

Market Consistent Embedded Value Report
2014
Munich Re

2014

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1 Introduction

1.1 Scope of disclosure

In June 2008, the European Insurance CFO Forum (CFO Forum) published the Market Consistent Embedded Value Principles^{®1} (MCEV Principles) in order to bring greater consistency and improved disclosure to the European insurance industry's embedded value. Throughout this document, MCEV and embedded value refer to the above MCEV Principles.

In October 2009, the CFO Forum published an amendment to the MCEV Principles to allow for the inclusion of an illiquidity premium. However, as the legislative framework of the future European regulatory regime (Solvency II) has not yet been fully finalised and to avoid discontinuities in relation to preceding MCEV disclosures, Munich Re is maintaining its prudent approach: it does not apply any yield curve adjustments such as illiquidity premiums or volatility adjustments in its valuation. This is in compliance with the CFO Forum's revised transitional guidance dating from September 2012. The revised transitional guidance states that there is no requirement to make allowance for Solvency II and associated consequences when complying with the MCEV Principles. To illustrate the impacts on our business of applying an illiquidity premium and of basing the MCEV calculations on Solvency-II-like yield curves, however, we do state the corresponding sensitivities.

Munich Re does not report its Group MCEV. In all other respects, we fully comply with the MCEV Principles.

In this report, which is a supplement to the Munich Re Group Annual Report, the following topics are dealt with for the reinsurance and primary insurance business we cover:

- The Market Consistent Embedded Value as at 31 December 2014
- An analysis of embedded value earnings for 2014
- A reconciliation of embedded value with IFRS equity
- An analysis of the sensitivities of the embedded value and value of new business as at 31 December 2014
- A detailed description of the embedded value methodology applied

1.2 Business covered

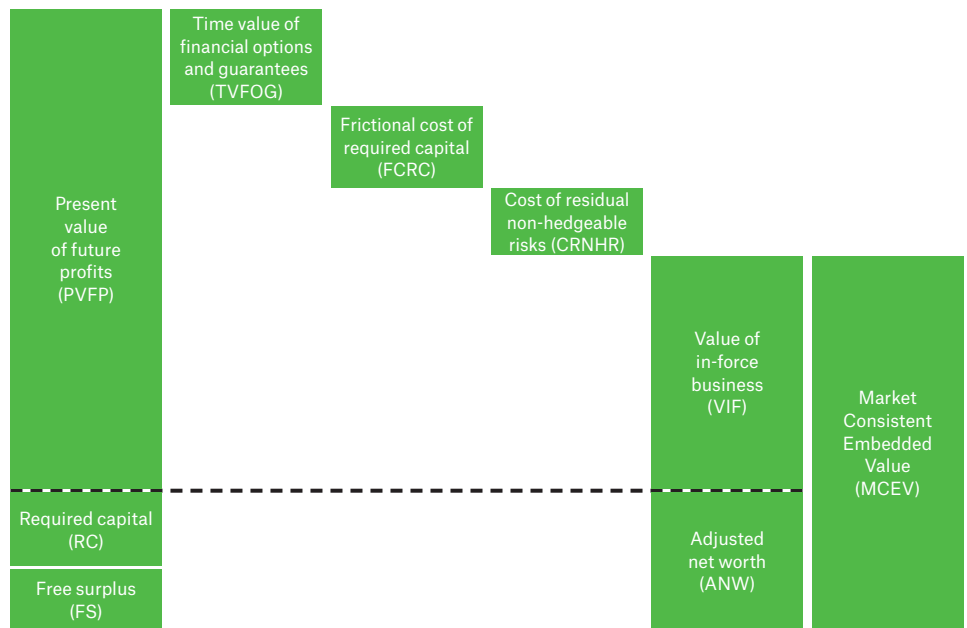
This embedded value report covers 100% of the life reinsurance business written by Munich Re and 97% of business written in the life and German health primary insurance entities of Munich Re. German health primary business is long-term in nature and therefore included, whereas health reinsurance business is short-term in nature and therefore excluded. For a detailed list of Munich Re segments and entities covered in this report, please refer to Section 5.10.

¹ Copyright: Stichting CFO Forum Foundation 2008, available online at <http://www.cfoforum.nl>

1.3 Definition of Market Consistent Embedded Value

Embedded value is the present value of shareholders’ interests in the earnings distributable from assets allocated to the covered business after making sufficient allowance for the aggregate risks involved. It can be split into the following components:

- Adjusted net worth (ANW) broken down into the components
 - Free surplus (FS) and
 - Required capital (RC)
- Value of in-force covered business (VIF), consisting of
 - Present value of future profits (PVFP)
 - Time value of financial options and guarantees (TVFOG)
 - Frictional cost of required capital (FCRC)
 - Cost of residual non-hedgeable risks (CRNHR)



All components are net of taxes, minority interests and policyholder participations (where applicable). A detailed description of the MCEV methodology used for preparing this supplement is given in Section 5.

2 Overview of embedded value results 2014

Since 2005, Munich Re has adhered to a strict market-consistent framework. As in previous years, we have refrained from applying any yield-curve adjustments in our valuation.

Our Market Consistent Embedded Value as at 31 December 2014 was €14,635m, down from €15,332m as at 31 December 2013. The decrease resulted from negative economic variances in our primary insurance business and other operating variances such as model changes. It was partly offset by positive foreign-exchange variances in our reinsurance business.

Highlights

€m	Reinsurance	Primary insurance	Total
Market Consistent Embedded Value 31.12.2013	9,382	5,949	15,332
Opening adjustments	2	-153	-151
Adjusted MCEV 31.12.2013	9,384	5,796	15,180
Value of new business	453	135	588
Expected return at reference rate	238	25	263
Expected return in excess of reference rate	59	111	170
Experience variances	63	-172	-109
Assumption changes	-131	-122	-253
Other operating variance	-361	-496	-857
Operating MCEV earnings 2014	322	-520	-198
Economic variances	121	-1,177	-1,056
Other non-operating variance	-205	-	-205
Total MCEV earnings 2014	237	-1,697	-1,460
Closing adjustments	847	67	914
Market Consistent Embedded Value 31.12.2014	10,469	4,166	14,635
IFRS equity excluding goodwill	7,066	5,101	12,167
Value not recognised in IFRS equity	3,403	-935	2,467

The sharp decline in interest rates and higher implied volatilities led to overall negative economic variances of €1,056m, for the most part in the primary insurance segment. In addition, other operating variances such as model changes adversely affected the embedded value by €857m. On the other hand, the strong appreciation of foreign currencies against the euro increased the reinsurance embedded value by €642m. This effect essentially stemmed from the movement in the exchange rates against the North American and Southeast Asian currencies in 2014, and is disclosed as part of the opening and closing adjustments.

The total MCEV decreased by 5% to €14,635m, and the value not recognised in IFRS equity was €2,467m.

3 Reinsurance

The embedded value of our life reinsurance business increased from €9,382m as at 31 December 2013 to €10,469m as at 31 December 2014. For the most part, this resulted from the appreciation of foreign currencies against the euro and a considerable fall in interest rates for all major currencies in 2014. The foreign exchange variances add up to €642m. The value of new business remained at a successful level of €453m (€577m in 2013). However, various effects, such as the strengthening of the valuation basis for Australian disability business, general updates of assumptions to reflect past evidence and expected future experience, and a changed cost allocation methodology within Munich Re Group adversely affected MCEV earnings.

