to sell.

Equity attributable to ordinary shareholders on an MCEV basis is £12,434 million compared to £12,829 million at 2011. This reflects the profit for the year, which was more than offset by actuarial losses on pension schemes and the payment of the dividend.

Principal Activity

The Company is the holding company of the Aviva plc group of companies (Group) whose principal activities are the provision of general insurance, life assurance, long term savings and fund management services.

Directors and who served during the year

The directors as at the date of this Report and who served during the year are shown below:

John McFarlane

Mark Wilson – appointed 1 December 2012 and became Group CEO on 1 January 2013

Patrick Regan

Trevor Matthews

Glyn Barker – appointed 27 February 2012

Mary Francis – resigned 3 October 2012

Richard Goeltz

Euleen Goh – resigned 31 December 2012

Michael Hawker

Gay Huey Evans

Igal Mayer – resigned 19 April 2012

Sir Adrian Montague – appointed 14 January 2013

Andrew Moss – resigned 8 May 2012

Lord Sharman of Redlynch – retired 30 June 2012

Bob Stein – appointed 28 January 2013

Leslie Van de Walle – resigned 2 May 2012

Russell Walls

Scott Wheway

Disclosure of information to the auditor

In accordance with section 418 of the Companies Act 2006, the directors in office at the date of approval of this Report confirm that, so far as they are each aware, there is no relevant audit information of which the Company's auditor, PricewaterhouseCoopers LLP (PwC), is unaware and each director has taken all steps that ought to have been taken as a director to be aware of any relevant audit information and to establish that PwC is aware of that information.

Change of auditor

Following a tender process in 2011, PwC was appointed as the Company's external auditor commencing with the 2012 financial year and its appointment was approved by shareholders at the 2012 AGM. PwC is subject to annual re-election and resolutions on its appointment and seeking authorisation for the directors to set the auditor's remuneration are included in the Notice of AGM.

Events after the reporting period

On 8 January 2013 the Company announced its intention to sell the Group's remaining stake in Delta Lloyd N.V., a Dutch listed insurance company. The sale took place by way of an accelerated book build offering and the Group's entire remaining holding of 34,288,795 ordinary shares in Delta Lloyd N.V. was sold at a price of €12.65 per share. The sale completed on 14 January 2013.

On 17 January 2013 the Company announced it had agreed to sell the Group's stake in its Malaysian joint ventures, CIMB Aviva Assurance Berhad and CIMB Aviva Takaful Berhad, to Sun Life Assurance Company of Canada for £152m payable in cash. The deal is subject to regulatory approval and is expected to complete during the first half of 2013.

On 27 February 2013 the Company announced it had agreed to sell Aviva Russia to Blagosostoyanie, a non-state pension fund in Russia, for a consideration of €35 million payable in cash. The sale is subject to approval by the Federal Antimonopoly Service of the Russian Federation and it is expected that the sale will complete during the first half of 2013.

Directors' responsibility statement

The statement of directors' responsibility in respect of the MCEV financial statements is contained on page 39.

By order of the Board on 6 March 2013

Mark Wilson
Group chief executive officer

Patrick Regan
Chief financial officer

MCEV financial statements

Consolidated income statement – MCEV basis

For the year ended 31 December 2012

	2012 £m			2011 £m		
	Continuing Operations	Discontinued Operations	Total	Continuing Operations	Discontinued Operations	Total
Operating profit/(loss) before tax attributable to shareholders' profits						
United Kingdom & Ireland	923	—	923	1,102	—	1,102
France	246	—	246	1,077	—	1,077
United States	—	(378)	(378)	—	241	241
Italy, Spain and Other	570	—	570	197	270	467
Higher Growth markets	467	—	467	512	—	512
Long-term business	2,206	(378)	1,828	2,888	511	3,399
General insurance and health	893	—	893	935	1	936
Fund management ¹	24	4	28	27	14	41
Other operations ²	(197)	(4)	(201)	(201)	4	(197)
Market operating profit/(loss)	2,926	(378)	2,548	3,649	530	4,179
Corporate centre	(136)	—	(136)	(138)	—	(138)
Group debt costs and other interest	(659)	(12)	(671)	(649)	(12)	(661)
Operating profit/(loss) before tax attributable to shareholders' profits (excluding Delta Lloyd as an associate)	2,131	(390)	1,741	2,862	518	3,380
Share of operating profit (before tax) of Delta Lloyd as an associate	112	—	112	157	—	157
Operating profit/(loss) before tax attributable to shareholders' profits	2,243	(390)	1,853	3,019	518	3,537
Integration and restructuring costs	(464)	(3)	(467)	(192)	(20)	(212)
Operating profit/(loss) before tax attributable to shareholders' profits after integration and restructuring costs	1,779	(393)	1,386	2,827	498	3,325
Adjusted for the following:						
Economic variances on long-term business	1,901	(6)	1,895	(5,283)	(1,574)	(6,857)
Short-term fluctuation in return on investments on non-long-term business	7	—	7	(266)	(60)	(326)
Economic assumption changes on general insurance and health business	(21)	—	(21)	(90)	—	(90)
Impairment of goodwill	(154)	(782)	(936)	(392)	—	(392)
Amortisation and impairment of intangibles	(110)	(97)	(207)	(218)	(53)	(271)
Profit on the disposal and remeasurement of subsidiaries and associates ³	(1)	1,095	1,094	565	159	724
Exceptional items	51	—	51	(57)	—	(57)
Non-operating items before tax (excluding Delta Lloyd as an associate)	1,673	210	1,883	(5,741)	(1,528)	(7,269)
Share of Delta Lloyd's non-operating items (before tax) as an associate	(523)	—	(523)	10	—	10
Non-operating items before tax	1,150	210	1,360	(5,731)	(1,528)	(7,259)
Share of Delta Lloyd's tax expense, as an associate	107	—	107	(34)	—	(34)
Profit/(loss) before tax attributable to shareholders' profits	3,036	(183)	2,853	(2,938)	(1,030)	(3,968)
Tax on operating profit	(746)	134	(612)	(893)	(155)	(1,048)
Tax on other activities	(516)	34	(482)	1,753	562	2,315
	(1,262)	168	(1,094)	860	407	1,267
Profit/(loss) for the period	1,774	(15)	1,759	(2,078)	(623)	(2,701)
Attributable to:						
Equity shareholders' of Aviva plc	919	(15)	904	(1,146)	(594)	(1,740)
Non-controlling Interest	855	—	855	(932)	(29)	(961)
	1,774	(15)	1,759	(2,078)	(623)	(2,701)

¹ Excludes the proportion of the results of Aviva Investors fund management businesses and other fund management operations within the Group that arises from the provision of fund management services to our life businesses.

These results are included within the life MCEV operating earnings consistent with the MCEV methodology.

² Excludes the proportion of the results of subsidiaries providing services to the Life business. These results are included within the life MCEV operating earnings consistent with the MCEV methodology.

³ Includes profit in respect of remeasurement of held for sale operations to expected fair value less cost to sell.

Earnings per share – MCEV basis

	Continuing Operations	Discontinued Operations	Total 2012	Continuing Operations	Discontinued Operations	Total 2011
Operating earnings/(losses) per share on an MCEV basis after tax, attributable to ordinary shareholders of Aviva plc						
Basic (pence per share)	36.5p	(8.8)p	27.7p	69.8p	5.3p	75.1p
Diluted ¹ (pence per share)	35.9p	(8.8)p	27.3p	68.6p	5.2p	73.8p
Earnings/(losses) after tax on an MCEV basis, attributable to ordinary shareholders of Aviva plc						
Basic (pence per share)	29.1p	(0.5)p	28.6p	(63.1)p	(0.2)p	(63.3)p
Diluted ¹ (pence per share)	28.7p	(0.5)p	28.2p	(63.1)p	(0.2)p	(63.3)p

¹ Losses have an anti-dilutive effect. Therefore the basic and diluted earnings have remained the same.

Consolidated statement of comprehensive income – MCEV basis

For the year ended 31 December 2012

	2012 £m	2011 £m
Profit/(loss) for the year from continuing operations	1,774	(2,078)
(Loss)/profit for the year from discontinued operations	(15)	(623)
Profit/(loss) from the year	1,759	(2,701)
Other comprehensive income from continuing operations		
Fair value (losses)/gains on AFS securities, owner-occupied properties and hedging instruments	—	(9)
Actuarial (losses)/gains on pension schemes	(830)	996
Actuarial (losses)/gains on pension schemes transferred to unallocated divisible surplus and other movements	—	(22)
Share of other comprehensive (expense)/income of joint ventures and associates	(7)	(141)
Foreign exchange rate movements	(145)	(448)
Aggregate tax effect - shareholders tax	172	(160)
Other comprehensive (expense)/income, net of tax from continuing operations	(810)	216
Other comprehensive (expense)/income, net of tax from discontinued operations	(14)	118
Other comprehensive (expense)/income, net of tax	(824)	334
Total comprehensive income/(expense) for the year from continuing operations	964	(1,862)
Total comprehensive (expense)/income for the year from discontinued operations	(29)	(505)
Total comprehensive income/(expense) for the year	935	(2,367)
Attributable to:		
Equity shareholders of Aviva plc	102	(1,419)
Non-controlling Interests	833	(948)
	935	(2,367)

Consolidated statement of changes in equity – MCEV basis

For the year ended 31 December 2012

	2012 £m	2011 £m
Balance at 1 January	15,495	20,205
Total comprehensive income/(expense) for the year	935	(2,367)
Dividends and appropriations	(847)	(813)
Shares issued in lieu of dividends	127	307
Capital contributions from minority shareholders	20	68
Movements in ordinary shareholder equity following deconsolidation of Delta Lloyd	—	(316)
Movements in non-controlling interests following deconsolidation of Delta Lloyd	—	(1,484)
Minority share of dividends declared in the year	(102)	(126)
Issue of fixed rate tier 1 notes	392	—
Recycling of reserves to income statement on disposal of subsidiary	187	(3)
Non-controlling interest in (disposed)/acquired subsidiaries	(13)	—
Changes in non-controlling interest in existing subsidiaries	—	(11)
Shares acquired by employee trusts	(33)	(29)
Shares distributed by employee trusts	8	—
Reserves credit for equity compensation plans	42	48
Shares issued under equity compensation plans	1	—
Aggregate tax effect – shareholder tax	18	16
Total equity	16,230	15,495
Non-controlling interests	(2,214)	(1,476)
Balance at 31 December	14,016	14,019

Consolidated statement of financial position – MCEV basis

As at 31 December 2012

	2012 £m	Restated ² 2011 £m
Assets		
Goodwill	1,520	2,640
Acquired value of in-force business and other intangibles	1,084	2,021
Additional value of in-force long-term business ¹	4,870	132
Interest in, and loans to, joint ventures	1,493	1,700
Interest in, and loans to, associates	215	1,118
Property and equipment	391	510
Investment property	10,815	11,638
Loans	24,537	28,116
Financial investments	189,078	216,058
Reinsurance assets	6,684	7,112
Deferred tax assets	188	238
Current tax assets	67	140
Receivables	7,617	7,937
Deferred acquisition costs and other assets	3,799	6,444
Prepayments and accrued income	2,701	3,235
Cash and cash equivalents	22,897	23,043
Assets of operations classified as held for sale	42,603	426
Total assets	320,559	312,508
Equity		
Ordinary share capital	736	726
Capital reserves	4,436	4,444
Other reserves	1,171	1,262
Shares held by employee trusts	(32)	(43)
Retained earnings	1,389	5,954
Additional retained earnings on an MCEV basis ¹	4,734	486
Equity attributable to ordinary shareholders of Aviva plc	12,434	12,829
Preference share capital, direct capital instruments and fixed rate tier 1 notes	1,582	1,190
Non-controlling interests ²	2,214	1,476
Total equity	16,230	15,495
Liabilities		
Gross insurance liabilities	113,091	147,379
Gross liabilities for investment contracts	110,494	113,366
Unallocated divisible surplus	6,931	650
Net asset value attributable to unitholders	11,146	10,352
Provisions	1,119	992
Deferred tax liabilities	547	1,171
Current tax liabilities	112	232
External borrowings	8,194	8,450
Payables and other financial liabilities	9,441	11,230
Other liabilities	1,843	2,828
Liabilities of operations classified as held for sale	41,411	363
Total liabilities	304,329	297,013
Total equity and liabilities	320,559	312,508

The summarised consolidated statement of financial position presented above is unaltered from the corresponding IFRS summarised consolidated statement of financial position with the exception of the following:

1 Adding the excess of the Life MCEV, including non-controlling interests, over the corresponding Life IFRS net assets represented as the additional value of in-force long-term business; corresponding item within equity represented by the additional retained profit on an MCEV basis; and, corresponding adjustments to non-controlling interests.

2 The 2011 results have been restated as outlined in E1 Basis of preparation

Reconciliation of shareholders' equity on IFRS and MCEV bases

As at 31 December 2012

2012	IFRS £m	Adjustment £m	MCEV £m
Ordinary share capital	736	—	736
Capital reserves	4,436	—	4,436
Other reserves	1,675	(504)	1,171
Shares held by employee trusts	(32)	—	(32)
Retained earnings	1,389	—	1,389
Additional retained earnings on an MCEV basis	—	4,734	4,734
Equity attributable to ordinary shareholders of Aviva plc	8,204	4,230	12,434
Preference share capital	200	—	200
Direct capital instruments and fixed rate tier 1 notes	1,382	—	1,382
Non-controlling interests	1,574	640	2,214
Total equity	11,360	4,870	16,230
2011	IFRS £m	Adjustment £m	MCEV £m
Ordinary share capital	726	—	726
Capital reserves	4,444	—	4,444
Other reserves	1,562	(300)	1,262
Shares held by employee trusts	(43)	—	(43)
Retained earnings	5,954	—	5,954
Additional retained earnings on an MCEV basis	—	486	486
Equity attributable to ordinary shareholders of Aviva plc	12,643	186	12,829
Preference share capital	200	—	200
Direct capital instruments	990	—	990
Non-controlling interests	1,530	(54)	1,476
Total equity	15,363	132	15,495

Reconciliation of IFRS total equity to MCEV net worth

As at 31 December 2012

	2012 £m	2011 £m
Net assets on a statutory IFRS net basis	11,360	15,363
Adjusting for general business and other net assets on a statutory IFRS net basis	1,602	301
Life and related businesses net assets on a statutory IFRS net basis	12,962	15,664
Goodwill and other intangibles	(989)	(2,117)
Acquired value of in-force business	(245)	(960)
Adjustment for share of joint ventures and associates	(9)	(7)
Adjustment for assets to regulatory value net of tax	94	(1,880)
Adjustment for DAC and DIR net of tax	(1,134)	(2,622)
Adjustment for differences in technical provisions	(488)	2,904
Other accounting and tax differences	940	(507)
MCEV net worth	11,131	10,475
MCEV value of in-force ¹	5,366	2,619
MCEV ²	16,497	13,094

¹ Comprises PVFP of £8,616million (31 December 2011: £5,847million), FC of £(569)million (31 December 2011: £(642) million), CNHR of £(1,381)million (31 December 2011: £(1,046) million), and TVOG of £(1,300) million (31 December 2011: £(1,540) million).

² Comprises embedded value of £14,941million (31 December 2011: £12,274 million) and non-controlling interest in long-term business assets of £1,556 million (31 December 2011: £820 million).

Differences between the reconciling items for 2011 and 2012 arise mainly from exclusion of the reconciling items for the United States in 2012. For 2012, the adjustments for DAC and DIR and differences in technical provisions mainly relate to the UK & Ireland. For 2012, IFRS net assets includes the expected fair value less cost to sell for the United States and the total difference from the amount included for the United States in the MCEV net worth is included in Other accounting and tax differences. The MCEV for the United States and other held for sale operations are at their expected fair value less cost to sell, which is adjusted in the MCEV value of in-force rather than the MCEV net worth.

Group MCEV analysis of earnings

2012	Covered business ^{1,4} £m A	Non-covered but related to life business ² £m B	Total life business ³ £m A+B	Non-covered relating to non-life £m C	Total non-covered business ⁴ £m B+C	Total £m A+B+C
Opening Group MCEV	12,274	2,533	14,807	(788)	1,745	14,019
Operating MCEV earnings	1,070	—	1,070	(193)	(193)	877
Non-operating MCEV earnings	713	(1,203)	(490)	517	(686)	27
Total MCEV earnings	1,783	(1,203)	580	324	(879)	904
Other movements in IFRS net equity	—	(145)	(145)	(521)	(666)	(666)
Capital and dividend flows	(283)	—	(283)	178	178	(105)
Foreign exchange variances	(60)	(41)	(101)	(35)	(76)	(136)
Acquired/divested business	1,227	31	1,258	(1,258)	(1,227)	—
Closing Group MCEV	14,941	1,175	16,116	(2,100)	(925)	14,016
Preference share capital, direct capital instruments and fixed rate tier 1 notes						(1,582)
Equity attributable to ordinary shareholders of Aviva plc on an MCEV basis						12,434

1 Covered business represents the business that the MCEV calculations cover, as detailed in the Basis of preparation note. The embedded value is presented net of non-controlling interests and tax.

2 Non-covered but related to life business represents the adjustments to the MCEV, including goodwill, to calculate the long-term business net assets on an MCEV basis. An analysis of net assets on an MCEV basis gross of non-controlling interests is provided in E6.

3 Net assets for the total life businesses on an MCEV basis presented net of non-controlling interests.

4 Covered business includes an adjustment for held for sale operations through the acquired/divested business line which is reflected as non-operating earnings for non-covered business, consistent with where the profit would arise on completion of the sale.

2011	Covered business ¹ £m A	Non-covered but related to life business ² £m B	Total life business ³ £m A+B	Non-covered relating to non-life £m C	Total non-covered business £m B+C	Total £m A+B+C
Opening Group MCEV	15,874	2,339	18,213	(1,985)	354	16,228
Operating MCEV earnings	2,193	—	2,193	4	4	2,197
Non-operating MCEV earnings	(3,530)	(218)	(3,748)	(189)	(407)	(3,937)
Total MCEV earnings	(1,337)	(218)	(1,555)	(185)	(403)	(1,740)
Other movements in IFRS net equity	—	412	412	270	682	682
Capital and dividend flows	(493)	—	(493)	(297)	(297)	(790)
Foreign exchange variances	(251)	(30)	(281)	(80)	(110)	(361)
Acquired/divested business	(1,519)	30	(1,489)	1,489	1,519	—
Closing Group MCEV	12,274	2,533	14,807	(788)	1,745	14,019
Preference share capital and direct capital instruments						(1,190)
Equity attributable to ordinary shareholders of Aviva plc on an MCEV basis						12,829

1 Covered business represents the business that the MCEV calculations cover, as detailed in the Basis of preparation note. The embedded value is presented net of non-controlling interests and tax.