The embedded value components of our life reinsurance business are presented in the following table, which shows the MCEV as at 31 December 2014 and 31 December 2013.

MCEV components

	31.12.2014	31.12.2013	Change
	€m	€m	%
Present value of future profits (PVFP)	8,630	7,333	17.7
Time value of financial options and guarantees (TVFOG)	-113	-114	-1.3
Frictional costs of required capital (FCRC)	-481	-522	-7.8
Cost of residual non-hedgeable risks (CRNHR)	-2,366	-1,552	52.4
Value of in-force covered business (VIF)	5,670	5,144	10.2
Free surplus (FS)	602	505	19.2
Required capital (RC)	4,197	3,733	12.4
Adjusted net worth (ANW)	4,798	4,238	13.2
Market Consistent Embedded Value (MCEV)	10,469	9,382	11.6

At €10,469m, the embedded value for Munich Re's life reinsurance business as at 31 December 2014 was 11.6% higher than last year's MCEV (€9,382m). An explanation of the drivers of this change in embedded value is given below.

The time value of financial options and guarantees of -€113m as at 31 December 2014 was largely unchanged from the previous year (-€114m). This moderate value was due to the fact that within life reinsurance we concentrated on assuming biometric risks with only minor exposure to capital market risks.

The change in the cost of residual non-hedgeable risks from €1,552m as at 31 December 2013 to €2,366m as at 31 December 2014 was essentially caused by lower interest rates, new business written in 2014, and the negative impact of foreign-exchange variances.

Required capital of €4,197m was higher than for the previous year (€3,733m). This increase was due to the following three factors: new business written in 2014 led to an increase of €273m in required capital, the release of capital required for the run-off of existing business brought about a decrease of €54m, and, finally, changes in foreign-exchange rates increased the capital requirement in the reporting currency by €245m. The total capital requirement of €4,197m for business covered as at 31 December 2014 exceeded by €772m the minimum solvency capital requirements for life reinsurance.

The change in embedded value in 2014 is shown in the following table:

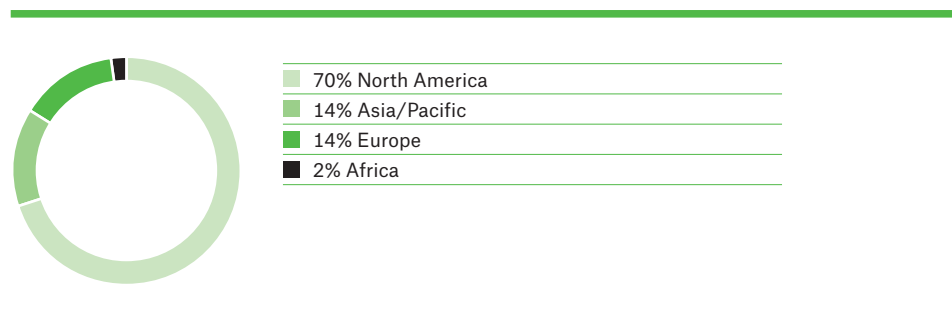
Analysis of MCEV earnings

€m	Free surplus	Required capital	VIF	MCEV
Opening MCEV	505	3,733	5,144	9,382
Opening adjustments	14	6	-18	2
Adjusted opening MCEV	519	3,739	5,126	9,384
Value of new business	-387	273	567	453
Expected return at reference rate	6	29	203	238
Expected return in excess of reference rate	57	1	1	59
Transfers from VIF and required capital to free surplus	624	-151	-473	-
Experience variances	249	-221	34	63
Assumption changes	-36	51	-146	-131
Other operating variance	-458	45	52	-361
Operating MCEV earnings	56	27	238	322
Economic variances	-75	111	84	121
Other non-operating variance	-96	81	-189	-205
Total MCEV earnings	-114	219	133	237
Closing adjustments	197	239	412	847
Closing MCEV	602	4,197	5,670	10,469

The **opening adjustments** of €2m represent foreign-exchange adjustments from beginning-of-year exchange rates to the average exchange rates used in the MCEV earnings analysis.

Recurring new business was the main contributor to a **value of new business (VNB)** of €453m in 2014, down 21% on the 2013 figure (€577m). The main reason for the fall in VNB was a lower volume of financially motivated transactions. Overall, the 2014 VNB fits well into Munich Re's long and successful track record of achieving sustainable profitable growth in life reinsurance.

VNB split by region



The **expected return at reference rate** (using assumptions as at the start of the year) was €238m (€284m), essentially due to a lower opening MCEV. Because of our prudent asset allocation, the **expected return in excess of reference rate**, amounting to €59m (€33m), was again rather low.

Experience in mortality and living benefits business in 2014 varied only slightly against expected values across all markets. The total effect on MCEV was €63m (–€113m). Operating **assumption changes** led on aggregate to a decrease of €131m (€301m). Assumptions have been updated to reflect both past evidence and expected future experience for the business covered.

An allowance is included for future effects expected to emanate from planned global initiatives such as reviews of models.

The **other operating variance** allows for model changes resulting from the continuous revision of embedded value calculation models. In total, the other operating variance accounted for –€361m (–€111m) in 2014.

Overall, operating embedded value earnings were €322m, 3.4% of the adjusted opening MCEV.

The fall in interest rates led to overall positive **economic variances**. In total the embedded value increased by €121m (–€168m). As our reinsurance business is dominated by insurance risks such as mortality risk, the impact of changes in the interest-rate environment has a much lower effect on the embedded value than for our primary business.

The revised allocation methodology for secondary expenses within Munich Re Group will take effect from 2015, leading to overall higher expense attributions to our life reinsurance business. This is the main driver of the other non-operating variance, which amounted in total to –€205m (–€54m).

The total embedded earnings of €237m accounted for 2.5% of the opening MCEV after adjustments.

The **closing adjustments** of €847m were dominated by foreign-exchange adjustments, which resulted from the transition from the average exchange rates used in the MCEV earnings analysis to the end-of-year exchange rates. Taking opening and closing foreign-exchange variances together, exchange rate effects again had a significant impact of €642m on the overall change in MCEV in 2014.

New business

	2014	2013	Change
	€m	€m	%
Value of new business (VNB)	453	577	-21.5
Present value of new business premiums (PVNBP)	11,916	12,830	-7.1
Annual premium equivalent (APE)	958	1,183	-19.0
%			
New business margin (VNB/PVNBP)	3.8	4.5	-15.5
VNB/APE	47.3	48.8	-3.1

The present value of new business premiums and the annual premium equivalent were down on the previous year. Also, the new business margin and the VNB/APE ratio decreased, mainly as a result of the fall in the volume of financially motivated transactions. Especially the profitability, in terms of VNB in relation to premium, of financially motivated transactions can be within a wider range, as reinsurance solutions for this kind of business are specially tailored to meet clients' specific requirements.

IFRS reconciliation

	31.12.2014	31.12.2013	Change
	€m	€m	%
IFRS equity excluding goodwill	7,066	5,527	27.8
Market Consistent Embedded Value	10,469	9,382	11.6
Value not recognised in IFRS equity	3,403	3,855	-11.7

The embedded value of business covered as at 31 December 2014 exceeded the relevant IFRS equity (excluding goodwill) by €3,403m, compared with €3,855m in the previous year.

Sensitivities for embedded value as at 31 December 2014:

MCEV and VNB sensitivities

	MCEV		Change	VNB		Change
	€m	€m	%	€m	€m	%
Base case	10,469			453		
Interest rates and assets						
Interest rates -100 BP	10,750	282	2.7	458	5	1.0
Interest rates +100 BP	10,075	-394	-3.8	441	-12	-2.7
Equity/property values -10%	10,465	-3	-	452	-1	-0.2
Equity/property-implied volatilities +25%	10,467	-2	-	453	-	-
Swaption-implied volatilities +25%	10,467	-1	-	453	-	-
Illiquidity premium 10 BP	10,517	48	0.5	450	-3	-0.7
Expenses and persistency						
Maintenance expenses -10%	10,593	124	1.2	473	20	4.4
Lapse rates -10%	10,810	341	3.3	531	78	17.1
Lapse rates +10%	10,174	-294	-2.8	387	-66	-14.5
Insurance risk						
Mortality/morbidity (life business) -5%	12,552	2,083	19.9	616	163	35.9
Mortality (life business) +5%	8,772	-1,697	-16.2	344	-109	-24.0
Mortality (annuity business) -5%	10,312	-156	-1.5	401	-52	-11.5
No mortality improvements (life business)	4,112	-6,357	-60.7	98	-355	-78.3
Morbidity (life business) +5%	10,105	-364	-3.5	392	-61	-13.5
Required capital						
Minimum solvency capital	10,526	58	0.5	454	1	0.2
Other						
Value of original currencies -10%	9,454	-1,015	-9.7	414	-40	-8.7
Solvency II sensitivity	10,527	59	0.6	465	12	2.6

Our life reinsurance business is dominated by insurance risks, primarily mortality risk. Therefore, changes in mortality or morbidity assumptions strongly impact the embedded value and the value of new business. Compared with our primary insurance business, changes in economic assumptions have only a small effect on the overall MCEV of our life reinsurance business.

Since Munich Re discloses its embedded value without taking any adjustments such as illiquidity premiums into consideration, we show two sensitivities in this respect. The first sensitivity shows the impact of including an illiquidity premium of 10 BP. The second one gives an indication of what Munich Re anticipates its embedded value could look like under a future Solvency II regime. As the Solvency II specifications have not yet been fully finalised, the economic assumptions applied for this sensitivity reflect a Munich Re estimation based on the Omnibus II directive and the Delegated Acts. The assumptions for this "Solvency II sensitivity" are described in detail in Section 6. The minor impact of both sensitivities on our life reinsurance business is due to the generally smaller influence of economic assumptions. Furthermore, there are offsetting effects between several markets.

The sensitivity of exchange rates relative to the reporting currency reflects the high proportion of business written in non-euro currencies. More than 80% of the life reinsurance business is denominated in foreign currencies, especially in Canadian and US dollars.

Except for the stressed assumptions, the sensitivity calculations are performed analogously to the base case.

4 Primary insurance

The embedded value components of our primary business are presented in the following table, which shows the embedded value as at 31 December 2014 and 31 December 2013.

MCEV components

	Primary insurance (Total)			German health primary		
	31.12.2014	31.12.2013	Change	31.12.2014	31.12.2013	Change
	€m	€m	%	€m	€m	%
Present value of future profits (PVFP)	3,601	5,466	-34.1	3,371	3,012	11.9
Time value of financial options and guarantees (TVFOG)	-979	-546	79.5	-	-	-
Frictional costs of required capital (FCRC)	-184	-543	-66.1	-169	-254	-33.6
Cost of residual non-hedgeable risks (CRNHR)	-1,105	-1,131	-2.3	-279	-278	0.4
Value of in-force covered business (VIF)	1,332	3,246	-58.9	2,924	2,481	17.9
Free surplus (FS)	557	526	5.9	169	149	13.3
Required capital (RC)	2,277	2,178	4.5	502	530	-5.2
Adjusted net worth (ANW)	2,834	2,704	4.8	671	678	-1.1
Market Consistent Embedded Value (MCEV)	4,166	5,949	-30.0	3,595	3,159	13.8

→	German life primary			International life primary		
	31.12.2014	31.12.2013	Change	31.12.2014	31.12.2013	Change
	€m	€m	%	€m	€m	%
Present value of future profits (PVFP)	-540	1,351	-140.0	770	1,103	-30.2
Time value of financial options and guarantees (TVFOG)	-810	-468	73.0	-170	-77	118.9
Frictional costs of required capital (FCRC)	24	-232	-110.5	-40	-58	-30.8
Cost of residual non-hedgeable risks (CRNHR)	-715	-779	-8.3	-112	-74	50.9
Value of in-force covered business (VIF)	-2,040	-129	1,485.6	449	894	-49.8
Free surplus (FS)	38	156	-75.7	350	221	58.5
Required capital (RC)	1,325	1,212	9.3	450	437	3.1
Adjusted net worth (ANW)	1,363	1,368	-0.4	800	657	21.7
Market Consistent Embedded Value (MCEV)	-677	1,239	-154.7	1,249	1,551	-19.5

At €4,166m, the MCEV of our primary insurance business was 30% down on the previous year (€5,949m).

Unfavourable financial markets (a combination of lower interest rates and a rise in interest-rate volatility) had a negative effect on our primary insurance business, in particular German life primary business. The continuing narrowing of spreads was not sufficient to compensate. In addition, operating MCEV earnings turned negative at -€520m, mainly as a result of experience variances and model changes, again in German life primary business.

The present value of future profits (PVFP) decreased by 34% to €3,601m (€5,466m) due to lower euro interest rates and model changes. As large parts of the guarantees in the life primary business were in the money with the current low interest rates, the time value of financial options and guarantees (TVFOG) was significantly negative at -€979m (-€546m). After the frictional cost of required capital (FCRC) of -€184m and the cost of residual non-hedgeable risks (CRNHR) of -€1,105m, the MCEV of the primary insurance business decreased to €4,166m.

The MCEV of the German life primary business decreased from €1,239m to -€677m, having been strongly affected by the even lower interest rates. The change was driven both by the decrease in PVFP from €1,351m to -€540m and by the decrease in TVFOG from -€468m to -€810m.

Our international life primary business was also affected by the adverse development of the capital markets, though less severely. The VIF decreased by 50%, from €894m to €449m. In total, the MCEV of the segment decreased by €303m to €1,249m (€1,551m).

The current capital markets make assumptions on expected lapse rates more ambiguous in our international life primary business. Changing those assumptions would affect our MCEV figures.

Our German health primary business is less exposed to capital market fluctuations, as technical interest rates are not guaranteed for the whole contract term. Policyholder options, on the other hand, have a significant influence on shareholders' cash flows. These policyholder options are covered by the MCEV model in accordance with current experience. As changed policyholder behaviour is still difficult to estimate in the long run, an alteration in assumptions reflecting future experience may lead to substantial future changes in our MCEV figures. Examples of policyholder options are:

- lapses with transfer values,
- obligation to pay benefits to non-payers with no ability to cancel contracts,
- change of policy.

Discussions on the German healthcare system continue. If this were to lead to material changes in legislation, our future MCEV figures are expected to change substantially.

The MCEV of our German health primary business increased by 14% to €3,595m (€3,159m). The main driver was the growth in PVFP, which increased by 12% to €3,371m (€3,012m), mainly due to lower discount rates and essentially stable future underwriting profits.

Details of changes in the 2014 MCEV from 2013 are explained in the following analysis of MCEV earnings.