2 Non-covered but related to life business represents the adjustments to the MCEV, including goodwill, to calculate the long-term business net assets on an MCEV basis. An analysis of net assets on an MCEV basis gross of non-controlling interests is provided in E6.

3 Net assets for the total life businesses on an MCEV basis presented net of non-controlling interests.

E1 – Basis of preparation

The consolidated income statement and consolidated statement of financial position on pages 3 to 5 present the Group's results and financial position for the covered life and related businesses on the Market Consistent Embedded Value (MCEV) basis and for its non-covered businesses and non-covered but related to life businesses on the International Financial Reporting Standards (IFRS) basis.

The MCEV methodology adopted is in accordance with the MCEV Principles[©] published by the CFO Forum in October 2009 with the exception of stating held for sale operations at their expected fair value, as represented by expected sale proceeds, less cost to sell.

The CFO Forum Guidance (17.4) requires that sensitivities are provided for the total MCEV results. However, the sensitivity analysis in note E19 excludes held for sale operations, reflecting that these operations are stated at expected fair value less cost to sell. The CFO Forum Guidance (17.3.29) indicates that changes to models to reflect improvements or rectify errors should be included in the 'other operating variances' line. Where possible, such model refinements have been reported in the analysis of earnings on the line where the impact would have occurred in order to provide better information when considering assumption changes/experience variances over multiple reporting periods.

The directors consider that the MCEV methodology gives useful insight into the drivers of financial performance of the Group's life and related businesses. This basis values future cash flows from assets consistently with market prices, including more explicit allowance for the impact of uncertainty in future investment returns and other risks. Embedded value is also consistent with the way pricing is assessed and the business is managed.

The results for 2012 have been audited by our auditors, PricewaterhouseCoopers LLP and the results for 2011 were audited by Ernst and Young LLP. The PricewaterhouseCoopers LLP report in respect of 2012 can be found on page 40.

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Covered business

The MCEV calculations cover the following lines of business: life insurance, long-term health and accident insurance, savings, pensions and annuity business written by our life insurance subsidiaries, including managed pension fund business and our share of certain life and related business written in our associated undertakings and joint ventures, as well as the equity release business written in the UK.

Covered business includes the Group's share of our joint ventures including our associated undertakings in India, China, Turkey, Malaysia, Taiwan and South Korea. In addition, the results of Group companies providing significant administration, fund management and other services and of Group holding companies have been included to the extent that they relate to covered business. Together these businesses are referred to as "Life and related businesses".

Aviva's investment holding of Delta Lloyd is not included within covered business as MCEV is not used to manage Delta Lloyd. For 'Group' MCEV reporting, which includes general insurance and other non-covered business, Delta Lloyd is included on an IFRS basis.

New business premiums

New business premiums include:

- premiums arising from the sale of new contracts during the period;
- non-contractual additional premiums; and
- expected renewals on new contracts and expected future contractual alterations to new contracts.

The Group's definition of new business under MCEV includes contracts that meet the definition of "non-participating investment" contracts under IFRS.

For products sold to individuals, premiums are considered to represent new business where a new contract has been signed, or where underwriting has been performed. Renewal premiums include contractual renewals, non-contractual variations that are reasonably predictable and recurrent single premiums that are pre-defined and reasonably predictable.

For group products, new business includes new contracts and increases to aggregate premiums under existing contracts. Renewal premiums are based on the level of premium received during the reporting period and allow for premiums expected to be received beyond the expiry of any guaranteed premium rates.

Life and pensions operating earnings

For life and pensions operating earnings, Aviva uses normalised investment returns. The use of asset risk premia reflects management's long-term expectations of asset returns in excess of the swap yield from investing in different asset classes.

The normalised investment return on equities and property has been calculated by reference to the ten-year swap rate in the relevant currency plus an appropriate risk premium. The expected return on bonds has been calculated by reference to the swap rate consistent with the duration of the backing assets in the relevant currency plus an appropriate risk margin (expected return is equivalent to the gross redemption yield less an allowance for defaults).

The expected existing business contribution (in excess of reference rate) is calculated using the implied discount rate (IDR), which itself is based on the normalised investment returns. The methodology applies the IDR to the Value of In Force (VIF) and Required Capital (RC) components of the MCEV and adds to this the total expected return for Free Surplus (FS) to derive the total expected return, in a manner consistent with that previously used under European Embedded Value reporting. This total is presented as the expected existing business contribution (reference rate), expected existing business contribution (in excess of reference rate) and expected return on shareholders' net worth (grossed up for tax for pre-tax presentation), with only the excess contribution being impacted by the approach. For businesses where the IDR is unpublished, the expected return in excess of the reference rate is calculated as the excess of the real world equivalent embedded value (EqEV) over the MCEV amortised over the average duration of the portfolio. The approach to expected return has no impact on total return or on the closing balance sheet.

E1 – Basis of preparation continued

MCEV methodology

Overview

Under the MCEV methodology, profit is recognised as it is earned over the life of products defined within covered business. The total profit recognised over the lifetime of a policy is the same as under the IFRS basis of reporting, but the timing of recognition is different.

Calculation of the embedded value

The shareholders' interest in the life and related businesses is represented by the embedded value. The embedded value is the total of the net worth of the life and related businesses and the value of in-force covered business. Calculations are performed separately for each business and are based on the cash flows of that business, after allowing for both external and intra-Group reinsurance. Where one life business has an interest in another, the net worth of that business excludes the interest in the dependent company.

The embedded value is calculated on an after-tax basis applying current legislation and practice together with future known changes. Consistent with CFO Forum guidance issued in 2012, no explicit allowance has been made for the developing European regulation regime (Solvency II) and associated consequences. Where gross results are presented, these have been calculated by grossing up post-tax results at the full rate of corporation tax for each country based on opening period tax rates, apart from the UK, where a 24% tax rate was used for 2012 for grossing up.

Net worth

The net worth is the market value of the shareholders' funds and the shareholders' interest in the surplus held in the non-profit component of the long-term business funds, determined on a statutory solvency basis and adjusted to add back any non-admissible assets, and consists of the required capital and free surplus.

Required capital is the market value of assets attributed to the covered business over and above that required to back liabilities for covered business, for which distribution to shareholders is restricted. Required capital is reported net of implicit items permitted on a local regulatory basis to cover minimum solvency margins which are assessed at a local entity level. The level of required capital for each business unit is generally set equal to the higher of:

- The level of capital at which the local regulator is empowered to take action;
- The capital requirement of the business unit under the Group's economic capital requirements; and
- The target capital level of the business unit;

where "higher of" is assessed as the basis yielding the lowest level of free assets.

For Aviva US, the required capital is set at 325% of the NAIC Company Action Level in line with management targets and target credit ratings.

This methodology reflects the level of capital considered by the directors to be appropriate to manage the business, and includes any additional shareholder funds not available for distribution, such as the reattributed inherited estate in the UK. The same definition of required capital is used for both existing and new business except in Italy where new business reflects the targeted capital level which better reflects the capital requirements of the new business.

The free surplus is the market value of any assets allocated to, but not required to support, the in-force covered business at the valuation date. The level of required capital across the business units expressed as a percentage of the EU minimum solvency margin (or equivalent) can be found in E18.

Value of in-force covered business (VIF)

The value of in-force covered business consists of the following components:

- present value of future profits;
- time value of financial options and guarantees;
- frictional costs of required capital; and
- cost of residual non-hedgeable risks.

Present value of future profits (PVFP)

This is the present value of the distributable profits to shareholders arising from the in-force covered business projected on a best estimate basis.

Distributable profits generally arise when they are released following actuarial valuations. These valuations are carried out in accordance with any local statutory requirements designed to ensure and demonstrate solvency in long-term business funds. Future distributable profits will depend on experience in a number of areas such as investment return, discontinuance rates, mortality, administration costs, as well as management and policyholder actions. Releases to shareholders arising in future years from the in-force covered business and associated required capital can be projected using assumptions of future experience.

Future profits are projected using best estimate non-economic assumptions and market consistent economic assumptions. In principle, each cash flow is discounted at a rate that appropriately reflects the riskiness of that cash flow, so higher risk cash flows are discounted at higher rates. In practice, the PVFP is calculated using the "certainty equivalent" approach, under which the reference rate is used for both the investment return and the discount rate. This approach ensures that asset cash flows are valued consistently with the market prices of assets without options and guarantees. Further information on the risk-free rates is given in note E18.

The PVFP includes the capitalised value of profits and losses arising from subsidiary companies providing administration, investment management and other services to the extent that they relate to covered business. This is referred to as the "look through" into service company expenses. In addition, expenses arising in holding companies that relate directly to acquiring or maintaining covered business have been allowed for. Where external companies provide services to the life and related businesses, their charges have been allowed for in the underlying projected cost base.

E1 – Basis of preparation continued

Time value of financial options and guarantees (TVOG)

The PVFP calculation is based on a single (base) economic scenario; however, a single scenario cannot appropriately allow for the effect of certain product features. If an option or guarantee affects shareholder cash flows in the base scenario, the impact is included in the PVFP and is referred to as the intrinsic value of the option or guarantee; however, future investment returns are uncertain and the actual impact on shareholder profits may be higher or lower. The value of in-force business needs to be adjusted for the impact of the range of potential future outcomes. Stochastic modelling techniques can be used to assess the impact of potential future outcomes, and the difference between the intrinsic value and the total stochastic value is referred to as the time value of the option or guarantee.

Stochastic modelling typically involves projecting the future cash flows of the business under thousands of economic scenarios that are representative of the possible future outcomes for market variables such as interest rates and equity returns. Under a market consistent approach, the economic scenarios generated reflect the market's tendency towards risk aversion. Allowance is made, where appropriate, for the effect of management and/or policyholder actions in different economic conditions on future assumptions such as asset mix, bonus rates and surrender rates.

Stochastic models are calibrated to market yield curves and volatility levels at the valuation date. Tests are performed to confirm that the scenarios used produce results that replicate the market price of traded instruments.

Where evidence exists that persistency rates are linked to economic scenarios, dynamic lapse assumptions are set that vary depending on the individual scenarios. This cost is included in the TVOG. Dynamic lapses are modelled for parts of the UK, US and French businesses. Asymmetries in non-economic assumptions that are linked to economic scenarios, but that have insufficient evidence for credible dynamic assumptions, are allowed for within mean best estimate assumptions.

Frictional costs of required capital

The additional costs to a shareholder of holding the assets backing required capital within an insurance company rather than directly in the market are called frictional costs. They are explicitly deducted from the PVFP. The additional costs allowed for are the taxation costs and any additional investment expenses on the assets backing the required capital. The level of required capital has been set out above in the net worth section.

Frictional costs are calculated by projecting forwards the future levels of required capital in line with drivers of the capital requirement. Tax on investment return and investment expenses are payable on the assets backing required capital, up until the point that they are released to shareholders.

Cost of residual non-hedgeable risks (CNHR)

The cost of residual non-hedgeable risks (CNHR) covers risks not already allowed for in the time value of options and guarantees or the PVFP. The allowance includes the impact of both non-hedgeable financial and non-financial risks. The most significant risk not included in the PVFP or TVOG is operational risk.

Asymmetric risks allowed for in the TVOG or PVFP are described earlier in the basis of preparation. No allowance has been made within the cost of non-hedgeable risk for symmetrical risks as these are diversifiable by investors.

US capital solutions

Credit has been taken within the US embedded value, and value of new business, for the anticipated reduction in capital requirements based on management's intention to enact transactions which allow recognition of additional assets that can be held against certain reserves, reducing shareholder capital requirements. These 'AXXX/XXX' transactions are fixed-term and are assumed to renew at current market rates. Enacting such transactions is common practice within the US market, and by the end of 2012, transactions have been enacted for all business written from 2006 to 2012.

New business tax

New business for the US and Italy has been valued on a basis with tax applied at the full corporation rate and consequential movements in the value of the Deferred Tax Asset included as a variance within existing business operating return.

Participating business

Future regular bonuses on participating business are projected in a manner consistent with current bonus rates and expected future market-consistent returns on assets deemed to back the policies.

For with-profit funds in the UK and Ireland, for the purpose of recognising the value of the estate, it is assumed that terminal bonuses are increased to exhaust all of the assets in the fund over the future lifetime of the in-force with-profit policies. However, under stochastic modelling there may be some extreme economic scenarios when the total assets in the Group's with-profit funds are not sufficient to pay all policyholder claims. The average additional shareholder cost arising from this shortfall has been included in the TVOG.

For profit-sharing business in continental Europe, where policy benefits and shareholder value depend on the timing of realising gains, the apportionment of unrealised gains between policyholders and shareholders reflect contractual requirements as well as existing practice. Under certain economic scenarios where additional shareholder injections are required to meet policyholder payments, the average additional cost has been included in the TVOG.

The embedded value of the US spread-based products anticipates the application of management discretion allowed for contractually within the policies, subject to contractual guarantees. This includes the ability to change the crediting rates and indexed strategies available within the policy. Consideration is taken of the economic environment assumed in future projections and returns in excess of the reference rate are not assumed. Anticipated market and policyholder reaction to management action has been considered.

E1 – Basis of preparation continued

Consolidation adjustments

The effect of transactions between group life companies such as loans and reinsurance arrangements have been included in the results split by territory in a consistent manner. No elimination is required on consolidation.

As the MCEV methodology incorporates the impact of profits and losses arising from subsidiary companies providing administration, investment management and other services to the Group's life companies, the equivalent profits and losses have been removed from the relevant segment (other operations or fund management) and are instead included within the results of life and related businesses. In addition, the underlying basis of calculation for these profits has changed from the IFRS basis to the MCEV basis.

The capitalised value of the future profits and losses from such service companies are included in the embedded value and value of new business calculations for the relevant business, but the net assets (representing historical profits and other amounts) remain under other operations or fund management. In order to reconcile the profits arising in the financial period within each segment with the assets on the opening and closing statement of financial positions, a transfer of IFRS profits from life and related business to the appropriate segment is deemed to occur. An equivalent approach has been adopted for expenses within our holding companies.

The assessments of goodwill, intangibles and pension schemes relating to life insurance business utilise the IFRS measurement basis with any required adjustment reflected in the additional value of the in force long-term business in the consolidated statement of financial position.

Exchange rates

The Group's principal overseas operations during the period were located within the Eurozone, the United States and Poland.

The results and cash flows of these operations have been translated at the average rates for that period and the assets and liabilities have been translated at the period end rates. Please refer to note E18.

Held for Sale operations

Aviva's methodology adopts the MCEV Principles and Guidance published by the CFO Forum in October 2009 with the exception of stating held for sale operations at their expected fair value less cost to sell in the consolidated statement of financial position.

It is considered that the CFO Forum MCEV Principles were designed to define the approach to valuing covered business on an ongoing basis and do not explicitly define the appropriate treatment of covered business operations that are held for sale. For these operations, where an agreed sale price is known with relative certainty, the directors believe it is reasonable to value the shareholder's interest as the expected fair value less cost to sell thus reflecting the expected value upon completion of the transaction.

Certain life covered operations are considered as held for sale, consistent with the IFRS classification of these operations as detailed in note E18. The life covered MCEV for the held for sale operations has been adjusted within the value of in force business and this adjustment has been reported in the analysis of earnings through acquired/divested business line, resulting in an increase to the closing MCEV at 31 December 2012 of £1,270 million. The adjustment reflects the amount needed to align the contribution to shareholder equity with the expected fair value less cost to sell. There is no impact to the life and related business MCEV operating profits and total earnings. The consolidated income statement includes a profit on disposal and remeasurement of subsidiaries and associates based on the expected fair value less cost to sell of £1,270 million in relation to the life covered held for sale operations.

In line with the preparation of the consolidated statement of financial position - MCEV basis, the assets and liabilities of held for sale operations are stated at the IFRS values with any differences in measurement on an MCEV basis reflected in the additional value of in-force long term business.

Within the sensitivity analysis E19, and other disclosures where applicable, held for sale operations are excluded, reflecting that these operations are stated at expected fair value less cost to sell. Further details are provided against each applicable disclosure.

Discontinued Operations

In line with IFRS, the results for the held for sale operations in the United States for the current year and prior period are presented as discontinued operations.

The results presented as discontinued operations for 2011 also include Delta Lloyd up to 6 May 2011, at which point, the Group sold 25 million shares in Delta Lloyd N.V. ("Delta Lloyd") (the Group's Dutch long-term insurance, general insurance and fund management subsidiary), reducing our holding to approximately 43% of Delta Lloyd's ordinary share capital.

Following the partial disposal, when Delta Lloyd became an associate of Aviva, Delta Lloyd has been removed from covered business as it is not managed by either Aviva or Delta Lloyd on an MCEV basis. The impact on MCEV as at 6 May 2011 was a reduction of £1,519 million.

On 5 July 2012, the Group sold a further 37.2 million shares in Delta Lloyd for £313 million (net of transaction costs), reducing our holding at that date to 19.8% of Delta Lloyd's ordinary share capital. As the Group no longer had significant influence over Delta Lloyd, the Group ceased to account for that company as an associate from 5 July 2012. From that date, our holding was classified as a financial investment and it remains part of non-covered business on an MCEV basis.