Analysis of MCEV earnings

€m	Primary insurance (Total)				German health primary			
	Free surplus	Required capital	VIF	MCEV	Free surplus	Required capital	VIF	MCEV
Opening MCEV	526	2,178	3,246	5,949	149	530	2,481	3,159
Opening adjustments	-288	82	53	-153	-149	-	-	-149
Adjusted opening MCEV	238	2,260	3,298	5,796	-	530	2,481	3,010
Value of new business	-153	20	268	135	-40	-	127	86
Expected return at reference rate	1	10	14	25	-	2	10	12
Expected return in excess of reference rate	-	-	111	111	-	-	58	58
Transfers from VIF and required capital to free surplus	534	-17	-517	-	209	-2	-207	-
Experience variances	-27	-57	-88	-172	50	-27	-25	-3
Assumption changes	-46	-	-77	-122	-	-	62	62
Other operating variance	-52	-	-444	-496	-	-	-82	-82
Operating MCEV earnings	258	-45	-732	-520	220	-27	-58	134
Economic variances	55	-1	-1,232	-1,177	-51	-	501	450
Other non-operating variance	-	-	-	-	-	-	-	-
Total MCEV earnings	313	-45	-1,965	-1,697	169	-27	443	585
Closing adjustments	6	62	-1	67	-	-	-	-
Closing MCEV	557	2,277	1,332	4,166	169	502	2,924	3,595

€m	German life primary				International life primary			
	Free surplus	Required capital	VIF	MCEV	Free surplus	Required capital	VIF	MCEV
Opening MCEV	156	1,212	-129	1,239	221	437	894	1,551
Opening adjustments	-89	82	55	49	-50	-	-3	-53
Adjusted opening MCEV	67	1,294	-73	1,288	171	436	891	1,498
Value of new business	-5	-	10	5	-108	20	131	43
Expected return at reference rate	-	5	-1	5	1	2	5	8
Expected return in excess of reference rate	-	-	38	38	-	-	15	15
Transfers from VIF and required capital to free surplus	207	-5	-201	-	118	-10	-108	-
Experience variances	-123	-32	-77	-231	45	2	14	61
Assumption changes	-	-	8	8	-46	-	-147	-192
Other operating variance	-57	-	-332	-389	5	-	-30	-25
Operating MCEV earnings	23	-32	-555	-564	15	15	-120	-90
Economic variances	11	-	-1,412	-1,401	95	-1	-321	-227
Other non-operating variance	-	-	-	-	-	-	-	-
Total MCEV earnings	34	-32	-1,967	-1,965	110	14	-441	-316
Closing adjustments	-63	63	-	-	69	-1	-1	67
Closing MCEV	38	1,325	-2,040	-677	350	450	449	1,249

Opening adjustments of -€153m mainly reflect dividends paid in the first half of 2014. Additionally, the MCEV of German life primary insurance increased by €89m due to the transfer of Vorsorge Luxemburg Lebensversicherung S.A. from Vorsorge Lebensversicherung AG to ERGO Versicherungsgruppe AG and the resultant separate disclosure. As large parts of our primary business are denominated in euros, foreign-exchange adjustments in general do not have a material impact.

The **value of new business** amounted to €135m. More details are given on page 17.

The **expected return at reference rate** contributed €25m. The **expected return in excess of reference rate** showed additional earnings in embedded value (€111m) consistent with management expectations for the business. In contrast to last year, AAA-rated fixed-income paper is expected to earn a risk premium, which had a positive impact. The assumed risk premiums are shown in Section 6.3.4.

Experience variances show the impact of differences between expectations (e.g. for mortality, disability and lapses) and actual experience in the year. For 2014, experience variances in our primary insurance segment were negative at –€172m. Especially for our German life primary business entities, various effects, e.g. with regard to profit sharing, lapses, expenses and taxation, totalled –€231m, with negative deviations in profit sharing being the main driver.

Operating assumption changes led in aggregate to a decrease in the MCEV of €122m. This resulted mainly from changed assumptions in our International life primary business, which produced a total effect of –€192m. For our German health primary business, the MCEV increased by €62m.

Other operating variance allows for model changes resulting from the continuous revision of embedded value calculation models across all companies. The negative overall impact of –€496m was the result of various refinements, predominantly in German life primary business, which accounted for –€389m of the decrease.

Overall, negative operating MCEV earnings amounted to –€520m, representing –9% of the adjusted opening MCEV.

The negative embedded value earnings for 2014 mainly resulted from negative **economic variances**. Unfavourable financial market developments led to a decrease of €1,177m for our primary insurance business. Lower interest rates and higher interest-rate volatilities were the main drivers of this negative development, which was partially offset by the positive effect of tightening credit spreads. In particular, economic variances in our German life primary business amounted to –€1,401m, mainly driven by movements in the fixed-income markets. The deterioration in the economic situation also caused the MCEV of our international life business to decrease by –€227m. Due to fewer earning restrictions and different legal frameworks, international life primary business is less exposed to changes in economic assumptions. At €450m, the economic variances for German health primary business partly compensated. The main reasons for this are that future margins are more valuable in the current low interest-rate environment and technical interest rates are not guaranteed for the whole contract term and can be changed through a premium adjustment process.

In 2014 there was no material effect from **other non-operating variance**.

Overall, total MCEV earnings amounted to –€1,697m (29% down on the adjusted opening MCEV).

Closing adjustments of €67m for our primary insurance business consist only of minor foreign-exchange adjustments (-€3m) and of capital flows to our international life primary business (€70m). The subscribed capital of the international life primary business has been increased to allow for future growth. The capital increase is recognised in the ANW in the amount admissible to cover local Solvency requirements. Profit transfers remain in the MCEV at the end of the year, and are shown as an opening adjustment for the next year.

New business

	Primary insurance (Total)			German health primary		
	2014	2013	Change	2014	2013	Change
	€m	€m	%	€m	€m	%
Value of new business (VNB)	135	213	-36.4	86	84	3.5
Present value of new business premiums (PVNBP)	6,186	5,662	9.3	2,256	2,050	10.0
Annual premium equivalent (APE)	515	545	-5.5	110	128	-14.4
%						
New business margin (VNB/PVNBP)	2.2	3.8	-41.8	3.8	4.1	-5.9
VNB/APE	26.2	39.0	-32.7	78.7	65.0	21.0

	German life primary			International life primary		
	2014	2013	Change	2014	2013	Change
	€m	€m	%	€m	€m	%
Value of new business (VNB)	5	44	-87.6	43	85	-49.1
Present value of new business premiums (PVNBP)	2,391	2,371	0.8	1,539	1,241	24.1
Annual premium equivalent (APE)	211	264	-20.3	195	153	27.6
%						
New business margin (VNB/PVNBP)	0.2	1.9	-87.7	2.8	6.9	-59.0
VNB/APE	2.6	16.6	-84.5	22.3	55.9	-60.2

The **value of new business** for our primary insurance decreased from €213m to €135m. The fall stemmed from our life business. As the present value of new business premiums increased, while the new business value decreased, the new business margin of our primary insurance business decreased from 3.8% to 2.2%.

For our German life primary business, the unfavourable financial market developments had a negative impact. Furthermore, we completed changing the methodology regarding future increments in existing life primary business. The value of future increments for almost all of our existing life primary business is classified as being part of the value of in-force, and the current year's increments on existing policies are no longer included in the new business value. Overall, the value of new business decreased to €5m and the new business margin to 0.2%.