Restatement

Following a review of the classification of contracts issued by the Group's Italian long-term business certain portfolios have been reclassified from participating insurance contracts to participating investment contracts in the IFRS financial statements. As a result there has been a reallocation from gross insurance liabilities at 31 December 2011 to gross liabilities for investment contracts of £2,722 million in the consolidated statement of financial position. There is no impact on profit for the year or equity reported for the year ended 31 December 2011

E2 – Geographical analysis of life MCEV operating earnings

Gross of tax and non-controlling interest 2012	United Kingdom & Ireland £m	France £m	Italy, Spain and Other £m	Developed markets £m	Higher growth markets £m	Continuing operations £m	Discontinued operations £m	Total £m
Value of new business	412	119	85	616	130	746	(280)	466
Earnings from existing business:								
– expected returns at the reference rate	229	96	39	364	123	487	85	572
– expected returns in excess of the reference rate	403	202	474	1,079	11	1,090	483	1,573
– expected returns	632	298	513	1,443	134	1,577	568	2,145
– experience variances	(120)	(59)	111	(68)	(10)	(78)	(170)	(248)
– operating assumption changes	(55)	(103)	(98)	(256)	182	(74)	(386)	(460)
Expected return on shareholders' net worth	112	54	86	252	32	284	63	347
Other operating variances	(58)	(63)	(127)	(248)	(1)	(249)	(173)	(422)
Operating earnings before tax	923	246	570	1,739	467	2,206	(378)	1,828

Gross of tax and non-controlling interest 2011	United Kingdom & Ireland £m	France £m	Italy, Spain and Other £m	Developed markets £m	Higher growth markets £m	Continuing operations £m	Discontinued operations £m	Total £m
Value of new business	376	142	166	684	136	820	(130)	690
Earnings from existing business:								
– expected returns at the reference rate	228	113	64	405	99	504	81	585
– expected returns in excess of the reference rate	366	140	145	651	33	684	624	1,308
– expected returns	594	253	209	1,056	132	1,188	705	1,893
– experience variances	93	26	11	130	14	144	(95)	49
– operating assumption changes	(133)	244	(176)	(65)	221	156	(16)	140
Expected return on shareholders' net worth	177	60	81	318	29	347	105	452
Other operating variances	(5)	352	(94)	253	(20)	233	(58)	175
Operating earnings before tax	1,102	1,077	197	2,376	512	2,888	511	3,399

Continuing Operations

Overall MCEV operating earnings for continuing operations reduced from £2,888 million in 2011 to £2,206 million in 2012. The key drivers of this reduction are set out below:

The overall **value of new business** reduced by 9% to £746 million (2011: £820 million), reflecting the 14% reduction in new business volumes partly offset by a 20bps increase in margin to 3.6% (2011: 3.4%).

Total expected return increased by £326 million to £1,861 million (2011: £1,535 million), reflecting an increase in the expected return on existing business by £389 million to £1,577 million in 2012 (2011: £1,188 million), mainly due to the expected reduction in cost of guarantees in Italy. This was partly offset by a reduction in expected return on shareholder net worth to £284 million (2011: £347 million).

Experience variances and **Operating assumption changes** total £ (152) million, driven by project spend in the UK and strengthened persistency assumptions across our major businesses. This compares with total positive experience variances and operating assumption changes of £300 million in 2011, giving an adverse variance compared with the prior year of £452 million.

There was also a significant variance on **Other Operating Variances**, which were £ (249) million in 2012, compared with a positive variance of £233 million in 2011. The majority of the total adverse movement of £482 million compared with the prior year arose in France, where there were favourable modelling improvements in 2011, but adverse changes in 2012 – and of this around half of the variance reflects our revised view on the terminal value of some specific reserves in this business.

The reported variances include around £110 million adverse impact of foreign exchange translation, particularly arising from the Euro and Zloty.

United Kingdom & Ireland

MCEV operating earnings were 16% lower at £923 million (2011: £1,102 million) as improvement in the value of new business has been more than offset by adverse experience variances, assumption changes and other operating variances during 2012 in the UK. A significant improvement in Ireland, where adverse variances in 2011 have not been repeated, is offset by the one off benefit of £149 million in the UK relating to the transfer of the former RBS joint venture business in 2011.

Value of new business increased by 10% to £412 million (2011: £376 million), reflecting the benefit from improved margins in protection and annuity business in the UK as a result of continued pricing discipline. These benefits outweigh the reduction in volumes in Ireland due to the closing of Ark Life to new business and the withdrawal from the large scale bulk purchase annuity market in the UK which did not meet economic hurdle rates.

Total expected return decreased by 3% to £744 million (2011: £771 million) primarily due to lower investment returns.

Experience variances, other operating variances and operating assumption changes decreased to £233 million adverse (2011: £45 million adverse) including higher expenditures from an increased level of regulatory change, unfavourable model improvements and revisions to mortality and persistency assumptions.

E2 – Geographical analysis of life MCEV operating earnings continued

France

MCEV operating earnings decreased to £246 million (2011: £1,077 million). 2012 included adverse experience and assumption changes in contrast to 2011, when operating profit included significant benefit from assumption changes and model refinements.

Value of new business decreased 16% to £119 million (2011: £142 million) following lower sales volumes of primarily unit-linked business and reduced margins on with-profit business as a result of the adverse economic climate in Europe in the year.

Total expected return increased 12% to £352 million (2011: £313 million) resulting from a higher opening implied discount rate, albeit on a lower embedded value.

Experience variances, other operating variances and operating assumption changes decreased to £225 million adverse (2011: £622 million) due to a revision of expense assumptions to reflect current experience, the inclusion of additional lapse provisions to reflect the current economic climate and the adverse modelling refinements referred to above. Assumption revisions in 2011 and economic circumstances over the year have led to lower experience variances in 2012.

Italy, Spain and Other Developed Markets

MCEV operating earnings increased to £570 million (2011: £197 million) reflecting increased expected return as well as improvements in experience variances and assumption changes, partly offset by a reduction in the value of new business.

Value of new business decreased to £85 million (2011: £166 million) driven by a reduction in volumes and margin in Italy and Spain, reflecting the adverse economic climate in Europe during the year.

Total expected return increased to £599 million (2011: £290 million) primarily in Italy reflecting expected release of allowances for guarantees in the opening value.

Experience variances, other operating variances and operating assumption changes increased to £114 million adverse (2011: £259 million adverse) reflecting additional lapse provisions in Italy and Spain relating to the current economic climate and adverse modelling refinements in Italy. These are partly offset by the benefit of increased lapses on the business with guarantees in Italy and the marginal impact of new business value on deferred tax losses.

Higher growth markets

MCEV operating earnings decreased by 9% to £467 million (2011: £512 million) reflecting a decrease in experience variance and assumption changes from the prior period.

Value of new business decreased by 4% to £130 million (2011: £136 million) as the benefits of growth in Turkey do not fully offset the reduced volumes in Poland and lower margins in Asia.

Total expected return of £166 million (2011: £161 million) is broadly in line with prior period.

Operating experience variances, other operating variances and assumption changes of £171 million (2011: £215 million), were mainly due to a change to assumed management actions in relation to product charges in Poland.

Discontinued Operations

MCEV operating earnings decreased to £378 million adverse (2011: £511 million) driven by adverse value of new business, unfavourable experience variances and adverse assumption changes in the US. Delta Lloyd, which is no longer part of the covered business in 2012, contributed £270 million in 2011.

Value of new business decreased to £280 million adverse (2011: £130 million adverse) reflecting the adverse economic movements from lower risk-free rates. Delta Lloyd contributed £1million in 2011.

Total expected return of £631 million (2011: £810 million) is broadly in line with prior period in the US. Delta Lloyd contributed £169 million in 2011.

Operating experience variances, other operating variances and assumption changes decreased to £729 million adverse (2011: £169 million adverse) primarily reflecting the marginal impact of new business on the value of deferred tax losses, revisions to persistency and mortality assumptions, adverse modelling refinements and additional capital transaction costs. Delta Lloyd contributed £100 million in 2011.

E2 – Geographical analysis of life MCEV operating earnings continued

Gross of tax and non-controlling interest 2012	UK £m	Ireland £m	UK & Ireland £m	France £m	Spain £m	Italy £m	Other £m	Developed markets £m	Poland £m	Asia £m	Other £m	Higher growth markets £m	Continuing operations £m	Discontinued operations £m	Total £m
Value of new business	420	(8)	412	119	56	29	—	616	35	63	32	130	746	(280)	466
Earnings from existing business															
– expected existing business contribution (reference rate)	215	14	229	96	27	9	3	364	85	24	14	123	487	85	572
– expected existing business contribution (in excess of reference rate)	381	22	403	202	101	373	—	1,079	6	5	—	11	1,090	483	1,573
Experience variances															
– maintenance expense ¹	(28)	—	(28)	(9)	(7)	(3)	6	(41)	4	—	(1)	3	(38)	(16)	(54)
– project and other related expenses ¹	(74)	(1)	(75)	(2)	—	—	—	(77)	—	(2)	—	(2)	(79)	(21)	(100)
– mortality/morbidity ²	1	(3)	(2)	1	12	(2)	2	11	8	3	3	14	25	(24)	1
– lapses ³	(15)	7	(8)	(24)	—	67	(5)	30	(6)	(12)	(3)	(21)	9	1	10
– other ⁴	(6)	(1)	(7)	(25)	1	41	(1)	9	(6)	3	(1)	(4)	5	(110)	(105)
	(122)	2	(120)	(59)	6	103	2	(68)	—	(8)	(2)	(10)	(78)	(170)	(248)
Operating assumption changes:															
– maintenance expense ⁵	8	2	10	(69)	(25)	28	4	(52)	35	(3)	(1)	31	(21)	—	(21)
– project and other related expenses	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
– mortality/morbidity ⁶	(36)	2	(34)	5	(1)	8	—	(22)	20	9	—	29	7	(220)	(213)
– lapses ⁷	(12)	5	(7)	(39)	(29)	(93)	—	(168)	(83)	—	—	(83)	(251)	(72)	(323)
– other ⁸	(23)	(1)	(24)	—	10	—	—	(14)	205	—	—	205	191	(94)	97
	(63)	8	(55)	(103)	(45)	(57)	4	(256)	177	6	(1)	182	(74)	(386)	(460)
Expected return on shareholders' net worth	99	13	112	54	26	59	1	252	11	16	5	32	284	63	347
Other operating variances ⁹	(67)	9	(58)	(63)	(11)	(110)	(6)	(248)	3	1	(5)	(1)	(249)	(173)	(422)
Earnings before tax and non-controlling interests	863	60	923	246	160	406	4	1,739	317	107	43	467	2,206	(378)	1,828

1 Adverse expense experience occurred across a number of businesses. Within the UK the maintenance expense variance reflects a one-off realignment of investment expense allocation between With Profit and Non Profit business and project and other related expenses include higher expenditures related to increased level of regulatory change.

2 Mortality experience continues to be better than the assumption set across a number of our businesses.

3 Persistency experience remains volatile across most of our business, in part reflecting the wider economic circumstances. Positive lapse variance in Italy reflects increased lapses on business with guarantees.

4 Other experience includes the marginal impact of new business on the value of deferred losses in the US and Italy as well as other tax variances in the US and the impact of policyholders switching to with profit funds in France.

5 Maintenance expense assumptions have been revised based on recent analysis.

6 Mortality assumptions have been updated in the UK and US, primarily related to annuities.

7 Persistency assumptions have been updated in a number of businesses and include additional provisions in Developed markets reflecting economic circumstances.

8 Other operating assumption changes in Poland relate to a change to assumed management actions in relation to product changes.

9 Other operating variances relate to modelling refinements in the UK, France and Italy and the cost of capital transactions and model refinements in the US.

E2 – Geographical analysis of life MCEV operating earnings continued

Gross of tax and non-controlling interest 2011	UK £m	Ireland £m	UK & Ireland £m	France £m	Spain £m	Italy £m	Other £m	Developed markets £m	Poland £m	Asia £m	Other £m	Higher growth markets £m	Continuing operations £m	Discontinued operations £m	Total £m
Value of new business	380	(4)	376	142	86	75	5	684	45	71	20	136	820	(130)	690
Earnings from existing business															
– expected existing business contribution (reference rate)	214	14	228	113	34	23	7	405	72	16	11	99	504	81	585
– expected existing business contribution (in excess of reference rate)	340	26	366	140	72	72	1	651	20	10	3	33	684	624	1,308
Experience variances															
– maintenance expense ¹	2	(8)	(6)	(14)	2	(7)	5	(20)	6	—	(3)	3	(17)	(47)	(64)
– project and other related expenses ¹	(30)	(1)	(31)	(15)	(1)	—	—	(47)	—	(4)	(1)	(5)	(52)	(12)	(64)
– mortality/morbidity ²	2	2	4	33	(5)	11	2	45	12	7	—	19	64	(36)	28
– lapses ³	(11)	(12)	(23)	9	—	2	(5)	(17)	4	(14)	—	(10)	(27)	4	(23)
– other ⁴	153	(4)	149	13	—	7	—	169	9	(2)	—	7	176	(4)	172
	116	(23)	93	26	(4)	13	2	130	31	(13)	(4)	14	144	(95)	49
Operating assumption changes:															
– maintenance expenses ⁵	63	(65)	(2)	11	(4)	(28)	(2)	(25)	51	19	—	70	45	46	91
– project and other related expenses ⁵	(65)	—	(65)	(4)	—	—	—	(69)	—	—	—	—	(69)	—	(69)
– mortality/morbidity ⁶	(18)	—	(18)	163	(16)	—	6	135	22	(6)	—	16	151	(1)	150
– lapses ⁷	(1)	(57)	(58)	107	(65)	(5)	(33)	(54)	37	(24)	3	16	(38)	(136)	(174)
– other ⁸	10	—	10	(33)	—	(28)	(1)	(52)	117	—	2	119	67	75	142
	(11)	(122)	(133)	244	(85)	(61)	(30)	(65)	227	(11)	5	221	156	(16)	140
Expected return on shareholders' net worth	147	30	177	60	32	47	2	318	10	16	3	29	347	105	452
Other operating variances ⁹	7	(12)	(5)	352	2	(95)	(1)	253	5	(11)	(14)	(20)	233	(58)	175
Earnings before tax and non-controlling interests	1,193	(91)	1,102	1,077	137	74	(14)	2,376	410	78	24	512	2,888	511	3,399

1 Adverse expense experience occurred across a number of businesses.

2 Mortality experience continues to be better than the assumption set across a number of our businesses, most notably in France. Adverse experience reflects normal volatility in mortality and increased retention limits in the US.

3 Persistency experience continues to be somewhat volatile across our businesses. Asia reflects an accumulation of small adverse experience across businesses.

4 Other experience includes tax benefits from the transfer of former RBS joint venture business into the long-term fund in the UK.

5 Maintenance and project expense assumptions have been revised in many regions with a broadly neutral impact on continuing business.

6 Mortality assumptions have been updated in France reflecting experience.

7 Persistency assumptions have been updated in a number of businesses reflecting lower expected lapses in France (AFER), increases due to the economic environment in Ireland and Spain, and, in the US, revisions to dynamic policyholder lapse behaviour.

8 Other operating assumption changes in Poland relate to a change to assumed management actions in relation to product charges, and, in the US, revisions to policyholder utilisation of rider benefits offset by revisions to annuity spread assumptions.

9 Other operating variances relate to modelling changes and the release of a modelling provision in France, and modelling refinements in Italy, and, in the US, the marginal impact of new business on the value of deferred tax losses, with cost of capital transactions and model refinements broadly offsetting.

E2 – Geographical analysis of life MCEV operating earnings continued

Net of tax and non-controlling interest 2012	UK £m	Ireland £m	UK & Ireland £m	France £m	Spain £m	Italy £m	Other £m	Developed markets £m	Poland £m	Asia £m	Other £m	Higher growth markets £m	Continuing operations £m	Discontinued operations £m	Total £m
Value of new business	319	(6)	313	67	15	8	—	403	26	50	26	102	505	(182)	323
Earnings from existing business															
– expected existing business contribution (reference rate)	164	9	173	61	11	2	3	250	61	17	11	89	339	55	394
– expected existing business contribution (in excess of reference rate)	289	14	303	123	35	107	—	568	5	4	—	9	577	314	891
Experience variances															
– maintenance expense ¹	(21)	—	(21)	(6)	(5)	(1)	5	(28)	3	—	—	3	(25)	(11)	(36)
– project and other related expenses ¹	(56)	(1)	(57)	(2)	—	—	—	(59)	—	(2)	—	(2)	(61)	(13)	(74)
– mortality/morbidity ²	1	(2)	(1)	—	4	(1)	1	3	6	3	2	11	14	(16)	(2)
– lapses ³	(12)	5	(7)	(14)	(1)	18	(4)	(8)	(5)	(7)	(2)	(14)	(22)	1	(21)
– other ⁴	(4)	—	(4)	(18)	—	12	(1)	(11)	(4)	2	(1)	(3)	(14)	(72)	(86)
	(92)	2	(90)	(40)	(2)	28	1	(103)	—	(4)	(1)	(5)	(108)	(111)	(219)
Operating assumption changes:															
– maintenance expenses ⁵	6	1	7	(46)	(21)	9	4	(47)	24	(2)	(1)	21	(26)	—	(26)
– project and other related expenses	(1)	—	(1)	—	—	—	—	(1)	—	—	—	—	(1)	—	(1)
– mortality/morbidity ⁶	(27)	1	(26)	3	(1)	2	—	(22)	15	7	—	22	—	(143)	(143)
– lapses ⁷	(9)	3	(6)	(26)	(12)	(26)	—	(70)	(60)	(1)	—	(61)	(131)	(47)	(178)
– other ⁸	(17)	—	(17)	—	3	—	—	(14)	149	—	—	149	135	(61)	74
	(48)	5	(43)	(69)	(31)	(15)	4	(154)	128	4	(1)	131	(23)	(251)	(274)
Expected return on shareholders' net worth	76	9	85	32	10	18	1	146	7	12	4	23	169	41	210
Other operating variances ⁹	(51)	6	(45)	(50)	(5)	(37)	(5)	(142)	2	1	(4)	(1)	(143)	(112)	(255)
Earnings after tax and non-controlling interests	657	39	696	124	33	111	4	968	229	84	35	348	1,316	(246)	1,070

1 Adverse expense experience occurred across a number of businesses. Within the UK the maintenance expense variance reflects a one-off realignment of investment expense allocation between With Profit and Non Profit business and project and other related expenses include higher expenditures related to increased level of regulatory change.

2 Mortality experience continues to be better than the assumption set across a number of our businesses.

3 Persistency experience remains volatile across most of our business, in part reflecting the wider economic circumstances. Positive lapse variance in Italy reflects increased lapses on business with guarantees.

4 Other experience includes the marginal impact of new business on the value of deferred losses in the US and Italy as well as other tax variances in the US and the impact of policyholders switching to with profit funds in France.

5 Maintenance expense assumptions have been revised based on recent analysis.

6 Mortality assumptions have been updated in the UK and US, primarily related to annuities.

7 Persistency assumptions have been updated in a number of businesses and include additional provisions in Developed markets reflecting economic circumstances.

8 Other operating assumption changes in Poland relate to a change to assumed management actions in relation to product charges.

9 Other operating variances relate to modelling refinements in the UK, France and Italy and the cost of capital transactions and model refinements in the US.

E2 – Geographical analysis of life MCEV operating earnings continued

Net of tax and non-controlling interest 2011	UK £m	Ireland £m	UK & Ireland £m	France £m	Spain £m	Italy £m	Other £m	Developed markets £m	Poland £m	Asia £m	Other £m	Higher growth markets £m	Continuing operations £m	Discontinued operations £m	Total £m
Value of new business	281	(3)	278	79	28	23	4	412	34	55	16	105	517	(85)	432
Earnings from existing business															
– expected existing business contribution (reference rate)	158	9	167	71	13	7	7	265	51	12	9	72	337	47	384
– expected existing business contribution (in excess of reference rate)	252	17	269	84	26	22	1	402	15	7	3	25	427	375	802
Experience variances															
– maintenance expense ¹	2	(6)	(4)	(9)	1	(4)	4	(12)	4	—	(2)	2	(10)	(30)	(40)
– project and other related expenses ¹	(22)	—	(22)	(10)	(1)	—	—	(33)	—	(3)	(1)	(4)	(37)	(9)	(46)
– mortality/morbidity ²	1	1	2	21	(2)	4	1	26	8	6	—	14	40	(22)	18
– lapses ³	(7)	(8)	(15)	8	(3)	—	(5)	(15)	3	(11)	1	(7)	(22)	3	(19)
– other ⁴	113	(2)	111	6	—	2	1	120	7	(2)	(1)	4	124	(5)	119
	87	(15)	72	16	(5)	2	1	86	22	(10)	(3)	9	95	(63)	32
Operating assumption changes:															
– maintenance expenses ⁵	47	(45)	2	7	(2)	(10)	(1)	(4)	36	14	(1)	49	45	8	53
– project and other related expenses ⁵	(49)	—	(49)	(2)	—	—	—	(51)	—	—	—	—	(51)	—	(51)
– mortality/morbidity ⁶	(14)	—	(14)	101	(5)	—	4	86	16	(6)	1	11	97	(1)	96
– lapses ⁷	—	(38)	(38)	73	(23)	(1)	(29)	(18)	26	(18)	4	12	(6)	(88)	(94)
– other ⁸	7	—	7	(21)	—	(8)	(2)	(24)	84	—	3	87	63	49	112
	(9)	(83)	(92)	158	(30)	(19)	(28)	(11)	162	(10)	7	159	148	(32)	116
Expected return on shareholders' net worth	109	20	129	36	13	16	1	195	7	12	2	21	216	59	275
Other operating variances ⁹	6	(9)	(3)	237	1	(29)	2	208	4	(7)	(14)	(17)	191	(39)	152
Earnings after tax and non-controlling interests	884	(64)	820	681	46	22	(12)	1,557	295	59	20	374	1,931	262	2,193

1 Adverse expense experience occurred across a number of businesses.

2 Mortality experience continues to be better than the assumption set across a number of our businesses, most notably in France. Adverse experience reflects normal volatility in mortality and increased retention limits in the US.

3 Persistency experience continues to be somewhat volatile across our businesses. Asia reflects an accumulation of small adverse experience across businesses.

4 Other experience includes tax benefits from the transfer of former RBS joint venture business into the long-term fund in the UK.

5 Maintenance and project expense assumptions have been revised in many regions with a broadly neutral impact on continuing business.

6 Mortality assumptions have been updated in France reflecting experience.

7 Persistency assumptions have been updated in a number of businesses reflecting lower expected lapses in France (AFER), increases due to the economic environment in Ireland and Spain, and, in the US, revisions to dynamic policyholder lapse behaviour.

8 Other operating assumption changes in Poland relate to a change to assumed management actions in relation to product charges, and, in the US, revisions to policyholder utilisation of rider benefits offset by revisions to annuity spread assumptions.

9 Other operating variances relate to modelling changes and the release of a modelling provision in France, and modelling refinements in Italy, and, in the US, the marginal impact of new business on the value of deferred tax losses, with cost of capital transactions and model refinements broadly offsetting.

E3 – Geographical analysis of fund management operating earnings

The summarised consolidated income statement – MCEV basis includes earnings from the Group's fund management operations as analysed below. This excludes the proportion of the results of Aviva Investors fund management businesses and other fund management operations within the Group that arise from the provision of fund management services to our Life businesses. These results are included within the Life MCEV operating earnings.

	2012 £m	2011 £m
Aviva Investors	12	16
United Kingdom	11	11
Other	1	—
Total – continuing operations	24	27
Total – discontinued operations	4	14
Total	28	41

E4 – Other operations

Where subsidiaries provide services to our life business, that proportion has been excluded. These results are included within the Life MCEV operating return.

	2012 £m	2011 £m
Developed markets	(60)	(38)
Higher growth markets	(12)	(30)
Other operations	(125)	(133)
Total – continuing operations	(197)	(201)
Total – discontinued operations	(4)	4
Total	(201)	(197)

E5 – Exceptional items and integration and restructuring costs

Exceptional items of £51 million (2011: £57 million) relate to pension regulation changes in Turkey and Poland.

Integration and restructuring costs were £467 million (2011: £212 million). This cost relates to restructuring and transformation activity we have taken to align our business operations with our strategy, including the Group's Simplify programme (£165 million), Ireland transformation (£153 million) including the merger of our UK and Ireland businesses, £24 million in relation to the transformation of Aviva Investors and £27 million in respect of other restructuring activities. Also included was an expense of £98 million, relating to preparing the business for the implementation of Solvency II.

E6 – Segmentation of consolidated statement of financial position

	2012			2011		
	Life and related businesses £m	General business and other £m	Group £m	Life and related businesses £m	General business and other £m	Group £m
Total assets before acquired value of in-force long-term business	286,358	29,204	315,562	281,471	30,090	311,561
Acquired additional value of in-force long-term business	127	—	127	815	—	815
Total assets included in the IFRS statement of financial position	286,485	29,204	315,689	282,286	30,090	312,376
Liabilities of the long-term business	(273,523)	—	(273,523)	(266,622)	—	(266,622)
Liabilities of the general insurance and other businesses	—	(30,806)	(30,806)	—	(30,391)	(30,391)
Net assets on a statutory IFRS basis	12,962	(1,602)	11,360	15,664	(301)	15,363
Additional value of in-force long-term business ¹	4,870	—	4,870	132	—	132
Net assets on an MCEV basis²	17,832	(1,602)	16,230	15,796	(301)	15,495
Equity capital, capital reserves, shares held by employee trusts and other reserves			6,311			6,389
IFRS basis retained earnings			1,389			5,954
Additional MCEV basis retained earnings			4,734			486
Equity attributable to ordinary shareholders of Aviva plc on an MCEV basis			12,434			12,829
Preference share capital, direct capital instruments and fixed rate tier 1 notes			1,582			1,190
Non-controlling interests			2,214			1,476
MCEV basis total equity			16,230			15,495

1 The analysis between the Group's and non-controlling interests' share of the additional value of in-force long-term business is as follows:

	2012 £m	2011 £m	Movement in year £m
Group's share included in shareholders' funds	4,734	486	4,248
Non-controlling interests' share	640	(54)	694
Movement in AFS securities	(504)	(300)	(204)
Additional value in-force long-term business	4,870	132	4,738

2 Analysis of net assets on an MCEV basis is made up as follows:

	2012 £m	2011 £m
Embedded Value	14,941	12,274
Non-controlling interests	1,556	820
	16,497	13,094
Goodwill and intangible assets allocated to long-term business ³	895	2,117
Notional allocation of IAS 19 pension fund surplus/(deficit) to long-term business ⁴	440	585
Long-term business net assets on an MCEV basis	17,832	15,796

3 Goodwill and intangible assets includes amounts related to associated undertakings and joint ventures and are after adjustments reflected in the additional value of in-force long-term business in the consolidated statement of financial position. In 2012 there is an adjustment to impair goodwill by a further £94 million compared to IFRS. There were no adjustments in 2011.

4 The value of the Aviva Staff Pension Scheme surplus has been notionally allocated between segments, based on current funding and, within the long-term business net assets on an MCEV basis, the Life proportion has been included. The pension fund surplus notionally allocated to long-term business is net of the agreed funding borne by the UK with-profit funds.

E7 – Analysis of life and pension earnings

The following table provides an analysis of the movement in embedded value for covered business. The analysis is shown separately for free surplus, required capital and the value of in-force covered business, and includes amounts transferred between these categories. All figures are shown net of tax and non-controlling interests.

Net of tax and non-controlling interests 2012	Continuing operations				Discontinued operations				Total
	Free surplus £m	Required capital ¹ £m	VIF £m	Total MCEV £m	Free surplus £m	Required capital ¹ £m	VIF £m	Total MCEV £m	Total MCEV £m
Opening MCEV	1,355	6,390	4,327	12,072	(11)	1,575	(1,362)	202	12,274
New business value	(389)	155	739	505	(319)	298	(161)	(182)	323
Expected existing business contribution (reference rate)	—	—	339	339	—	—	55	55	394
Expected existing business contribution (in excess of reference rate)	—	—	577	577	—	—	314	314	891
Transfers from VIF and required capital to the free surplus	1,133	(246)	(887)	—	587	(375)	(212)	—	—
Experience variances	112	(162)	(58)	(108)	(212)	53	48	(111)	(219)
Assumption changes	—	30	(53)	(23)	—	—	(251)	(251)	(274)
Expected return on shareholders' net worth	56	113	—	169	(7)	48	—	41	210
Other operating variances	314	30	(487)	(143)	(8)	—	(104)	(112)	(255)
Operating MCEV earnings	1,226	(80)	170	1,316	41	24	(311)	(246)	1,070
Economic variances	(390)	121	1,022	753	216	(67)	(153)	(4)	749
Other non-operating variances ²	(71)	—	36	(35)	(4)	—	3	(1)	(36)
Total MCEV earnings	765	41	1,228	2,034	253	(43)	(461)	(251)	1,783
Capital & dividend flows ³	(299)	—	—	(299)	16	—	—	16	(283)
Foreign exchange variances	5	(88)	27	(56)	(6)	(69)	71	(4)	(60)
Acquired/divested business ⁴	—	(17)	149	132	—	—	1,095	1,095	1,227
Closing MCEV	1,826	6,326	5,731	13,883	252	1,463	(657)	1,058	14,941

1 Required capital is shown net of implicit items permitted by local regulators to cover minimum solvency margins.

2 Other non-operating variances relate to costs for Solvency II implementation and other restructuring exercises, as well as the impact of regulatory changes in Poland and Turkey.

3 Included within capital and dividend flows is the transfer to Life and related businesses from other segments consisting of service company profits and losses during the reported period that have emerged from the value of in-force. Since the 'look through' into service companies includes only future profits and losses, these amounts must be eliminated from the closing embedded value.

4 Acquired/divested business includes the adjustment for held for sale operations, the acquisition of Pelayo Vida on 17 January 2012, and the divestiture of Czech, Hungarian, Romanian and Sri Lankan Life businesses.

Net of tax and non-controlling interests 2011	Continuing operations				Discontinued operations				Total
	Free surplus £m	Required capital ¹ £m	VIF £m	Total MCEV £m	Free surplus £m	Required capital ¹ £m	VIF £m	Total MCEV £m	Total MCEV £m
Opening MCEV	1,495	5,961	5,691	13,147	108	2,381	238	2,727	15,874
New business value	(558)	254	821	517	(376)	319	(28)	(85)	432
Expected existing business contribution (reference rate)	—	—	337	337	—	—	47	47	384
Expected existing business contribution (in excess of reference rate)	—	—	427	427	—	—	375	375	802
Transfers from VIF and required capital to the free surplus	1,193	(223)	(970)	—	714	(385)	(329)	—	—
Experience variances	169	61	(135)	95	(122)	100	(41)	(63)	32
Assumption changes	96	(92)	144	148	—	—	(32)	(32)	116
Expected return on shareholders' net worth	97	119	—	216	(1)	60	—	59	275
Other operating variances	(16)	5	202	191	132	13	(184)	(39)	152
Operating MCEV earnings	981	124	826	1,931	347	107	(192)	262	2,193
Economic variances	(790)	432	(2,208)	(2,566)	298	(63)	(1,179)	(944)	(3,510)
Other non-operating variances ²	(30)	(19)	42	(7)	(21)	1	7	(13)	(20)
Total MCEV earnings	161	537	(1,340)	(642)	624	45	(1,364)	(695)	(1,337)
Capital & dividend flows ^{3, 4}	(316)	—	126	(190)	(85)	—	(218)	(303)	(493)
Foreign exchange variance	15	(108)	(150)	(243)	(16)	42	(34)	(8)	(251)
Acquired/divested business ⁵	—	—	—	—	(642)	(893)	16	(1,519)	(1,519)
Closing MCEV	1,355	6,390	4,327	12,072	(11)	1,575	(1,362)	202	12,274

1 Required capital is shown net of implicit items permitted by local regulators to cover minimum solvency margins.

2 Other non-operating variances primarily relate to costs for Solvency II implementation.

3 Included within capital and dividend flows is the transfer to Life and related businesses from other segments consisting of service company profits and losses during the reported period that have emerged from the value of in-force. Since the 'look through' into service companies includes only future profits and losses, these amounts must be eliminated from the closing embedded value.

4 As a result of the January 2012 announced disposal of the Czech, Hungarian, and Romanian businesses, the VIF movement reflects the write-down of this business to the IFRS carrying value.

5 Divested business is the removal of Delta Lloyd from covered business subsequent to the reduction of our holding to 43% on 6th May 2011.

E8 – Life MCEV operating earnings

The table below presents the life and pensions MCEV earnings broken down into constituent parts. The life and pensions MCEV operating earnings comprise: the value of new business written during the year; the earnings from existing business including other operating variances; and the expected investment return on the shareholders' net worth.

These components are calculated using economic assumptions as at the start of the year (in-force business) or start of the quarter (new business) and operating (demographic and expenses) assumptions as at the end of the year.

	2012 £m	2011 £m
Gross of tax and non-controlling interest		
Value of new business	746	820
Earnings from existing business		
– expected returns at the reference rate	487	504
– expected returns in excess of the reference rate	1,090	684
– expected returns	1,577	1,188
– experience variances	(78)	144
– operating assumption changes	(74)	156
Other operating variance	(249)	233
Expected return on shareholders' net worth	284	347
Life and pensions operating earnings before tax	2,206	2,888
Economic variances	1,901	(5,283)
Other non-operating variances	(42)	(12)
Life and pensions earnings before tax	4,065	(2,407)
Tax on operating earnings	(576)	(824)
Tax on other activities	(619)	1,651
Life and pensions earnings after tax – continuing operations	2,870	(1,580)
Life and pensions earnings after tax – discontinued operations	(251)	(707)
Life and pensions earnings after tax	2,619	(2,287)

There were no separate development costs reported in these years.

Other non-operating variances relate to costs for Solvency II implementation and other restructuring exercises, as well as the impact of regulatory changes in Poland and Turkey.

The table above presents a summarised breakdown of the life and pensions MCEV earnings on a gross of non-controlling interests basis and gross of tax with tax shown separately. The Group favours the gross presentation for consistency with the IFRS results. The table below compares the key items on the different bases as the subsequent analysis is provided predominantly on a net of tax and non-controlling interests basis as preferred by the CFO Forum Principles.

Key indicators

	2012		2011	
	Net of non-controlling interests and tax £m	Gross of non-controlling interests and tax £m	Net of non-controlling interests and tax £m	Gross of non-controlling interests and tax £m
Value of new business – continuing operations	505	746	517	820
Value of new business – discontinued operations	(182)	(280)	(85)	(130)
Value of new business	323	466	432	690
Life and pensions operating return – continuing operations	1,316	2,206	1,931	2,888
Life and pensions operating return – discontinued operations	(246)	(378)	262	511
Life and pensions operating return	1,070	1,828	2,193	3,399
Life and pensions earnings – continuing operations	2,034	4,065	(642)	(2,407)
Life and pensions earnings – discontinued operations	(251)	(387)	(695)	(1,083)
Life and pensions earnings	1,783	3,678	(1,337)	(3,490)

E9 – Present value of life new business premiums

The tables below set out the present value of new business premiums (PVNBP) written by the life and related businesses, gross of tax and non-controlling interests. The PVNBP calculation is equal to total single premium sales received in the period plus the discounted value of regular premiums expected to be received over the term of the new contracts, and is expressed at the point of sale.

The premium volumes and projection assumptions used to calculate the present value of regular premiums for each product are the same as those used to calculate the value of new business, so the components of the new business margin are on a consistent basis.

The weighted average capitalisation factor (WACF) is the multiple of the annualised regular premium which gives the present value at point of sale of the regular premiums.

Gross of non-controlling interests 2012	Regular premiums £m	WACF	Present value of regular premiums £m	Single premiums £m	Present value of new business premiums £m
United Kingdom	771	4.9	3,793	6,617	10,410
Ireland	33	3.8	127	505	632
United Kingdom & Ireland	804	4.9	3,920	7,122	11,042
France	74	7.9	584	3,054	3,638
Spain	67	5.6	375	920	1,295
Italy	54	5.9	317	1,654	1,971
Other	7	8.9	62	97	159
Developed markets	1,006	5.2	5,258	12,847	18,105
Poland	36	7.3	261	112	373
Asia	282	5.3	1,482	283	1,765
Other	79	3.7	290	113	403
Higher growth markets	397	5.1	2,033	508	2,541
Total life and pensions – continuing operations	1,403	5.2	7,291	13,355	20,646
Total life and pensions – discontinued operations¹	130	11.1	1,440	2,599	4,039
Total life and pensions	1,533	5.7	8,731	15,954	24,685

¹ Represents the results of the United States.

Gross of non-controlling interests 2011	Regular premiums £m	WACF	Present value of regular premiums £m	Single premiums £m	Present value of new business premiums £m
United Kingdom	766	4.9	3,776	7,478	11,254
Ireland	53	3.9	205	712	917
United Kingdom & Ireland	819	4.9	3,981	8,190	12,171
France	81	6.7	540	3,507	4,047
Spain	92	5.4	501	1,425	1,926
Italy	58	5.4	316	2,677	2,993
Other	19	8.8	168	94	262
Developed markets	1,069	5.2	5,506	15,893	21,399
Poland	50	7.3	367	120	487
Asia	295	4.9	1,444	338	1,782
Other	68	3.6	246	74	320
Higher growth markets	413	5.0	2,057	532	2,589
Total life and pensions – continuing operations	1,482	5.1	7,563	16,425	23,988
Total life and pensions – discontinued operations¹	182	9.6	1,751	3,266	5,017
Total life and pensions	1,664	5.6	9,314	19,691	29,005

¹ Represents the results of the United States and the results of Delta Lloyd up to 6 May 2011.