The value of new business in our international life primary business decreased from €85m to €43m. Considerable contributions still come from Belgian business, though they were substantially less than in the previous year as financial market conditions and assumption changes affected new business values. Italian, Austrian and Polish business also made a considerable contribution. The overall new business margin decreased from 6.9% to 2.8%.

For our German health primary business, the value of new business increased slightly from €84m to €86m. The new business margin decreased from 4.1% to 3.8%.

IFRS reconciliation

	31.12.2014	31.12.2013	Change
	€m	€m	%
IFRS equity excluding goodwill	5,101	3,947	29.2
Market Consistent Embedded Value	4,166	5,949	-30.0
Value not recognised in IFRS equity	-935	2,002	-146.7

The embedded value of the primary insurance business covered as at 31 December 2014 was €935m below the corresponding IFRS equity (excluding goodwill). The value not recognised in IFRS equity decreased by €2,937m during 2014.

MCEV and VNB sensitivities

	MCEV		Change	VNB		Change
	€m	€m	%	€m	€m	%
Base case	4,166			135		
Interest rates and assets						
Interest rates -100 BP	1,599	-2,567	-61.6	48	-87	-64.6
Interest rates +100 BP	5,414	1,248	29.9	160	25	18.1
Equity/property values -10%	3,974	-192	-4.6	132	-3	-2.4
Equity/property-implied volatilities +25%	4,032	-134	-3.2	136	1	0.5
Swaption-implied volatilities +25%	3,902	-264	-6.3	120	-15	-11.0
Illiquidity premium 10 BP	4,609	443	10.6	143	7	5.4
Expenses and persistency						
Maintenance expenses -10%	4,247	81	1.9	140	5	3.5
Lapse rates -10%	4,077	-89	-2.1	146	11	8.0
Lapse rates +10%	4,251	85	2.0	136	1	0.8
Insurance risk						
Mortality/morbidity (life business) -5%	4,241	75	1.8	146	11	7.8
Mortality (life business) +5%	4,139	-27	-0.6	132	-3	-2.0
Mortality (annuity business) -5%	4,070	-96	-2.3	136	1	0.4
No mortality improvements (life business)	4,124	-42	-1.0	130	-5	-3.9
Morbidity (life business) +5%	4,108	-58	-1.4	136	1	0.6
Required capital						
Minimum solvency capital	4,337	171	4.1	124	-11	-8.0
Other						
Value of original currencies -10%	4,158	-8	-0.2	134	-1	-0.9
Solvency II sensitivity	5,062	896	21.5	145	10	7.4

In contrast to our reinsurance business, most of our primary business is characterised by substantial financial options and guarantees. The main drivers are therefore economic assumptions.

As in previous years, we did not apply any yield-curve adjustments in our base case calculation. To show the impact of taking yield-curve adjustments into consideration, we calculate two sensitivities. The first one demonstrates the effect of including an illiquidity premium of 10 BP for the whole portfolio. The second one gives an indication of what Munich Re's embedded value is anticipated to look like if calibrated using the base yield curve of the future Solvency II regime. The economic assumptions applied for this sensitivity reflect a Munich Re estimate based on the specifications of the Omnibus II directive and the Delegated Acts. Our assumptions for the Solvency II sensitivity are described in detail in Section 6 of this report.

Particularly for our German life primary business, embedded financial options and guarantees have a strong asymmetrical and non-linear impact on cash flows to shareholders. Falling interest rates thus have a higher impact on embedded value than rising interest rates. For large parts of our German life insurance portfolio, current risk-free interest rates as used in our valuation are below guaranteed interest rates. All in all, the effects of all economic and non-economic sensitivities are fairly high. This is especially true for the sensitivity to interest rates and the Solvency II sensitivity.

As an increase in volatilities leads to a higher TVFOG for traditional participating business, embedded value decreases when there is an increase in swaption-implied volatility or in equity- and property-implied volatility. However, because exposure to equity and property is low, the effects of the corresponding sensitivities on the MCEV are moderate.

The substantial effects of cross-subsidisation between new and in-force participating business (especially in German life and health primary insurance) are reflected in the approach we used to calculate the VNB sensitivities.

Except for the stressed assumptions, the sensitivity calculations are performed analogously to the base case.

5 Embedded value methodology

The embedded value methodology adopted by Munich Re is in accordance with the Market Consistent Embedded Value Principles® (MCEV Principles) published by the European Insurance CFO Forum (CFO Forum) in June 2008. We do not apply any yield curve modifications such as illiquidity premiums as permitted by an amendment to the MCEV Principles, published by the CFO Forum in October 2009. In this section, we specify the methodology used in preparing this supplementary report.

The embedded value results and IFRS equities are presented at a consolidated Group level. Results are presented net of minority interests and policyholders' interests. Intra-Group reinsurance ceded from primary insurers to reinsurers is shown in the reinsurance segment.

The embedded value reporting currency is the euro. Calculations are undertaken in the original currency of the business covered and converted to euros for consolidation purposes. In converting original currency embedded values and their components into euros, the exchange rates as at the relevant valuation dates are used. Changes in the embedded value due to changes in foreign-exchange rates are part of opening and closing adjustments. For converting embedded value earnings based on the original currency into euros, average exchange rates are used. More details are given in Section 6.2.

5.1 Look-through principle

The assets related to the business covered are mainly managed by the Group's asset management units. The costs and profits from managing these assets are included in the embedded value on a look-through basis.

Where material, costs of other service companies, such as administration and IT, are also included in the embedded value on a look-through basis. Costs of holding companies related to the business covered have been allowed for in the embedded value calculations as well.

5.2 Adjusted net worth (ANW)

The adjusted net worth (ANW) of our business covered is defined as follows:

- For pure life reinsurance entities, the ANW equals the local regulatory net worth adjusted to reflect the market value of assets.
- For composite reinsurance entities, the allocated required capital is used.
- For primary insurance entities, the ANW is based on the local regulatory net worth. Profit transfers and dividends are treated on a unified basis. Therefore, the ANW also includes profit transfers.

Differences between IFRS and statutory pension liabilities are included in the MCEV as an adjustment to net assets.

The required capital (RC) is defined as follows:

- For reinsurance entities, the RC is derived taking into account both regulatory requirements and internal objectives (e.g. rating requirements, internal economic capital model).
- For German primary insurers, the RC is set to statutory net worth adjusted for differences between IFRS and statutory pension liabilities.
- For international primary insurers, the RC is equal to 100% of the EU minimum solvency requirements. This simplified assumption has little impact on the MCEV.

The free surplus (FS) is defined as the adjusted net worth less the required capital.

5.3 Value of in-force covered business (VIF)

A bottom-up approach to allow for risk is adopted for the calculation of the present value of in-force covered business. The economic assumptions and discount rates used are calibrated applying a market-consistent methodology to allow for financial risk. In principle, each cash flow is valued according to its inherent financial risk.

For business without significant financial options and guarantees, the certainty-equivalent technique is used. Under this valuation approach, the reference rate is used for both the projection of assets and the discounting of all cash flows. In particular, it is assumed that all assets earn the reference rate.

For business with significant financial options and guarantees, a stochastic model using market-consistent scenarios is applied to determine the VIF. The stochastic models take interactions of assets and liabilities into account and include expected management behaviour, e.g. regarding the investment strategy, the management of unrealised capital gains, and the determination of bonus rates for participating business. In addition, dynamic policyholder behaviour with respect to lapses and surrenders is allowed for.