E10 – Geographical analysis of value of new business

The tables below set out the present value of new business premiums (PVNBP) written by the life and related businesses, the value of the new business and the resulting margin, firstly gross and then net of tax and non-controlling interests. The value generated by new business written during the period is the present value of the projected stream of after-tax distributable profit from that business, including expected profit between point of sale and the valuation date. It reflects the additional value to shareholders created through the activity of writing new business including the impacts of interactions between in force and new business with the exception of tax as noted in the basis of preparation. The value of new business has been calculated using economic assumptions at the point of sale which has been implemented with the assumptions being taken as those appropriate to the start of each quarter. For contracts that are re-priced more frequently, weekly or monthly economic assumptions have been used. The operating assumptions are consistent with those used to determine the embedded value. The value of new business is shown after the effect of the frictional costs of holding required capital, and after the effect of the costs of residual non-hedgeable risks on the same basis as for the in-force covered business.

	Present value of new business premiums		Value of new business		New business margin	
	2012 £m	2011 £m	2012 £m	2011 £m	2012 %	2011 %
Gross of tax and non-controlling interest						
United Kingdom	10,410	11,254	420	380	4.0%	3.4%
Ireland	632	917	(8)	(4)	(1.3)%	(0.4)%
United Kingdom & Ireland	11,042	12,171	412	376	3.7%	3.1%
France	3,638	4,047	119	142	3.3%	3.5%
Spain	1,295	1,926	56	86	4.3%	4.5%
Italy	1,971	2,993	29	75	1.5%	2.5%
Other	159	262	—	5	—	1.9%
Developed markets	18,105	21,399	616	684	3.4%	3.2%
Poland	373	487	35	45	9.4%	9.2%
Asia	1,765	1,782	63	71	3.6%	4.0%
Other	403	320	32	20	7.9%	6.3%
Higher growth markets	2,541	2,589	130	136	5.1%	5.3%
Total life and pensions – continuing operations	20,646	23,988	746	820	3.6%	3.4%
Total life and pensions – discontinued operations¹	4,039	5,017	(280)	(130)	(6.9)%	(2.6)%
Total life and pensions	24,685	29,005	466	690	1.9%	2.4%

¹ Current period represents the results of the United States and prior period represents the results of the United States and Delta Lloyd up to 6 May 2011.

	Present value of new business premiums		Value of new business		New business margin	
	2012 £m	2011 £m	2012 £m	2011 £m	2012 %	2011 %
Net of tax and non-controlling interest						
United Kingdom	10,410	11,254	319	281	3.1%	2.5%
Ireland	474	688	(6)	(3)	(1.3)%	(0.4)%
United Kingdom & Ireland	10,884	11,942	313	278	2.9%	2.3%
France	2,996	3,376	67	79	2.2%	2.3%
Spain	719	1,054	15	28	2.1%	2.7%
Italy	841	1,336	8	23	1.0%	1.7%
Other	158	262	—	4	—	1.5%
Developed markets	15,598	17,970	403	412	2.6%	2.3%
Poland	339	440	26	34	7.7%	7.7%
Asia	1,748	1,756	50	55	2.9%	3.1%
Other	403	320	26	16	6.5%	5.0%
Higher growth markets	2,490	2,516	102	105	4.1%	4.2%
Total life and pensions – continuing operations	18,088	20,486	505	517	2.8%	2.5%
Total life and pensions – discontinued operations¹	4,039	4,531	(182)	(85)	(4.5)%	(1.9)%
Total life and pensions	22,127	25,017	323	432	1.5%	1.7%

¹ Current period represents the results of the United States and prior period represents the results of the United States and Delta Lloyd up to 6 May 2011.

E11 – Post-tax internal rate of return and payback period on life and pensions new business

The new business written requires up-front capital investment due to high set-up costs and capital requirements. The internal rate of return (IRR) is a measure of the shareholder return expected on this capital investment. It is equivalent to the discount rate at which the present value of the post-tax cash flows expected to be earned over the lifetime of the business written, including allowance for the time value of options and guarantees, is equal to the total invested capital to support the writing of the business. The capital included in the calculation of the IRR is the initial capital required to pay acquisition costs and set up statutory reserves in excess of premiums received (initial capital), plus required capital at the same level as for the calculation of the value of new business.

The payback period shows how quickly shareholders can expect the total capital to be repaid. The payback period has been calculated based on undiscounted cash flows and allows for the initial and required capital.

The projected investment returns in both the IRR and payback period calculations assume that equities, properties and bonds earn a return in excess of risk-free consistent with the long-term rate of return assumed in operating earnings.

The IRR on life and pensions new business excluding United States for the year was 14.9% (2011: 14.5% excluding Delta Lloyd and United States).

Gross of non-controlling interests 2012	Internal rate of return %	Initial capital £m	Required capital £m	Total invested capital £m	New business impact on free surplus	Payback period years
United Kingdom	18%	112	164	276	6	6
Ireland	2%	31	10	41	31	25
United Kingdom & Ireland	16%	143	174	317	37	8
France	11%	33	113	146	125	8
Spain	21%	21	42	63	35	4
Italy	12%	20	69	89	41	6
Other	8%	12	1	13	15	10
Developed markets	15%	229	399	628	253	8
Poland	20%	20	8	28	25	4
Asia	11%	60	29	89	82	11
Other	28%	17	15	32	29	3
Higher growth markets	16%	97	52	149	136	8
Total – excluding United States	14.9%	326	451	777	389	8
Total – United States	17%	24	292	316	319	4
Total	15.5%	350	743	1,093	708	7

Gross of non-controlling interests 2011	Internal rate of return %	Initial capital £m	Required capital £m	Total invested capital £m	New business impact on free surplus	Payback period years
United Kingdom	15%	155	187	342	89	7
Ireland	6%	27	22	49	38	12
United Kingdom & Ireland	14%	182	209	391	127	8
France	11%	45	127	172	153	8
Spain	23%	25	70	95	50	4
Italy	12%	24	117	141	66	6
Other	9%	25	1	26	25	8
Developed markets	14%	301	524	825	421	7
Poland	24%	25	9	34	30	4
Asia	13%	56	31	87	80	12
Other	22%	15	12	27	27	4
Higher growth markets	17%	96	52	148	137	9
Total – excluding Delta Lloyd and United States	14.5%	397	576	973	558	7
Total – Delta Lloyd¹ and United States	14%	53	328	381	376	6
Total	14.3%	450	904	1,354	934	7

¹ Includes the results of Delta Lloyd up to 6 May 2011.

In Ireland, the closure of Ark Life to new business in the first half of 2012 has adversely impacted IRR and payback period as current expenses are spread over a smaller volume of business.

Total invested capital is gross of non-controlling interests and valued on a point of sale basis. This differs from the new business impact on the free surplus which is stated net of non-controlling interests, valued on a year-end basis and benefits from the writing of new business in the UK Life RIEESA. The reconciliation is as follows:

	2012 £m	2011 £m
Total capital invested	1,093	1,354
Non-controlling interests ¹	(112)	(180)
Benefit of RIEESA on new business funding in UK	(220)	(190)
Timing differences (point of sale versus year end basis) ²	(53)	(50)
New business impact on free surplus	708	934

¹ Non controlling interests primarily in Italy and Spain

² Timing differences across all markets

E12 – Free surplus emergence

	Existing business					New business		Total business	
	Transfer from VIF to net worth £m	Return on net worth £m	Impact of experience variances and assumption changes on net worth £m	Release of required capital to free surplus £m	Total existing business surplus generation £m	Impact on net worth £m	Reduction in free surplus from required capital £m	Total new business surplus generation £m	Total free surplus generation £m
Net of tax and non-controlling interest 2012									
United Kingdom & Ireland	364	85	194	67	710	(78)	41	(37)	673
Developed markets excluding United Kingdom & Ireland	321	61	68	111	561	(71)	(145)	(216)	345
Developed markets	685	146	262	178	1,271	(149)	(104)	(253)	1,018
Higher growth markets	202	23	62	57	344	(85)	(51)	(136)	208
Total – continuing operations	887	169	324	235	1,615	(234)	(155)	(389)	1,226
Total – discontinued operations¹	212	41	(167)	274	360	(21)	(298)	(319)	41
Total	1,099	210	157	509	1,975	(255)	(453)	(708)	1,267

¹ Represent the results of the United States.

	Existing business					New business		Total business	
	Transfer from VIF to net worth £m	Return on net worth £m	Impact of experience variances and assumption changes on net worth £m	Release of required capital to free surplus £m	Total existing business surplus generation £m	Impact on net worth £m	Reduction in free surplus from required capital £m	Total new business surplus generation £m	Total free surplus generation £m
Net of tax and non-controlling interest 2011									
United Kingdom & Ireland	420	129	204	(72)	681	(121)	(6)	(127)	554
Developed markets excluding United Kingdom & Ireland	358	66	(18)	195	601	(97)	(197)	(294)	307
Developed markets	778	195	186	123	1,282	(218)	(203)	(421)	861
Higher growth markets	192	21	37	7	257	(86)	(51)	(137)	120
Total – continuing operations	970	216	223	130	1,539	(304)	(254)	(558)	981
Total – discontinued operations¹	329	59	123	212	723	(57)	(319)	(376)	347
Total	1,299	275	346	342	2,262	(361)	(573)	(934)	1,328

¹ Represents the results of United States and the results of Delta Lloyd up to 6 May 2011.

E13 – Maturity profile of business

(a) Total in-force business

To show the profile of the VIF emergence, the value of VIF in the statements of financial position has been split into five-year tranches depending on the date when the profit is expected to emerge.

Net of non-controlling interest 2012 £m	0-5 ¹	6-10	11-15	16-20	20+	Total
United Kingdom & Ireland	496	893	639	261	812	3,101
Developed markets excluding United Kingdom & Ireland	432	222	156	92	101	1,003
Developed markets	928	1,115	795	353	913	4,104
Higher growth markets	676	432	228	146	145	1,627
Total – excluding United States	1,604	1,547	1,023	499	1,058	5,731
Total – United States	(657)	—	—	—	—	(657)
Total	947	1,547	1,023	499	1,058	5,074

¹ For held for sale operations, the VIF emergence is reported in the 0-5 column.

Net of non-controlling interest 2011 £m	0-5	6-10	11-15	16-20	20+	Total
United Kingdom & Ireland	177	866	704	312	661	2,720
Developed markets excluding United Kingdom & Ireland	(94)	125	130	76	48	285
Developed markets	83	991	834	388	709	3,005
Higher growth markets	600	332	177	106	107	1,322
Total – excluding United States	683	1,323	1,011	494	816	4,327
Total – United States	60	(624)	(335)	(144)	(319)	(1,362)
Total	743	699	676	350	497	2,965

E13 – Maturity profile of business continued**(b) New business**

To show the profile of the VIF emergence, the value of new business has been split into five-year tranches depending on the date when the profit is expected to emerge.

Net of non-controlling interest 2012 £m	0-5 ¹	6-10	11-15	16-20	20+	Total
United Kingdom & Ireland	85	73	50	35	148	391
Developed markets excluding United Kingdom & Ireland	69	38	25	13	17	162
Developed markets	154	111	75	48	165	553
Higher growth markets	96	46	21	15	8	186
Total – continuing operations	250	157	96	63	173	739
Total – discontinued operations²	(161)	—	—	—	—	(161)
Total	89	157	96	63	173	578

1 For held for sale operations, the VIF emergence is reported in the 0-5 column.

2 Represent the results of the United States.

Net of non-controlling interest 2011 £m	0-5	6-10	11-15	16-20	20+	Total
United Kingdom & Ireland	104	61	36	26	172	399
Developed markets excluding United Kingdom & Ireland	100	55	31	16	29	231
Developed markets	204	116	67	42	201	630
Higher growth markets	101	46	22	13	9	191
Total – continuing operations	305	162	89	55	210	821
Total – discontinued operations¹	35	(83)	38	6	(24)	(28)
Total	340	79	127	61	186	793

1 Represents the results of the United States and the results of Delta Lloyd up to 6 May 2011.

E14 – Segmental analysis of life and related business embedded value

Net of non-controlling interest 2012 £m	Free surplus £m	Required Capital ¹ £m	VIF £m	Total MCEV £m
United Kingdom	1,230	2,648	2,621	6,499
Ireland	96	246	480	822
United Kingdom & Ireland	1,326	2,894	3,101	7,321
France	80	2,106	984	3,170
Spain ²	58	294	178	530
Italy ^{2,3}	(42)	598	(172)	384
Other	40	12	13	65
Developed markets	1,462	5,904	4,104	11,470
Poland	161	113	1,282	1,556
Asia	180	282	240	702
Other	23	27	105	155
Higher growth markets	364	422	1,627	2,413
Total – excluding United States	1,826	6,326	5,731	13,883
Total – United States⁴	252	1,463	(657)	1,058
Total	2,078	7,789	5,074	14,941

1 Required capital is shown net of implicit items permitted by local regulators to cover minimum solvency margins.

2 Required capital in Italy and Spain reflects the current economic environment and is in excess of regulatory requirements. The increase in Italy from full year 2011 results from a true-up of prior estimates.

3 Italy has a positive surplus on a statutory basis.

4 Aviva USA's holding company debt amounting to £708 million at 31 December 2012 has been included within non-covered business.

Net of non-controlling interest 2011 £m	Free surplus £m	Required Capital ¹ £m	VIF £m	Total MCEV £m
United Kingdom	1,036	2,859	2,320	6,215
Ireland	40	343	400	783
United Kingdom & Ireland	1,076	3,202	2,720	6,998
France ²	(145)	2,048	800	2,703
Spain	118	227	105	450
Italy ³	8	499	(658)	(151)
Other	39	21	38	98
Developed markets	1,096	5,997	3,005	10,098
Poland	131	102	929	1,162
Asia	98	270	300	668
Other	30	21	93	144
Higher growth markets	259	393	1,322	1,974
Total – excluding United States	1,355	6,390	4,327	12,072
Total – United States^{2,4}	(11)	1,575	(1,362)	202
Total	1,344	7,965	2,965	12,274

1 Required capital is shown net of implicit items permitted by local regulators to cover minimum solvency margins.

2 France and Aviva USA have a positive surplus on a statutory basis.

3 Negative MCEV in Italy results from widening of spreads on sovereign debt over the year.

4 Aviva USA's holding company debt amounting to £736 million at 31 December 2011 has been included within non-covered business.

The required capital across our life businesses varies between 100% and 325% of EU minimum or equivalent. The weighted average level of required capital for our life business expressed as a percentage of the EU minimum (or equivalent) solvency margin has decreased to 134% (2011: 135%). These levels of required capital are used in the calculation of the Group's embedded value to evaluate the cost of locked in capital. At 31 December 2012 the aggregate regulatory requirements based on the EU minimum test amounted to £5.8 billion (2011: £5.9 billion). At this date, the actual net worth held in our long-term business, was £9.9 billion (2011: £9.3 billion) which represents 170% (2011: 158%) of these minimum requirements.

E15 – Risk allowance within present value of in-force (VIF)

Within the VIF in the tables, there are additional allowances for risks not included within the basic present value of future profits calculation.

Net of non-controlling interest 2012 £m	PVFP £m	Frictional costs £m	Non- hedgeable risks £m	Time value of financial options and guarantees £m	VIF £m
United Kingdom	3,334	(241)	(436)	(36)	2,621
Ireland	512	(8)	(24)	—	480
United Kingdom & Ireland	3,846	(249)	(460)	(36)	3,101
France	2,050	(105)	(225)	(736)	984
Spain	241	(5)	(39)	(19)	178
Italy	(96)	(7)	(34)	(35)	(172)
Other	14	—	(1)	—	13
Developed markets	6,055	(366)	(759)	(826)	4,104
Poland	1,545	(8)	(244)	(11)	1,282
Asia	427	(31)	(89)	(67)	240
Other	108	(1)	(2)	—	105
Higher growth markets	2,080	(40)	(335)	(78)	1,627
Total – excluding United States	8,135	(406)	(1,094)	(904)	5,731
Total – United States	(50)	(141)	(158)	(308)	(657)
Total	8,085	(547)	(1,252)	(1,212)	5,074

The Time Value of Options and Guarantees has become less negative by £198 million to £1,212 million, reflecting positive impacts from economic movements, in particular the reduction in swaption volatilities, and revisions to dynamic policyholder behaviour in the United States, partly offset by refinements to stochastic modelling in France.

The allowance for non-hedgeable risks has become more negative by £307 million, reflecting an increased level of capital related to non-hedgeable risks.

Net of non-controlling interest 2011 £m	PVFP £m	Frictional costs £m	Non- hedgeable risks £m	Time value of financial options and guarantees £m	VIF £m
United Kingdom	2,977	(241)	(389)	(27)	2,320
Ireland	439	(14)	(22)	(3)	400
United Kingdom & Ireland	3,416	(255)	(411)	(30)	2,720
France	1,721	(147)	(182)	(592)	800
Spain	176	(12)	(45)	(14)	105
Italy	(550)	(3)	(20)	(85)	(658)
Other	47	(1)	(6)	(2)	38
Developed markets	4,810	(418)	(664)	(723)	3,005
Poland	1,088	(11)	(145)	(3)	929
Asia	455	(26)	(67)	(62)	300
Other	96	(1)	(2)	—	93
Higher growth markets	1,639	(38)	(214)	(65)	1,322
Total – excluding United States	6,449	(456)	(878)	(788)	4,327
Total – United States	(513)	(160)	(67)	(622)	(1,362)
Total	5,936	(616)	(945)	(1,410)	2,965

E16 – Implied discount rates (IDR)

In the valuation of a block of business, the IDR is the rate of discount such that a traditional embedded value calculation for the covered business equates to the MCEV.

The cash flows projected are the expected future cash flows including expected investment cash flows from equities, bonds and properties earning a risk premium in excess of risk free, statutory reserves and required capital. The risk premiums used are consistent with those used in the expected existing business contribution within operating earnings. As the risk premiums are positive, a discount rate higher than risk-free is required to give a value equal to the market-consistent embedded value.

Average derived risk discount rates are shown below for the embedded value.

	2012 %	2011 %
United Kingdom	7.2%	9.3%
Ireland ¹	1.9%	4.1%
United Kingdom & Ireland	6.4%	8.5%
France	6.7%	7.9%
Spain ¹	12.9%	15.0%
Italy ²	13.4%	n/a
Other	3.1%	4.3%
Developed markets	7.5%	n/a
Poland	5.2%	6.5%
Asia ¹	5.6%	5.2%
Other	6.6%	9.1%
Higher growth markets	5.4%	6.3%
Total – excluding United States	7.2%	n/a
Total – United States^{1,2}	n/a	n/a
Total	n/a	n/a

¹ IDRs have been calculated excluding held for sale operations in 2012, reflecting that they are stated at expected fair value less cost to sell.

² Where there is significant difference in projected real world and risk neutral profits and the value of the in force business plus required capital is negative or close to zero, the IDR is not well defined and consequently IDR is not meaningful.

E17 – Summary of non-controlling interest in life and related businesses' MCEV results

2012	Ireland £m	France £m	Spain £m	Italy £m	Developed markets £m	Higher growth markets £m	Delta Lloyd £m	Total £m	Share-holders' Interest £m	Group £m
Value of new business after tax	(2)	12	24	10	44	4		48	323	371
Life MCEV operating earnings after tax	13	36	79	154	282	32		314	1,070	1,384
Life MCEV earnings after tax	15	75	60	626	776	60		836	1,783	2,619
Closing covered businesses' embedded value	272	280	406	381	1,339	217		1,556	14,941	16,497
2011	Ireland £m	France £m	Spain £m	Italy £m	Developed markets £m	Higher growth markets £m	Delta Lloyd £m	Total £m	Share-holders' Interest £m	Group £m
Value of new business after tax	(1)	15	32	27	73	5	—	78	432	510
Life MCEV operating earnings/ (losses) after tax	(10)	25	49	28	92	40	94	226	2,193	2,419
Life MCEV (losses)/earnings after tax	(29)	(16)	(8)	(928)	(981)	44	(13)	(950)	(1,337)	(2,287)
Closing covered businesses' embedded value	266	214	405	(244)	641	179	—	820	12,274	13,094

Non-controlling interest in life and related businesses is not impacted by the treatment of held for sale operations. There are no non-controlling interests in the United Kingdom or United States.

E18 – Principal assumptions

(a) Economic assumptions – Deterministic calculations

Economic assumptions are derived actively, based on market yields on risk-free fixed interest assets at the end of each reporting period.

In setting the risk-free rate we have, wherever possible, used the mid-price swap yield curve for an AA-rated bank. The curve is extrapolated beyond the last available market data point to an ultimate forward rate using the Nelson-Siegel functional form if necessary. For markets in which there is no reliable swap yield curve, the relevant government bond yields are used. For certain business, swap rates are adjusted for a 'liquidity premium' in deriving the risk free rates, and these adjustments are shown below the reference rate table.

Required capital is shown as a multiple of the EU statutory minimum solvency margin or equivalent.

The principal economic assumptions used are as follows:

Reference rate (spot, swap rates) and expense inflation

United Kingdom	2012	2011	2010
Reference rate			
1 year	0.6%	1.2%	1.0%
5 years	1.0%	1.6%	2.7%
10 years	1.9%	2.3%	3.7%
15 years	2.6%	2.8%	4.1%
20 years	2.9%	3.0%	4.2%
Expense inflation	2.8%	2.8%	3.3%
<hr/>			
Eurozone	2012	2011	2010
Reference rate			
1 year	0.3%	1.4%	1.3%
5 years	0.8%	1.7%	2.5%
10 years	1.6%	2.4%	3.4%
15 years	2.1%	2.8%	3.8%
20 years	2.3%	2.8%	3.8%
Expense inflation ¹	2.5%	2.5%	2.5%
<hr/>			
Poland	2012	2011	2010
Reference rate			
1 year	3.4%	4.9%	4.4%
5 years	3.4%	4.8%	5.5%
10 years	3.5%	5.0%	5.7%
15 years	3.4%	4.7%	5.4%
20 years	3.2%	4.3%	5.1%
Expense inflation	2.1%	2.9%	3.0%
<hr/>			
United States	2012	2011	2010
Reference rate			
1 year	0.3%	0.7%	0.4%
5 years	0.9%	1.2%	2.2%
10 years	1.9%	2.1%	3.5%
15 years	2.4%	2.5%	4.0%
20 years	2.7%	2.6%	4.2%
Expense inflation	2.0%	2.0%	3.0%

¹ Based on France, the largest Eurozone business

For service companies, expense inflation relates to the underlying expenses rather than the fees charged to the life company.

E18 – Principal assumptions continued

The following adjustments are made to the swap rate for immediate annuity type contracts and for all contracts for Aviva USA. The risk-free rate is taken as the swap yield curve for the currency of the liability, adjusted by adding the following to each swap rate:

	4Q 2012	3Q 2012	2Q 2012	1Q 2012	4Q 2011	3Q 2011	New business		Embedded value	
							2Q 2011	1Q 2011	2012	2011
UK immediate annuities	1.19%	1.49%	1.46%	1.34%	1.27%	1.20%	1.00%	1.14%	1.30%	1.30%
UK bulk purchase annuities	1.19%	1.49%	1.46%	1.34%	1.36%	1.38%	0.65%	0.72%	1.30%	1.30%
France	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.44%	1.18%
Spain	0.13%	0.09%	0.28%	0.35%	0.96%	0.33%	0.31%	0.36%	0.30%	0.88%
US immediate annuities	0.83%	0.95%	1.00%	1.26%	1.28%	0.59%	0.57%	0.66%	0.91%	1.33%
US deferred annuities and all other contracts	0.70%	0.81%	0.84%	1.07%	1.09%	0.51%	0.49%	0.56%	0.77%	1.13%

The approach to estimating the market level of liquidity premium in corporate bond assets is consistent with the formula structure proposed by CFO/CRO Forum and adopted in the Solvency II Fifth Quantitative Impact Study (QIS5).

The formula is:

United Kingdom/Europe:	50% of (iBoxx Corporate bond spread – 40bp)
USA:	60% of (iBoxx Corporate bond spread – 40bp)

For assets valued on a marked to model basis (e.g., commercial mortgages), the liquidity premium is consistent with the underlying model valuation.

Adjustments are made where liabilities are not fully backed by assets earning a liquidity premium and for contracts that are exposed to some lapse risk (15% reduction to the market level liquidity premium). There has been no change to the types of contracts to which a liquidity premium is applied.

Risk premium – used for operating profit, Implied Discount Rates (IDR), Internal Rates of Return (IRR) and payback period

For life and pensions operating earnings, Aviva uses normalised investment returns. The normalised investment returns are expressed as a swap rate based on the typical duration of the assets held plus an asset risk premium. More detail is given in note E1 – Basis of preparation.

The use of asset risk premia only impacts operating earnings as expected returns reflect management's long-term expectations of asset returns in excess of the reference rate from investing in different asset classes. This assumption does not impact the embedded value or value of new business as asset risk premia are not recognised until earned. The asset risk premia set out in the table below are added to the ten year swap rate to calculate expected returns.

All territories	2012	2011	2010
Equity risk premium	3.5%	3.5%	3.5%
Property risk premium	2.0%	2.0%	2.0%

Future returns on fixed interest investments are calculated from prospective yields less an adjustment for credit risk.

Required capital and tax

	Tax rates ⁵			Required capital (% EU minimum or equivalent)	
	2012	2011	2010	2012	2011
United Kingdom ¹	23.0%	25.0%	27.0%	100%/200%	100%/200%
Ireland ²	12.5%	12.5%	12.5%	174%/180%	174%/180%
France	34.4%	34.4%	34.4%	107.5%	107.5%
United States	35.0%	35.0%	35.0%	325%	325%
Spain ³	30.0%	30.0%	30.0%	177%	132%
Italy ⁴	34.3%	34.3%	32.4%	243%	195%
Poland	19.0%	19.0%	19.0%	125.5%	125.5%

¹ The required capital in the United Kingdom under MCEV is 100% for unit-linked and other non-participating business and annuity business with 200% for BPA business. In addition, the reattribution of the inherited estate has led to additional capital being locked in to support the with-profit business, and this has been included within required capital.

² Required capital in Ireland under MCEV is 174% for bancassurance and 180% for retail business.

³ This is the aggregate required capital for in force business in Spain. It increases in 2012 reflecting the current economic environment.

⁴ This is the aggregate required capital level for in force business in Italy and reflects the current economic environment. It has increased from 2011 due to a true up of prior estimates. New business metrics continue to use management target levels of required capital (115%-165% of EU minimum), which better reflects the capital requirements of the new business.

⁵ Current tax legislation and rates have been assumed to continue unaltered except where changes in future tax rates have been substantively enacted.

The reduction in the UK corporation tax rate to 23% was substantively enacted on 3 July 2012 and will apply from 1 April 2013. This is considered a known future change for MCEV purposes and has been reflected in the Group's MCEV net assets as at 31 December 2012.

As announced in the 2012 Autumn Statement, the rate is expected to reduce further to 21% from 1 April 2014. The benefit to the Group's MCEV net assets from the further 2% reduction in the rate from 23% to 21% is estimated at approximately £90 million and is not reflected in the Group's MCEV net assets as at 31 December 2012.

The UK Finance Act 2012 also included initial legislation introducing considerable changes to the regime for taxing UK life insurance companies applicable from 1 January 2013. These changes are considered to be known future changes for MCEV purposes and do not have a material impact on the Group's MCEV net assets as at 31 December 2012.

E18 – Principal assumptions continued

Other economic assumptions

Required capital relating to with-profit business is generally assumed to be covered by the surplus within the with-profit funds and no effect has been attributed to shareholders. Where the fund is insufficient and additional shareholder support is required, this is included within required capital, including the RIEESA in the UK. Bonus rates on participating business have been set at levels consistent with the economic assumptions. The distribution of profit between policyholders and shareholders within the with-profit funds assumes that the shareholder interest in conventional with-profit business in the UK and Ireland continues at the current rate of one-ninth of the cost of bonus.

(b) Economic assumptions – Stochastic calculations

The calculation of time value of options and guarantees allows for expected management and policyholder actions in response to varying future investment conditions. The management actions modelled include changes to asset mix, bonus rates and rates of interest and other guarantees granted to policyholders. Modelled policyholder actions are described under 'Non-economic assumptions'.

Model – United States and United Kingdom

Swap rates are generated by a model, the LIBOR Market Model Plus (LMM+), which projects a full swap curve at monthly intervals. Forward rates are assumed to have a distribution that lies between the log-normal and normal distributions. Although this no longer guarantees non-negative interest rates, it maintains interest rates within a more plausible range than the standard Libor Market Model, and gives a better fit to certain swaption volatility surfaces. The model is calibrated to volatilities for swaptions for ten year swaps for a range of option terms and strike rates. Swaption volatilities are taken from SuperDerivatives. In the case of the United States, an adjustment is made to the starting reference rate as described above. After making this adjustment the interest rate model is calibrated to the swaption implied volatilities supplied by SuperDerivatives. Tests have been performed to ensure that sufficient scenarios have been used that the result converges to the stochastic value of the business being valued.

The total annual return on equities is calculated as the return on one-year swaps plus an excess return. For the US, this excess return is modelled using a log-normal model where volatility varies by time horizon. This allows the model to capture the term structure of implied volatilities. The model is calibrated to at-the-money options of a variety of terms. For the UK, a stochastic volatility jump diffusion model is used, which allows for varying levels of volatility over time and across strike prices. Option volatilities are taken from Markit.

The model also generates property total returns and real yield curves, which are significant asset classes for the UK only. In the absence of liquid market data, the property volatilities are based on historic data.

Assumptions for correlations between asset classes have been set based on historic data.

Model – Other Developed and Higher Growth markets

Swap rates are generated by a model, the LIBOR Market Model (LMM) that projects a full swap curve at monthly intervals. Forward rates are assumed to have a log-normal distribution which guarantees non-negative interest rates. The model is calibrated to at-the-money swaptions of a variety of terms and tenors. Swaption volatilities are taken from SuperDerivatives. Tests have been performed to ensure that sufficient scenarios have been used that the result converges to the stochastic value of the business being valued.

The total annual return on equities is calculated as the return on one-year swaps plus an excess return. This excess return is generally modelled using a log-normal model where volatility varies by time horizon. This allows the model to capture the term structure of implied volatilities. The model is calibrated to at-the-money options of a variety of terms. Option volatilities are taken from Markit.

Assumptions for correlations between asset classes have been set based on historic data.

Asset classes

The significant asset classes for UK participating business are equities, property and long-term fixed rate bonds. The most significant assumptions are the distribution of future long-term interest rates (nominal and real) and swaption implied volatilities.

For many businesses, including US and France, the most important assets are fixed rate bonds of various durations.

Summary statistics

Swaption implied volatilities

The implied volatility is that determined by Black-Scholes' formula to reproduce the market price of the option. The following table sets out the swaption implied volatilities.

Option length	2012 Swap length				2011 Swap length			
	10 years	15 years	20 years	25 years	10 years	15 years	20 years	25 years
UK sterling								
10 years	17.1%	16.4%	16.0%	15.7%	18.0%	16.8%	16.1%	15.6%
15 years	15.2%	14.8%	14.2%	13.9%	16.2%	15.4%	14.8%	14.1%
20 years	14.8%	14.1%	13.4%	13.1%	15.3%	14.5%	13.8%	13.1%
25 years	14.9%	14.1%	13.5%	13.1%	15.4%	14.3%	13.5%	12.8%
Euro								
10 years	24.6%	24.0%	23.5%	23.1%	27.3%	28.1%	28.7%	28.4%
15 years	25.5%	24.2%	22.7%	21.8%	31.6%	30.9%	29.3%	28.1%
20 years	25.7%	23.0%	20.9%	20.1%	38.2%	32.6%	29.2%	27.7%
25 years	23.6%	20.5%	18.8%	18.2%	35.0%	29.1%	26.3%	25.2%
US dollar								
10 years	23.0%	21.6%	21.2%	21.5%	30.4%	29.3%	28.4%	28.3%
15 years	21.9%	20.1%	20.1%	20.8%	30.1%	28.1%	27.4%	27.7%
20 years	20.4%	19.0%	18.8%	19.4%	27.5%	26.5%	26.9%	27.6%
25 years	20.4%	20.0%	20.4%	20.9%	28.0%	27.9%	29.5%	30.4%

E18 – Principal assumptions continued

Equity implied volatilities

The implied volatility is that determined by the Black-Scholes formula to reproduce the market price of the option. The following table sets out the equity implied volatilities.

Option length	2012						2011					
	UK	Ireland	France	US	Spain	Italy	UK	Ireland	France	US	Spain	Italy
5 years	23.4%	24.6%	24.6%	23.9%	27.4%	24.6%	25.8%	27.5%	27.5%	28.9%	30.4%	31.9%
10 years	26.3%	24.7%	24.7%	26.6%	28.0%	24.7%	27.2%	27.9%	27.9%	31.0%	30.1%	31.5%
15 years	26.8%	25.0%	25.0%	27.7%	28.2%	25.0%	27.1%	29.4%	29.4%	31.2%	31.6%	33.0%

Property implied volatilities

Best estimate levels of volatility have been used in the absence of meaningful option prices from which implied levels of volatility can be derived.

For the UK, model property implied volatility is 15% for 31 December 2012 (*31 December 2011: 15%*).

(c) Non-economic assumptions

Demographic assumptions

Assumed future mortality, morbidity and lapse rates have been derived from an analysis of Aviva's recent operating experience with a view to giving a best estimate of future experience. We have anticipated future changes in experience where that is appropriate, e.g. we have allowed for improvements in future policyholder longevity.

We have set the assumptions based on a best estimate of shareholder outcomes. In particular, where the policyholder behaviour varies with economic experience, we have set assumptions which are dynamic, i.e. vary depending on the economic assumptions. For example, surrender and option take up rate assumptions that vary according to the investment scenario under consideration have been used in the calculation of the time value of options and guarantees, based on our assessment of likely policyholder behaviour in different investment scenarios.

Additionally, where demographic experience is not driven by economic scenarios but is asymmetric on a stand-alone basis, the best estimate assumption considers the weighted-average expected experience, not simply the median or most likely outcome.

Notwithstanding that certain operations have been classified as held for sale, the Aviva Ireland and Aviva Spain demographic and expense assumptions have been set assuming the businesses do not incur diseconomies of scale.

In 2010, a test case was taken to the European Court of Justice to rule on the current law and practice whereby insurers may take into account a person's gender in the assessment of risk and consequently the pricing of insurance products. The ruling was issued on 1 March 2011 and required gender equality for pricing from 21 December 2012. The impact of the ruling on the Group's MCEV net assets in our UK and European businesses is not considered to be material.

Expense assumptions

Management expenses and operating expenses of holding companies attributed to life and related businesses have been included in the MCEV calculations and split between expenses relating to the acquisition of new business, the maintenance of business in-force and project expenses. Future expense assumptions include an allowance for maintenance expenses and a proportion of recurring project expenses. Certain expenses of an exceptional nature, when they occur, are identified separately and are generally charged as incurred. No future productivity gains have been anticipated.

Where subsidiary companies provide administration, investment management or other services to our life businesses, the value of profits or losses arising from these services have been included in the embedded value and value of new business.

Non-hedgeable risk

For the balance sheet and operating profit, a charge of 3.6% (*2011: 3.3%*) has been applied to the group-diversified capital required on a 1-in-200 one-year basis over the remaining lifetime of in-force business. The charge is set so as to give an aggregate allowance that is in excess of the expected operational risk costs arising from the in-force covered business over its remaining lifetime. The increase in the charge results from a reassessment of the group diversification benefit.

The capital levels used are projected to be sufficient to cover non-hedgeable risks at the 99.5% confidence level one-year after the valuation date. The capital is equal to the capital from the ICA results for those risks considered including allowance for management actions consistent with the base MCEV. Diversification benefits are included between non-hedgeable risks of the covered business. No diversification benefit is assumed with hedgeable risks of the covered business or with non-covered business in general. The capital has been projected as running off over the remaining life of the in-force portfolio in line with the drivers of the capital requirement.

In addition to the operational risk allowance, financial non-hedgeable risks and other product level asymmetries have been allowed for. These allowances are not material as significant financial non-hedgeable risks and product level asymmetries are either modelled explicitly and included in the TVOG or are included in the PVFP through the use of appropriate best estimate assumptions.

Other

It has been assumed that there will be no changes to the methods and bases used to calculate the statutory technical provisions and current surrender values, except where driven by varying future investment conditions under stochastic economic scenarios.