In some territories where life reinsurance business is written, only limited policy data is available to the reinsurer. In such cases, projections are made on a portfolio basis to reflect expected profitability ratios and all other relevant information.

For our German life primary business, it is assumed that in the case of severe financial distress, approval from the regulator is granted to restrict policyholder participation and to cover policyholder guarantees by the free RfB and the terminal bonus fund. Besides this, we do not model any limited liability put options and assume that guarantees are not changed.

We have classified the value of the future increments for our existing life primary business as being part of the value of in-force covered business. However, this methodology is not yet fully in place for the whole portfolio. For those parts of the business, the current year's increments are included in the new business value.

For our German health primary business, the development of healthcare costs is based on general inflation assumptions adjusted for higher health inflation in some parts of the business. Premium rates are assumed to increase in line with these developments.

The VIF consists of the following items that are exemplified in the sections below:

- Present value of future profits (PVFP)
- Time value of financial options and guarantees (TVFOG)
- Cost of residual non-hedgeable risks (CRNHR)
- Frictional cost of required capital (FCRC)

5.3.1 Present value of future profits (PVFP)

The PVFP is the present value of future local statutory shareholder after-tax profits from the in-force covered business and the assets backing the associated liabilities, net of tax, policyholder participation and minority interests.

5.3.2 Time value of financial options and guarantees (TVFOG)

Participating life business is generally characterised by the following key features:

- A minimum interest rate or a minimum level of bonus is guaranteed to the policyholder. Hence, whenever the investment return on the allocated assets does not exceed the necessary minimum and other means of funding the guarantees are depleted, the shareholder will bear the cost of maintaining the guarantees.
- Generally, bonuses and crediting rates exceed minimum guaranteed levels. In this case, the amount credited will be based on profit-sharing rules which involve a degree of management discretion.

The participating features are usually a combination of contractual or legal constraints and management discretion that has to take competitive pressure or market practice into account. The participating business has been modelled to reflect both contractual and regulatory constraints as well as management discretion. For projected surrender rates, the difference between the reference rate and the credited rate is taken into account.

In our market-consistent calculation, we allow for the potential impact on future shareholder cash flows of all financial options and guarantees within the in-force covered business. This allowance is based on stochastic techniques using methods and assumptions consistent with the underlying embedded value. All projected cash flows are valued using economic assumptions in line with the price of similar cash flows that are traded in the capital markets.

Stochastic models are used for all business with significant (substantial) financial options and guarantees. The time value of financial options and guarantees is determined as the difference between the average present value over all stochastic scenarios and the present value for the certainty-equivalent scenario. The stochastic model is run using 1,000 scenarios based on an econometric model and takes the following explicitly into account:

- Management discretion concerning bonus policy and profit-sharing rules
- Timing of realisation of unrealised capital gains
- Dynamic asset allocation (in particular, management of the equity-backing ratio)
- Dynamic adjustment of technical interest rates for German health primary business
- Surrender rates dependent on the capital markets

It is predominantly life primary business that is exposed to substantial financial options and guarantees. The following aspects of financial options and guarantees are of particular relevance:

- All policyholder options (such as full or partial surrender, premium discontinuance and annuitisation) combined with policyholder guarantees (like interest-rate guarantees, guaranteed surrender values or guaranteed annuity rates) have a large influence on the VIF.
- On the other hand, companies are able to substantially influence the value of financial options and guarantees, for example by changing their bonus policy for participating life business or by adjusting the long-term asset allocation. Such management discretion is subject to any contractual guarantees and regulatory or legal constraints.

The TVFOG published in this and other Munich Re documents reports the net effect.

For our German health primary segment, stochastic models are used that implicitly reflect TVFOG in VIF. Our life reinsurance portfolio has only a very limited exposure to financial options and guarantees, e.g. variable annuity business.

5.3.2.1 TVFOG in German life primary business

In German life primary business, by far the biggest share of the time value of financial options and guarantees results from the guaranteed interest rate together with legal restrictions for minimum policyholder participation.

The maximum actuarial interest rate in life insurance (commonly referred to as the “guaranteed interest rate”) is laid down in the German federal ordinance concerning actuarial assumptions for future policy benefits (“Deckungsrückstellungsverordnung”).

The German federal ordinance relating to minimum policyholder participation in life insurance (“Mindestzuführungsverordnung”) applies rules concerning customers’ minimum participation in statutory profits that restrict loss offset from the different profit sources (investment result, risk result, other result).

5.3.2.2 TVFOG in German health primary business

For participating German health primary business, minimum profit-sharing rules are set according to current legal requirements. Management discretion is relevant for the use of free policyholder funds to reduce future premium increases necessary to cover the assumed development of healthcare costs. Furthermore, management decisions on how to proceed with changes in technical interest rates are taken into account, subject to legal restrictions.

The impact of financial options and guarantees in German health primary business varies from that in German life primary business. Besides options of the policyholder, there are also options of the company. Policyholder behaviour is modelled in accordance with current experience. However, changed policyholder behaviour is difficult to estimate in the long run. Options of the company mainly involve the following factors:

- Technical interest rates are not guaranteed for the whole contract term, but can be changed through a premium adjustment process. In the event of an interest-rate reduction, this generally leads to higher premium rates for the policyholder.
- If future investment returns are expected to be below the guaranteed interest rate, the German Federal Financial Supervisory Authority (BaFin) demands in accordance with the “Aktuarielle Unternehmenszins-Verfahren (AUZ-Verfahren)” a reduction in the interest-rate guarantee that is equivalent to premium rate increases within the premium adjustment process.

5.3.3 Cost of residual non-hedgeable risks (CRNHR)

The cost of residual non-hedgeable risks reflects the impact of risks not already allowed for in the TVFOG or the PVFP. For determining the CRNHR, we use a cost-of-capital approach.

For all businesses, the amount of economic risk capital for non-hedgeable risks (ERCNHR) is determined by our internal economic capital model and projected over the run-off of the business. We are adhering to the methodology of past years so as to reflect our integrated risk management process and include the diversification between our covered and non-covered business. Diversification between hedgeable and non-hedgeable risk is disregarded. The economic risk capital corresponds to the value at risk over a one-year time horizon with a confidence level of 99.5%. CRNHR is the present value of the future ERCNHR of the covered business times the cost rate of 7%.

5.3.4 Frictional cost of required capital (FCRC)

The cost of holding capital is derived from taxes on profits from assets backing up required capital and from the cost of managing those assets. For German primary insurance business, unrealised gains and losses on required capital are allocated to FCRC. In addition, for our German health primary business, investment income on shareholder funds is subject to policyholder participation and thus also included in the FCRC.

5.4 Change in embedded value

The change in embedded value from one valuation date to the next comprises the following elements:

- Opening adjustments
- Embedded value earnings
- Closing adjustments

The value of acquired or divested business (including the change in stakes of Munich Re in companies covered in this report) as well as capital movements, especially dividends, are shown either as **opening adjustments** or **closing adjustments** in a manner designed to best reflect the economic return Munich Re has achieved in the period. Additionally included in the opening adjustments are changes in scope as well as the impact of changes in currency exchange rates from the end of last year to an average exchange rate. Closing adjustments furthermore contain the changes from that average exchange rate to the currency exchange rate at the end of the reporting year.