E18 – Principal assumptions continued

(d) Held for sale operations

Certain operations are considered held for sale, consistent with the IFRS classification.

US long term business

On 8 November 2012 the Group confirmed it was in discussions with external parties with respect to its US life operations, consisting of Aviva Life and Annuity Company and the associated internal asset management operations of Aviva Investors North America, Inc (“US Life”) and these have been classified as held for sale. On 21 December 2012 the Group announced that it had agreed to sell US Life to Athene Holding Ltd for consideration of £1.0 billion including the shareholder loan (£1.1 billion including repayment of external loan). There is uncertainty in the ultimate consideration which depends on the development of statutory surplus between the announcement of sale and ultimate completion date. The transaction is expected to complete in 2013. Following classification as held for sale, US Life segment has been remeasured to fair value less costs to sell resulting in an increase to the closing MCEV at 31 December 2012 of £1,095 million.

Spanish long-term business - Aseval

On 18 December 2012 Aviva reached a settlement with Bankia S.A. (“Bankia”) to transfer the Group’s entire holding in Aseval Aseguradora Valenciana, Sociedad Anónima de Seguros y Reaseguros (“Aseval”), a Spanish life assurance company, to Bankia. Aseval was classified as held for sale at this date. The transfer is expected to complete on or before 30 April 2013 with proceeds of £494 million. Following classification as held for sale, Aseval, included within the ‘Italy, Spain and Other’ operating segment, has been remeasured to fair value less costs to sell resulting in an increase to the closing MCEV at 31 December 2012 of £127 million.

Irish long-term business – Ark Life

Our Irish long-term business is carried out through a subsidiary, Aviva Life Holdings Ireland Limited (“ALHI”), which is 75% owned by Aviva and 25% owned by Allied Irish Bank (“AIB”). ALHI holds four subsidiaries, one of which is Ark Life Assurance Company Limited (“Ark Life”) which carries out bancassurance business via a distribution agreement with AIB. The original distribution agreement was renewable in 2011 but, on 15 December 2011, AIB notified the Group that they did not wish to renew it and the existing shareholders’ agreement governing ALHI was terminated.

The termination of this agreement triggered the ability for both parties to exercise put and call options that will result in the unwind of the original structure such that the Ark Life business returns 100% to AIB and the Group will purchase the 25% minority stake in ALHI. The formal exercise of these options was approved on 17 January 2012 and, as a result, the Ark Life business became held for sale on that date. Completion of the transaction is subject to agreement of terms with AIB and regulatory approval. Completion is expected in the next 12 months.

Management’s current best estimate of the disposal proceeds for the Ark Life business is £232 million net of transaction costs and the current estimate of the liability in respect of the put options exercised in January 2012 over AIB’s non-controlling interest is £122 million. Following classification as held for sale, Ireland, included within the ‘United Kingdom & Ireland’ operating segment, has been remeasured to fair value less costs to sell resulting in an increase to the closing MCEV at 31 December 2012 of £20 million.

Malaysian long-term business

During 2012, the Group’s Malaysian joint ventures, CIMB Aviva Assurance Berhad and CIMB Aviva Takaful Berhad, were classified as held for sale following the decision of management to seek to dispose of the business. On 17 January 2013 agreement was reached to sell Aviva’s interests in these businesses to Sun Life Assurance Company of Canada. Upon receipt of regulatory approval the parties will work to close the proposed transaction during the first half of 2013. The expected proceeds of this transaction are £152 million. Following classification as held for sale, these businesses, included within the ‘Higher Growth Market’ operating segment, have been remeasured to fair value less costs to sell resulting in an increase to the closing MCEV at 31 December 2012 of £28 million.

Other held for sale operations

During the year the Group entered into negotiations to dispose of Aviva Russia. On 27 February 2013 the Group announced the sale of the business to Blagosostoyanie for a consideration of €35 million. The transaction is expected to complete in the first half of 2013. This business is included in the consolidated statement of financial position at its closing MCEV.

During 2010, the Group’s Taiwan joint venture, First-Aviva Life Insurance Co., Ltd., was classified as held for sale following the decision of management to seek to dispose of the business. A sale of this business was not completed in 2012 and management have reviewed its classification as held for sale and determined that the classification remains appropriate. The disposal is expected to be completed within 12 months of the balance sheet date. As the expected sale proceeds are not known at 31 December 2012, this business is included in the consolidated statement of financial position at its closing MCEV.

The sale of our Romania pensions business is still subject to regulatory approval and is expected to complete in the next 12 months, so it has been classified as held for sale. This business is included in the consolidated statement of financial position at its closing MCEV.

E18 – Principal assumptions continued

(e) Other assumptions

Valuation of debt

Borrowings in the MCEV consolidated statement of financial position are valued on an IFRS basis, consistent with the primary financial statements. At 31 December 2012 the market value of the Group's external debt, subordinated debt, preference shares including General Accident plc preference shares of £250 million (classified as non-controlling interests) and direct capital instrument was £7,260 million (31 December 2011: £5,782 million).

	2012 £m	2011 £m
Borrowings per summarised consolidated statement of financial position - MCEV basis	8,194	8,450
Add: Amount included in held for sale	145	—
Less: Securitised mortgage funding	(1,332)	(1,306)
Borrowings excluding non-recourse funding - MCEV basis	7,007	7,144
Less: Operational financing by businesses	(1,868)	(1,889)
External debt and subordinated debt - MCEV basis	5,139	5,255
Add: Preference shares (including General Accident plc), direct capital instrument and fixed rate tier 1 notes	1,832	1,440
External debt, subordinated debt, preference shares, direct capital instrument and fixed rate tier 1 notes - MCEV basis	6,971	6,695
Effect of marking these instruments to market	289	(913)
Market value of external debt, subordinated debt, preference shares, direct capital instrument and fixed rate tier 1 notes	7,260	5,782

Exchange rates

The Group's principal overseas operations during the year were located within the Eurozone, the United States and Poland. The results and cash flows of these operations have been translated into sterling at the average rates for the year and the assets and liabilities have been translated at the year end rates as follows:

	2012	2011
Eurozone		
– Average rate (€1 equals)	£0.81	£0.87
– Period end rate (€1 equals)	£0.81	£0.84
United States		
– Average rate (\$US1 equals)	£0.63	£0.63
– Period end rate (\$US1 equals)	£0.62	£0.65
Poland		
– Average rate (zł1 equals)	£0.19	£0.21
– Period end rate (zł1 equals)	£0.20	£0.19

E19 – Sensitivity analysis

(a) Economic assumptions

The following tables show the sensitivity of the embedded value and the value of new business to:

- 10 basis point increase in the liquidity premium adjustment, where applicable;
- one percentage point increase and decrease in the risk-free rate with a floor of 0%, including all consequential changes (including assumed investment returns for all asset classes, market values of fixed interest assets, risk discount rates);
- 10% increase and decrease in market values of equity and property assets;
- 25% multiplicative increase in equity, property and swaption volatilities;
- 50 basis point increase and decrease in credit spreads with no change to liquidity premium; and
- decrease in the level of required capital to 100% EU minimum (or equivalent).

In each sensitivity calculation, all other assumptions remain unchanged except where they are directly affected by the revised economic conditions. For example, future bonus rates are automatically adjusted to reflect sensitivity changes to future investment returns. Some of the sensitivity scenarios may have consequential effects on valuation bases, where the basis for certain blocks of business is actively updated to reflect current economic circumstances. Consequential valuation impacts on the sensitivities are allowed for where an active valuation basis is used. Where businesses have a target asset mix, the portfolio is re-balanced after a significant market movement otherwise no re-balancing is assumed.

For new business, the sensitivities reflect the impact of a change immediately after inception of the policy.

In general, the magnitude of the sensitivities will reflect the size of the embedded values, though this will vary as the sensitivities have different impacts on the different components of the embedded value. In addition, other factors can have a material impact, such as the nature of the options and guarantees, as well as the types of investments held.

The credit spread sensitivities assume that the change relates to credit risk and not liquidity risk; in practice, credit spread movements may be partially offset due to changes in liquidity risk. Own sovereign debt is excluded from credit spread sensitivities.

Sensitivities will also vary according to the current economic assumptions, mainly due to the impact of changes to both the intrinsic cost and time value of options and guarantees. Options and guarantees are the main reason for the asymmetry of the sensitivities where the guarantee impacts to different extents under the different scenarios.

No sensitivities have been included for held for sale operations, reflecting that these operations are stated at expected fair value less cost to sell. Consequently, the United States, as a discontinued operation, has been excluded from the tables.

E19 – Sensitivity analysis continued

Life and related business embedded value

2012 Embedded value (net of non-controlling interest)	As reported in E14 £m	10bps increase in adjustment to risk-free rates £m	Interest rates		Swaption implied volatilities 25% increase £m
			1% increase £m	1% decrease £m	
United Kingdom & Ireland	7,321	225	(205)	245	(5)
France	3,170	5	95	(175)	(130)
Italy, Spain and Other	979	10	20	(55)	—
Developed markets	11,470	240	(90)	15	(135)
Higher growth markets	2,413	—	60	(125)	—
Total – excluding United States	13,883	240	(30)	(110)	(135)

2012 Embedded value (net of non-controlling interest)	As reported in E14 £m	Equity/Property					EU minimum capital or equivalent £m
		Market Values			Credit Spread		
		10% increase £m	10% decrease £m	Volatility 25% increase £m	50bps increase £m	50bps decrease £m	
United Kingdom & Ireland	7,321	240	(270)	(180)	(1,060)	1,150	5
France	3,170	200	(205)	(140)	(70)	75	15
Italy, Spain and Other	979	20	(20)	(5)	(40)	40	10
Developed markets	11,470	460	(495)	(325)	(1,170)	1,265	30
Higher growth markets	2,413	20	(30)	—	(20)	20	10
Total – excluding United States	13,883	480	(525)	(325)	(1,190)	1,285	40

New business

2012 Value of new business (net of tax and non-controlling interest)	As reported in E2 £m	10bps increase in adjustment to risk-free rates £m	Interest rates		Swaption implied volatilities 25% increase £m
			1% increase £m	1% decrease £m	
United Kingdom & Ireland	313	33	(17)	24	—
France	67	—	6	(13)	(5)
Italy, Spain and Other	23	—	—	(2)	—
Developed markets	403	33	(11)	9	(5)
Higher growth markets	102	—	17	(11)	(1)
Total – continuing operations	505	33	6	(2)	(6)

2012 Value of new business (net of tax and non-controlling interest)	As reported in E2 £m	Equity/Property					EU minimum capital or equivalent £m
		Market Values			Credit Spread		
		10% increase £m	10% decrease £m	Volatility 25% increase £m	50bps increase £m	50bps decrease £m	
United Kingdom & Ireland	313	—	—	—	(106)	113	—
France	67	13	(13)	(2)	(2)	1	1
Italy, Spain and Other	23	—	—	—	(2)	2	—
Developed markets	403	13	(13)	(2)	(110)	116	1
Higher growth markets	102	4	4	—	—	—	2
Total – continuing operations	505	17	(9)	(2)	(110)	116	3

E19 – Sensitivity analysis continued

(b) Non-economic assumptions

The following tables below show the sensitivity of the embedded value and the value of new business to the following changes in non-economic assumptions:

- 10% decrease in maintenance expenses (a 10% sensitivity on a base expense assumption of £10 pa would represent an expense assumption of £9 pa). Where there is a “look through” into service company expenses the fee charged by the service company is unchanged while the underlying expense decreases;
- 10% decrease in lapse rates (a 10% sensitivity on a base assumption of 5% pa would represent a lapse rate of 4.5% pa); and
- 5% decrease in both mortality and morbidity rates disclosed separately for life assurance and annuity business.

No future management actions are modelled in reaction to the changing non-economic assumptions. In each sensitivity calculation all other assumptions remain unchanged. No changes to valuation bases have been included.

No sensitivities have been included for held for sale operations, reflecting that these operations are stated at expected fair value less cost to sell. Consequently, the United States, as a discontinued operation, has been excluded from the tables.

Life and related business embedded value

2012 Embedded value (net of non-controlling interest)	As reported in E14 £m	10% decrease in maintenance expenses £m	10% decrease in lapse rates £m	5% decrease in mortality/ morbidity rates - life assurance £m	5% decrease in mortality/ morbidity rates - annuity business £m
United Kingdom & Ireland	7,321	215	55	90	(380)
France	3,170	60	25	20	(20)
Italy, Spain and Other	979	15	25	15	(5)
Developed markets	11,470	290	105	125	(405)
Higher growth markets	2,413	60	80	40	—
Total – excluding United States	13,883	350	185	165	(405)

New business

2012 Value of new business (net of tax and non-controlling interest)	As reported in E2 £m	10% decrease in maintenance expenses £m	10% decrease in lapse rates £m	5% decrease in mortality/ morbidity rates - life assurance £m	5% decrease in mortality/ morbidity rates - annuity business £m
United Kingdom & Ireland	313	30	14	11	(20)
France	67	5	2	2	—
Italy, Spain and Other	23	2	5	2	—
Developed markets	403	37	21	15	(20)
Higher growth markets	102	13	14	6	—
Total – continuing operations	505	50	35	21	(20)

Statement of directors' responsibilities in respect of the Market Consistent Embedded Value (MCEV) basis

When compliance with the European Insurance CFO Forum Market Consistent Embedded Value Principles (MCEV Principles), published in October 2009, is stated, those principles require the directors to prepare supplementary information in accordance with the methodology contained in the MCEV Principles and to disclose and explain any non-compliance with the guidance included in the MCEV Principles.

In preparing this supplementary information, the directors have done so in accordance with these MCEV Principles with the exception of stating held for sale operations at their expected fair value, as represented by expected sale proceeds, less cost to sell and have also complied with the guidance as set out in the Basis of Preparation. Specifically, the directors have:

- determined assumptions on a realistic basis, having regard to past, current and expected future experience and to relevant external data, and then applied them consistently;
- made estimates that are reasonable and consistent; and
- provided additional disclosures when compliance with the specific requirements of the MCEV Principles is insufficient to enable users to understand the impact of particular transactions, other events and conditions and the Group's financial position and financial performance.

On behalf of the Board

Patrick Regan
Chief financial officer
6 March 2013

Independent auditors' report to the directors of Aviva plc on the consolidated MCEV financial statements

Introduction

We have audited the consolidated MCEV financial statements of Aviva plc for the year ended 31 December 2012 which comprise the Consolidated income statement – MCEV basis, Earnings per share – MCEV basis, the Consolidated statement of comprehensive income – MCEV basis, the Consolidated statement of changes in equity – MCEV basis, the Consolidated statement of financial position – MCEV basis, the Reconciliation of shareholders' equity on IFRS and MCEV bases, the Reconciliation of IFRS Total Equity to MCEV Net Worth, the Group MCEV analysis of earnings and the related notes E1 to E19 on pages 3 to 38 ("the consolidated MCEV financial statements"). The consolidated MCEV financial statements have been prepared by the directors of Aviva plc in accordance with the MCEV Principles issued in June 2008 by the CFO Forum as amended in October 2009 ("the CFO Forum Principles") and the Basis of Preparation set out on pages 8 to 11 and should be read in conjunction with the Aviva plc Annual Report and Accounts 2012.

Respective responsibilities of directors and auditors

The directors are responsible for preparing the consolidated MCEV financial statements in accordance with the MCEV basis set out in Note E1 – Basis of preparation. Our responsibility, as set out in our letter of engagement dated 22 March 2012, is to audit and express an opinion on the consolidated MCEV financial statements in accordance with applicable law and International Standards on Auditing (UK and Ireland). Those standards require us to comply with the Auditing Practices Board's Ethical Standards for Auditors.

This report, including the opinion, has been prepared for and only for the Company's directors as a body in accordance with our letter of engagement dated 22 March 2012 and for no other purpose. We do not, in giving this opinion, accept or assume responsibility for any other purpose or to any other person to whom this report is shown or into whose hands it may come save where expressly agreed by our prior consent in writing.

Scope of the audit of the consolidated MCEV financial statements

An audit involves obtaining evidence about the amounts and disclosures in the consolidated MCEV financial statements sufficient to give reasonable assurance that the consolidated MCEV financial statements are free from material misstatement, whether caused by fraud or error. This includes an assessment of: whether the basis of preparation is appropriate to the Group's circumstances and has been consistently applied and adequately disclosed; the reasonableness of significant accounting estimates made by directors; and the overall presentation of the consolidated MCEV financial statements. In addition, we read all the financial and non-financial information in the MCEV Full year 2012 Supplement to identify material inconsistencies with the audited consolidated MCEV financial statements. If we become aware of any apparent material misstatements or inconsistencies we consider the implications for our report.

Basis for Qualified Opinion on the consolidated MCEV financial statements

As explained in the Basis of preparation to the consolidated MCEV financial statements, the net assets of the held for sale operations have been stated at their expected fair value less costs to sell because the directors believe this to be a better assessment of the value to shareholders' from these operations. By stating the held for sale operations at a value in excess of their MCEV the consolidated MCEV financial statements do not comply with the CFO Forum Principles in this respect. If the consolidated MCEV financial statements had been prepared in accordance with the CFO Forum Principles the profit for the year would have been £489 million and the total equity as at 31 December 2012 would have been £14,960 million.

Qualified Opinion on the consolidated MCEV financial statements

In our opinion, except for the effects of the matter described in the Basis for Qualified Opinion paragraph, the consolidated MCEV financial statements for the year ended 31 December 2012 have been properly prepared, in all material respects, in accordance with the CFO Forum Principles and the Basis of preparation set out on pages 8 to 11.

PricewaterhouseCoopers LLP

Chartered Accountants
London
6 March 2013

¹ The maintenance and integrity of the Aviva plc website is the responsibility of the directors; the work carried out by the auditors does not involve consideration of these matters and, accordingly, the auditors accept no responsibility for any changes that may have occurred to the consolidated MCEV financial statements since they were initially presented on the website.

² Legislation in the United Kingdom governing the preparation and dissemination of financial information may differ from legislation in other jurisdictions.

Other information

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Product definitions

Annuities

A type of policy that pays out regular amounts of benefit, either immediately and for the remainder of a person's lifetime, or deferred to commence from a future date. Immediate annuities may be purchased for an individual and his or her dependants or on a bulk purchase basis for groups of people. Deferred annuities are accumulation contracts, which may be used to provide benefits in retirement, and may be guaranteed, unit-linked or index-linked.

Bonds and savings

These are accumulation products with single or regular premiums and unit-linked or guaranteed investment returns.