Embedded value earnings are stated at average currency exchange rates and at the average share of Munich Re in the respective companies. They are explained in more detail in the following section.

5.5 Embedded value earnings

Embedded value earnings can be split into the following components:

- Value of new business
- Expected return at reference rate
- Expected return in excess of reference rate
- Transfer from VIF and required capital to free surplus
- Experience variances
- Assumption changes
- Other operating variance
- Economic variances
- Other non-operating variance

The sum of the first seven components of embedded value earnings is referred to as operating embedded value earnings.

The **value of new business** is explained in the following section.

The **expected return at reference rate** – “expected existing business contribution (reference rate)” according to the MCEV Principles – is calculated assuming a risk-free roll-forward of the embedded value at the beginning of the year.

The **expected return above reference rate** – “expected existing business contribution (in excess of reference rate)” according to the MCEV Principles – reflects management’s expectation for one year with regard to asset returns above the reference rate. The parameters used for the previous and current reporting year are shown in Section 6.3.

The **transfer from VIF and required capital to free surplus** shows the release of expected profits from the value of in-force covered business to the free surplus as well as the projected release of required capital to free surplus during the year. The underlying expectation is based on the models as at the beginning of the year. Given that there is only a shift between MCEV components involved, there is no impact on the embedded value within this line item.

The **experience variances** summarise the prospective and retrospective outcome of differences between the actual operating experience in the reporting year and the operating result assumed in the previous embedded value calculation.

Assumption changes represent the aggregate impact on the embedded value of changes in the operating assumptions within the reporting year. All operating assumptions are subject to an active review at each valuation date.

Other operating variances comprise model changes or model refinements as well as the effect of tax planning action.

The **economic variances** describe the aggregate impact on the embedded value of changes in economic assumptions (including reference rate and implied volatilities) during the reporting year and in the projection years. They are the net effect of a change in economic parameters on the assets and liabilities.

Other non-operating variances summarise the impact of changes in the regulatory framework such as taxation or legislation concerning policyholder participation.

5.6 Value of new business (VNB)

The VNB is the present value as at the end of the reporting year of the future local statutory after-tax profits in respect of new business written in the reporting year, reduced by the time value of financial options and guarantees, cost of residual non-hedgeable risks and frictional costs associated with the new business. Additionally, after-tax regulatory profits in respect of this business during the reporting year are included in the reported VNB. The calculation is consistent with the methodology outlined for the value of in-force business.

For reinsurance business, the value of new business can be calculated on a stand-alone basis, as there are no material interactions between in-force and new business. New business is defined as business arising from new reinsurance contracts as well as that from the sale of new contracts on existing reinsurance treaties by our customers during the reporting period. Due to the nature of life reinsurance, the value of new business includes the value of expected renewals on those new contracts and expected future contractual alterations to those new contracts. New life reinsurance business comprises:

- For individual business, new cessions in the year on either new or existing treaties
- For group business, new group schemes on either new or existing treaties, and also new members in existing group schemes
- For annually renewable reinsurance contracts (e.g. stop-loss and other non-proportional reinsurance business), new treaties and renewals of existing treaties

For primary insurance business, because of material interactions between existing and new business, a marginal approach is used, i.e. the difference between the embedded value with and without new business. The marginal approach helps to capture the effect of interactions between in-force and new business. New business is defined as business arising from the sale of new contracts during the reporting period. The value of new business includes the value of expected renewals on those new contracts and expected future contractual alterations to those new contracts. If the value of future increments for existing primary life policies is not included in the VIF, the current year's increments on these policies are included in the new business value.

5.7 Operating assumptions

Operating assumptions describe expected future operating experience. They refer mainly to mortality, morbidity, persistency, expenses and – in primary insurance business – to policyholder participation. The operating assumptions are based on best-estimate assumptions derived from company experience and/or market experience. They are in line with management expectations and reflect recent operating experience of the entities concerned.

All costs related to the business covered are split into acquisition, maintenance and investment-related expenses and are fully allowed for in the embedded value. We use a going-concern approach in line with the MCEV Principles. Future productivity gains are not anticipated in the embedded value calculations beyond what has been achieved.

5.8 Tax assumptions

Tax assumptions included in the embedded value models reflect local taxation rates and bases, including future changes that are at an advanced stage of legislative implementation. Tax modelling also includes the valuation of existing tax losses carried forward. No withholding taxes on dividends from subsidiaries have been allowed for.

Within the business covered in the case of ERGO, tax grouping effects are taken into account.

5.9 Economic assumptions

The economic assumptions are derived following a market-consistent valuation approach. Many asset classes and economic assumptions are modelled stochastically. These include equity and property returns, bond yields, interest rates and inflation.

The construction of risk-neutral economic scenarios requires careful calibration to the underlying market parameters to ensure that the valuation replicates the market prices of assets. The key areas for calibration are initial yield curves, implied market-consistent volatilities of all relevant asset classes, and correlations between asset classes.

The economic scenarios have been calibrated to the market conditions at the valuation dates, i.e. reference rates, swaption prices and equity option prices. Generally, swap rates have been used as an approximation of the risk-free yield curves. In countries without deep and liquid swap markets, government bonds were used instead.

The calculations of the time value of financial options and guarantees are based on stochastic simulations. The calibration has been provided by Barrie & Hibbert (Moody's Analytics), a UK-based financial consulting company. An Economic Scenario Generator (ESG), also provided by Barrie & Hibbert, has been used to centrally generate the stochastic scenarios. Risk-free nominal interest rates are modelled using a LIBOR market model.

The parameters used for the previous and current reporting year are shown in Section 6.3.

5.10 Business covered

The MCEV reported for 2014 covers 100% of the life reinsurance business written by Munich Re. With regard to our primary insurance business, the MCEV 2014 covers 97% of our business written in the life and the German health primary insurance entities of Munich Re.

Reinsurance companies, major branches writing covered life reinsurance business, and primary insurance companies writing covered primary insurance business are listed in the following table:

Business covered

Life reinsurance business
Reinsurance companies writing covered life reinsurance business
Munich Reinsurance Company of Australasia Ltd., Sydney
Munich Re do Brasil Resseguradora S.A., São Paulo
Münchener Rückversicherungs-Gesellschaft AG, Munich
Munich Reinsurance Company of Africa Ltd., Johannesburg
New Reinsurance Company Ltd., Zurich
Munich Re of Malta p.l.c., Ta' Xbiex
Munich American Reassurance Company, Atlanta, Georgia
Major branch offices writing life reinsurance business
Munich Reinsurance Company Canada Branch (Life), Toronto
Munich Reinsurance Company United Kingdom Life Branch, London
German life primary business
ERGO Lebensversicherung Aktiengesellschaft, Hamburg
VICTORIA Lebensversicherung Aktiengesellschaft, Düsseldorf
ERGO Direkt Lebensversicherung AG, Fürth
Vorsorge Lebensversicherung Aktiengesellschaft, Düsseldorf
Vorsorge Luxemburg Lebensversicherung S.A., Grevenmacher
German health primary business
DKV Deutsche Krankenversicherung Aktiengesellschaft, Cologne
ERGO Direkt Krankenversicherung AG, Fürth
International life primary business
ERGO Previdenza S.p.A., Milan
Sopockie Towarzystwo Ubezpieczen na Zycie Ergo Hestia Spolka Akcyjna, Sopot
ERGO Life Insurance SE, Vilnius
ERGO Insurance N.V., Brussels
ERGO Versicherung Aktiengesellschaft, Vienna

In 2014, ERGO Direkt Lebensversicherung AG Vienna was merged with ERGO Versicherung Aktiengesellschaft Vienna. The merger was effective as of 26 September 2014. Hitherto, this business was not included in the MCEV.