Critical illness cover

Pays out a lump sum if the insured person is diagnosed with a serious illness that meets the plan definition.

Deferred annuities

An annuity (or pension) due to be paid from a future date or when the policyholder reaches a specified age. A deferred annuity may be funded by a policyholder by payment of a series of regular contributions or by a capital sum.

Group pensions

A pension plan that covers a group of people, which is typically purchased by a company and offered to their employees.

Guaranteed annuities

A policy that pays out a fixed regular amount of benefit for a defined period.

Income drawdown

The policyholder can transfer money from any pension fund to an income drawdown plan from which they receive an income. The remainder of the pension fund continues to be invested, giving it the potential for growth.

Investment sales

Comprise retail sales of mutual fund-type products such as unit trusts, individual savings accounts (ISAs) and open ended investment companies (OEICs).

ISAs

Individual savings accounts – Tax-efficient plans for investing in stocks and shares, cash deposits or life insurance investment funds, subject to certain limits.

Mortgage endowment

An insurance contract combining savings and protection elements which is designed to repay the principal of a loan or mortgage.

Mortgage life insurance

A protection contract designed to pay off the outstanding amount of a mortgage or loan in the event of death of the insured.

Open ended investment company (OEIC)

An collective investment fund structured as a limited company in which investors can buy and sell shares.

Pensions

A means of providing income in retirement for an individual and possibly his/her dependants.

Personal pensions

A pension plan tailored to the individual policyholder, which includes the options to stop, start or change their payments.

Protection

An insurance contract that protects the policyholder or his/her dependants against financial loss on death or ill-health.

Regular premium

A series of payments are made by the policyholder, typically monthly or annually, for part of or all of the duration of the contract.

SICAVs

This is an open-ended investment fund, structured as a legally independent joint stock company, whose units are issued in the form of shares.

Single premium

A single lump sum is paid by the policyholder at commencement of the contract.

Stakeholder pensions

Low cost and flexible pension plans available in the UK, governed by specific regulations.

Term assurance

A simple form of life insurance, offering cover over a fixed number of years during which a lump sum will be paid out if the life insured dies.

Unit trusts

A form of open ended collective investment constituted under a trust deed, in which investors can buy and sell units.

Unit-linked annuities

A type of deferred annuity which is invested in units of investment funds, whose value depends directly on the market value of assets in those funds.

Whole life

A protection policy that remains in force for the insured's whole life. Traditional whole life contracts have fixed premium payments that typically cannot be missed without lapsing the policy. Flexible whole life contracts allow the policyholder to vary the premium and/or amount of life cover, within certain limits.

With-profits

A type of long-term savings and insurance product sold in the UK under with profits policies premiums are paid into a separate fund. Policyholders receive a return on their policies through bonuses, which "smooth" the investment return from the assets which premiums are invested in. Bonuses are declared on an annual and terminal basis. Shareholders have a participating interest in the with-profit funds and any declared bonuses. Generally, policyholder and shareholder participation in with-profit funds in the UK is split 90:10.

General terms

Available for sale (AFS)

Securities that have been acquired neither for short-term sale nor to be held to maturity. These are shown at fair value on the statement of financial position and changes in value are taken straight to equity instead of the income statement.

Association of British Insurers (ABI)

A major trade association for UK insurance companies, established in July 1985.

Acquired value of in force (AVIF)

The present value of future profits on a portfolio of long-term insurance and investment contracts, acquired either directly or through the purchase of a subsidiary.

Bancassurance

An arrangement whereby banks and building societies sell insurance and investment products to their customers on behalf of other financial providers.

UK Corporate Governance Code

The code sets out guidance in the form of principles and provisions on how companies should be directed and controlled to follow good governance practice.

Deferred acquisition costs (DAC)

The costs directly attributable to the acquisition of new business for insurance and investment contracts may be deferred to the extent that they are expected to be recoverable out of future margins in revenue on these contracts.

Fair value

The amount for which an asset can be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction.

FSA

The UK's Financial Services Authority – Main regulatory body appointed by the government to oversee the financial services industry in the UK. Since December 2001 it has been the single statutory regulator responsible for savings, insurance and investment business. From 1 April 2013, the FSA will split into two new regulatory bodies: the Prudential Regulation Authority (PRA), which will be a subsidiary of the Bank of England, and the Financial Conduct Authority (FCA).

Funds under management

Represents all assets actively managed or administered by or on behalf of the Group including those funds managed by third parties.

Funds under management by Aviva

Represents all assets actively managed or administered by the fund management operations of the Group.

General insurance

Also known as non-life or property and casualty insurance. Property insurance covers loss or damage through fire, theft, flood, storms and other specified risks. Casualty insurance primarily covers losses arising from accidents that cause injury to other people or damage the property of others.

Gross written premiums

The total earnings or revenue generated by sales of insurance products, before any reinsurance is taken into account. Not all premiums written will necessarily be treated as income in the current financial year, because some of them could relate to insurance cover for a subsequent period.

Independent Financial Advisers (IFAs)

A person or organisation authorised to give advice on financial matters and to sell the products of all financial service providers.

IFRS

International Financial Reporting Standards. These are accounting regulations designed to ensure comparable statement of financial position preparation and disclosure, and are the standards that all publicly listed companies in the European Union are required to use.

Operating profit

From continuing operations based on expected investment returns, stated before tax attributable to shareholders' profits and before non-operating items including, impairment of goodwill, exceptional and other items. This is also referred to as adjusted operating profit.

Inherited estate

In the UK, the assets of the long-term with-profit funds less the realistic reserves for non-profit policies written within the with-profit funds, less asset shares aggregated across the with-profit policies and any additional amounts expected at the valuation date to be paid to in-force policyholders in the future in respect of smoothing costs and guarantees.

Long-term and savings business

Collective term for life insurance, pensions, savings, investments and related business.

Net written premiums

Total gross written premiums for the given period, minus premiums paid over or 'ceded' to reinsurers.

Net asset value per ordinary share

Net asset value divided by the number of ordinary shares in issue. Net asset value is based on equity shareholders' funds.

Present value of new business premiums (PVNBP)

Present value of new regular premiums plus 100% of single premiums, calculated using assumptions consistent with those used to determine the value of new business under Market Consistent Embedded Value (MCEV) principles published by the CFO Forum.

Turnbull Guidance on Internal Control

The Turnbull Guidance sets out best practice on internal controls for UK listed companies, and provides additional guidance in applying certain sections of the UK Corporate Governance Code.

Market Consistent Embedded Value (MCEV) terms

Asymmetric risk

Risks that will cause shareholder profits to vary where the variation above and below the average are not equal in distribution.

CFO Forum

The CFO Forum (www.cfoforum.nl) is a high-level group formed by the chief financial officers of major European listed and non-listed insurance companies. Its aim is to discuss issues relating to proposed new accounting regulations for their businesses and how they can create greater transparency for investors.

The forum was created in 2002, the Market Consistent Embedded Value Principles were launched in June 2008. The principles are a further development of the European Embedded Value Principles first launched in May 2004.

Cost of non-hedgeable risks

This is the cost of undertaking those risks for which a deep and liquid market in which to hedge that risk does not exist. This can include both financial risks and non-financial risks such as mortality, persistency and expense.

Covered business

The contracts to which the MCEV methodology has been applied.

EU solvency

The excess of assets over liabilities and the worldwide minimum solvency margins, excluding goodwill and the additional value of in-force long-term business, and excluding the surplus held in the Group's life funds. The Group solvency calculation is determined according to the UK Financial Services Authority application of EU Insurance Groups Directive rules.

Financial options and guarantees

Features of the covered business conferring potentially valuable guarantees underlying, or options to change, the level or nature of policyholder benefits and exercisable at the discretion of the policyholder, whose potential value is impacted by the behaviour of financial variables.

Free surplus

The amount of any capital and surplus allocated to, but not required to support, the in-force covered business.

Frictional costs

The additional taxation and investment costs incurred by shareholders through investing the Required Capital in the Company rather than directly.

Group MCEV

A measure of the total consolidated value of the Group with covered life business included on an MCEV basis and non-covered business (including pension schemes and goodwill) included on an IFRS basis.

Gross risk-free yields

Gross of tax yields on risk-free fixed interest investments, generally swap rates under MCEV.

Implicit items

Amounts allowed by local regulators to be deducted from capital amounts when determining the EU required minimum margin.

Life business

Subsidiaries selling life and pensions contracts that are classified as covered business under MCEV.

Life MCEV

The MCEV balance sheet value of covered business as at the reporting date. Excludes non-covered business including pension schemes and goodwill.

Life MCEV operating earnings

Operating earnings on the MCEV basis relating to the lines of business included in the embedded value calculations.

Life MCEV earnings

Total earnings on the MCEV basis relating to the lines of business included in the embedded value calculations.

Look-through basis

Inclusion of the capitalised value of profits and losses arising from subsidiary companies providing administration, investment management and other services to the extent that they relate to covered business.

Long-term savings

Includes life and pension sales calculated under MCEV and retail investment sales.

Market consistent

A measurement approach where economic assumptions are such that projected asset cash flows are valued consistently with current market prices for traded assets.

Net worth

The market value of the shareholders' funds and the shareholders' interest in the surplus held in the non-profit component of the long-term business funds, determined on a statutory solvency basis and adjusted to add back any non-admissible assets, and consists of the required capital and free surplus.

New business margin

New business margins are calculated as the value of new business divided by the present value of new business premiums (PVNBP), and expressed as a percentage.

Present value of new business premiums (PVNBP)

The present value of new regular premiums plus 100% of single premiums, calculated using assumptions consistent with those used to determine the value of new business.

Required capital

The amount of assets, over and above the value placed on liabilities in respect of covered business, whose distribution to shareholders is restricted.

Risk-free rate (reference rate in CFO Forum terminology)

The risk-free rate is taken as swaps except for all contracts that contain features similar to immediate annuities and are backed by appropriate assets, including paid up group deferred annuities and deferred annuities and all other contracts in the US. The adjusted risk-free rate is taken as swaps plus the additional return available for products and where backing asset portfolios can be held to maturity.

Service companies

Companies providing administration or fund management services to the covered business.

Solvency cover

The excess of the regulatory value of total assets over total liabilities, divided by the regulatory value of the required minimum solvency margin.

Spread business

Contracts where a significant source of shareholder profits is the taking of credit spread risk that is not passed on to policyholders. The most significant spread business in Aviva are immediate annuities and US deferred annuities and life business.

Statutory basis

The valuation basis and approach used for reporting financial statements to local regulators.

Stochastic techniques

Techniques that incorporate the potential future variability in assumptions.

Symmetric risks

Risks that will cause shareholder profits to vary where the variation above and below the average are equal and opposite. Financial theory says that investors do not require compensation for non-market risks that are symmetrical as the risks can be diversified away by investors.

Time value and intrinsic value

A financial option or guarantee has two elements of value, the time value and intrinsic value. The intrinsic value is the discounted value of the option or guarantee at expiry, assuming that future economic conditions follow best estimate assumptions. The time value is the additional value arising from uncertainty about future economic conditions.

Value of new business

Is calculated using economic assumptions set at the start of each quarter and the same operating assumptions as those used to determine the embedded values at the end of the reporting period and is stated after the effect of any frictional costs. Unless otherwise stated, it is also quoted net of tax and minority interests.

Shareholder profile as at 31 December 2012

By category of shareholder	Number of shareholders	%*	Number of shares	%*
Individual	571,901	96.89	278,168,612	9.44
Banks and nominee companies	15,334	2.60	2,614,092,081	88.73
Pension fund managers and insurance companies	239	0.04	2,788,904	0.09
Other corporate bodies	2,771	0.47	50,922,664	1.73
Total	590,245	100	2,945,972,261	100

By size of shareholding	Number of shareholders	%*	Number of shares	%*
1–1,000	532,678	90.25	148,707,650	5.05
1,001–5,000	51,069	8.65	97,672,281	3.32
5,001–10,000	3,605	0.61	25,063,113	0.85
10,001–250,000	2,304	0.39	97,703,037	3.32
250,001–500,000	162	0.03	58,338,929	1.98
500,001 and above	426	0.07	2,498,907,051	84.82
American Depositary Receipts (ADRs)	1	0.00	19,580,200 ⁺	0.66
Total	590,245	100	2,945,972,261	100

⁺The number of registered ordinary shares represented by ADRs. Please note that each Aviva ADR represents two (2) ordinary shares.

* Percentages do not necessarily add up due to rounding.

2013 financial calendar

Annual General Meeting	9 May 2013
Announcement of first quarter Interim Management Statement	16 May 2013
Announcement of unaudited half-year results	8 August 2013
Announcement of third quarter Interim Management Statement	7 November 2013

2012 final dividend dates – ordinary shares

Ex-dividend date	20 March 2013
Record date	22 March 2013
Dividend payment date*	17 May 2013

* Please note that the ADR local payment date will be approximately five business days after the proposed dividend date for ordinary shares.

Annual General Meeting (AGM)

- The 2013 AGM will be held at The Barbican Centre, Silk Street, London EC2Y 8DS on Thursday, 9 May 2013 at 11am.
- Details of each resolution to be considered at the meeting are provided in the Notice of AGM, which is available on the Company's website at www.aviva.com/agm.
- Shareholders can vote electronically at www.investorcentre.co.uk/eproxy, in person by attending the meeting, or by completing and returning the relevant voting card(s) by post.
- The voting results for the 2013 AGM will be accessible on the Company's website at www.aviva.com/agm shortly after the meeting.
- If you are unable to attend the AGM but would like to ask the directors a question in connection with the business of the meeting, you can do so by sending a question to the group company secretary by email to aviva.shareholders@aviva.com. We will endeavour to provide you with a response as soon as possible.

AGM voting instructions

- Completed proxy instructions must be submitted to the Company's Registrar, Computershare Investor Services PLC (Computershare), as soon as possible, but in any event to arrive by no later than:
 - 11am on Tuesday, 7 May 2013 for ordinary shareholders; and
 - 11am on Friday, 3 May 2013 for members of the Aviva Share Account and participants in the Aviva All Employee Share Ownership Plan.

Dividends

- Dividends on ordinary shares are normally paid in May and November - please see the table above for the key dates in respect of the 2012 final dividend.
- Dividends on preference shares are normally paid in March, June, September and December - please visit www.aviva.com/preferenceshares for the latest dividend payment dates.
- Holders of ordinary and preference shares will receive any dividends payable in sterling and holders of ADRs will receive any dividends payable in US dollars.

Direct credit of dividend payments

- If you would like to have your cash dividends paid directly into your bank or building society account, please visit www.aviva.com/dividendmandate for more information or contact the Computershare using the contact details overleaf.

Overseas global dividend service

- The Global Payments Service provided by Computershare enables shareholders living overseas to elect to receive their dividends in a choice of over 65 international currencies. For further details and fees for this service please visit www.investorcentre.co.uk/faq and select the Dividends and Payments tab, followed by Global Payment Service.

Manage your holdings online

You can view and manage your shareholding online by visiting www.aviva.com/ecomms. To log in you will require your 11 digit Shareholder Reference Number (SRN), which you will find on your proxy or voting card, latest dividend stationery, or any share certificate issued since 4 July 2011.

Shareholders can also elect to receive electronic communications by registering their email address online, or by contacting Computershare directly. Making this election will save on printing and distribution costs and has environmental benefits.

Useful links for shareholders**Online Shareholder Services Centre**

www.aviva.com/shareholderservices

Dividend information for ordinary shares

www.aviva.com/dividends

Annual General Meeting information and Electronic Voting

www.aviva.com/agm
www.investorcentre.co.uk/eproxy

Aviva share price

www.aviva.com/shareprice

ADR holders

www.aviva.com/adr

Aviva preference shareholders

www.aviva.com/preferenceshares

Aviva preference share price

www.londonstockexchange.com

Aviva Annual Review

In response to shareholder feedback, we have reintroduced the Annual Review as an alternative to the full Annual Report and Accounts. The Annual Review provides a summary of Aviva's businesses and performance in an easier to read format, which many of our shareholders found useful in the past. You can find further information and view the Annual Review at www.aviva.com/reports. If you prefer to receive hard copy documents and would like to elect to receive a copy of the Annual Review instead of the full Annual Report and Accounts, please contact Computershare.

Contact details**Ordinary and preference shares – Computershare**

For any queries regarding your shareholding, or to advise of changes to your personal details, please contact our Registrar, Computershare:



By telephone: 0871 495 0105

Lines are open from 8.30am to 5pm (UK time), Monday to Friday (excluding public holidays).

Please call +44 117 378 8361 if calling from outside the UK.



By email: avivaSHARES@computershare.co.uk



In writing: Computershare Investor Services PLC
The Pavilions, Bridgwater Road, Bristol BS99 6ZZ

American Depositary Receipts (ADRs) – Citibank

For any queries regarding Aviva ADRs, please contact Citibank Shareholder Services (Citibank):



By telephone: 1 877 248 4237 (1 877-CITI-ADR),

or +1 781 575 4555 if you are calling from outside the US. (Lines are open from 8.30am to 6.00pm, Monday to Friday US Eastern Standard Time).

By email: citibank@shareholders-online.com



In writing: Citibank Shareholder Services

PO Box 43077, Providence, Rhode Island 02940-3077 USA



Please visit www.citi.com/dr for further information about Aviva's ADR programme.

Group Company Secretary

Shareholders may contact the group company secretary as follows:



By email: aviva.shareholders@aviva.com



In writing: Kirstine Cooper, Group Company Secretary
St Helen's, 1 Undershaft, London EC3P 3DQ



By telephone: +44 (0)20 7283 2000

Form 20-F

Aviva is a foreign private issuer in the United States of America and is subject to certain reporting requirements of the Securities Exchange Commission (SEC). Aviva files its Form 20-F with the SEC, copies of which can be found at www.aviva.com/reports.

Be on your guard – beware of fraudsters!

Shareholders are advised to be very wary of any unsolicited telephone calls or correspondence offering to buy shares at a discount or offering free financial advice or company reports. Boiler rooms use increasingly sophisticated means to approach investors and often leave their victims out of pocket. The Financial Services Authority (FSA) has found most share fraud victims are experienced investors who lose an average of £20,000. The FSA has provided tips on how to protect your savings which you can find at www.fsa.gov.uk/scams.

- Remember: if it sounds too good to be true, it probably is!
- Keep in mind that genuine companies are very unlikely to call you with an offer to buy or sell shares.
- If the caller persists, hang up.

For more information please visit the warning to shareholders page at: www.aviva.com/shareholderservices.