Furthermore, Vorsorge Luxemburg Lebensversicherung S.A., formerly a 100%-subsidiary of Vorsorge Lebensversicherung Aktiengesellschaft, is now owned directly by ERGO Versicherungsgruppe AG. The change was effective as of 1 December 2014.

6 Assumptions

6.1 Tax rates

Long-term tax rates

%	Reinsurance		Primary insurance	
	31.12.2014	31.12.2013	31.12.2014	31.12.2013
Germany	33	33	32	32
Italy	36	34	35	35
US	35	35		
UK	20	20		
Canada	27	27		

Within the business covered, tax grouping effects at ERGO are taken into account. The above tax rates show the company tax rates.

6.2 Currency exchange rates

Currency exchange rates

€1 = ... foreign currency	31.12.2014	2014 average year	31.12.2013
US\$	1.210	1.356	1.378
£	0.776	0.812	0.832
Can\$	1.402	1.483	1.464

Munich Re's reporting currency is the euro. Embedded value earnings based on the original currency are converted using average currency exchange rates that are defined as the average of daily exchange rates from 1 January to 30 September. In the table above, the average exchange rates and the period-end exchange rates for the valuation year 2014 as well as the exchange rates from the end of last year are shown for the major currencies.

6.3 Economic assumptions

The embedded value results for 2014 are based on economic market conditions as at 31 December 2014. In the following sections, the key economic assumptions, i.e. the reference yield curve, implied volatilities for each asset class, and correlations between different asset classes, are described for the major currencies.

6.3.1 Reference rates

Generally, swap rates have been used as an approximation of the risk-free yield curves. In countries without deep and liquid swap markets, government bonds were used instead. For interpolation, a regression spline technique is used, and extrapolation is done using the Nelson-Siegel form.

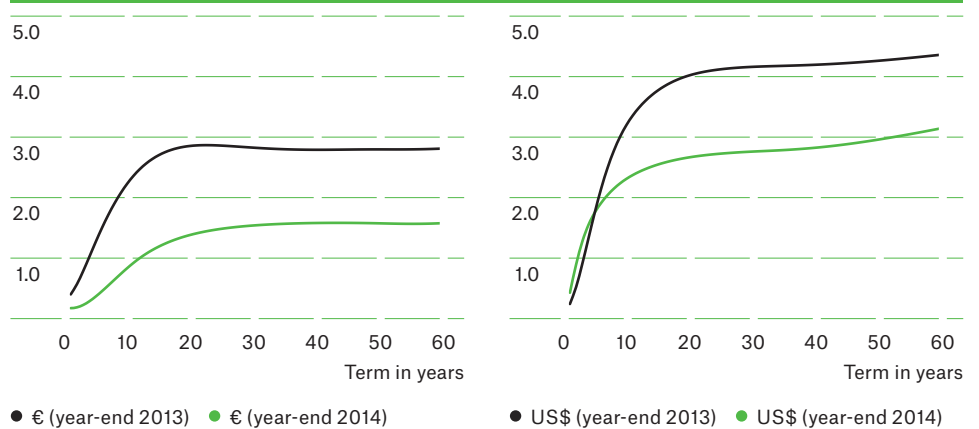
The table below shows the zero spot rates at the relevant valuation date for the major currencies.

Zero spot rate

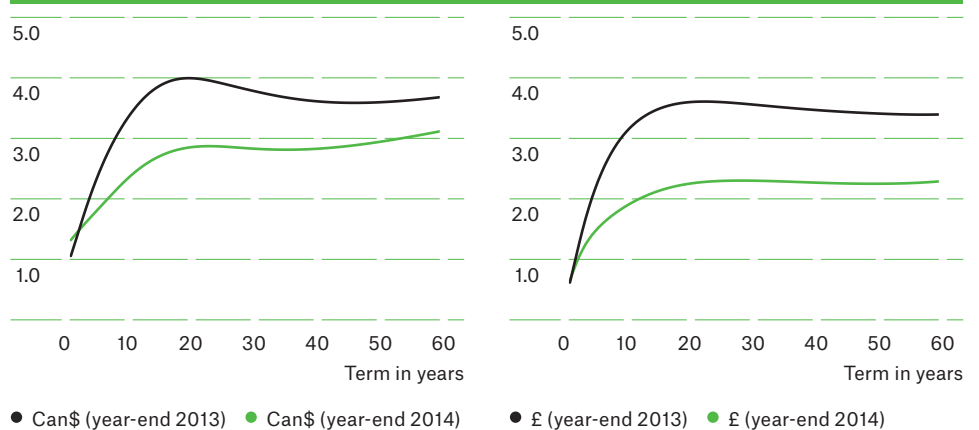
Term	31.12.2014				31.12.2013			
	€	US\$	£	Can\$	€	US\$	£	Can\$
1 year	0.16	0.44	0.65	1.32	0.39	0.25	0.61	1.05
2 years	0.18	0.90	0.93	1.44	0.56	0.53	1.05	1.38
3 years	0.22	1.29	1.15	1.56	0.78	0.92	1.48	1.71
4 years	0.28	1.57	1.33	1.68	1.02	1.35	1.85	2.02
5 years	0.36	1.77	1.46	1.79	1.27	1.78	2.16	2.30
6 years	0.45	1.92	1.57	1.90	1.50	2.17	2.42	2.56
7 years	0.54	2.05	1.66	2.01	1.71	2.50	2.65	2.79
8 years	0.64	2.16	1.75	2.13	1.90	2.78	2.83	2.99
9 years	0.74	2.25	1.82	2.23	2.08	3.02	2.99	3.17
10 years	0.83	2.32	1.88	2.33	2.23	3.21	3.11	3.33
15 years	1.18	2.56	2.13	2.70	2.70	3.78	3.48	3.86
20 years	1.38	2.67	2.25	2.85	2.85	4.03	3.60	3.99
25 years	1.48	2.74	2.29	2.86	2.86	4.13	3.60	3.90
30 years	1.53	2.77	2.30	2.83	2.82	4.17	3.56	3.78

The following graphs illustrate the zero spot rate curves.

Zero spot rate (%)



Zero spot rate (%)



6.3.2 Volatilities

The interest-rate scenarios have been generated to replicate at-the-money swaption prices. The implied volatilities for these swaptions are outlined in the following table.

Target swaption implied volatilities (tenor of 20 years)

Term	31.12.2014		31.12.2013	
	€	US\$	€	US\$
1 year	43.5	27.6	23.7	20.5
2 years	41.1	27.4	24.3	20.1
3 years	39.4	27.1	24.3	19.4
4 years	37.6	26.7	24.1	18.7
5 years	35.9	26.1	24.0	18.0
10 years	32.6	23.4	21.7	15.2
15 years	30.7	20.8	20.2	14.1
20 years	28.9	19.6	18.4	13.6
30 years	26.6	21.3	15.3	15.2

The equity models have been calibrated to implied volatilities of at-the-money equity index options observed in the OTC market. The ten-year implied volatility (the longest maturity option available) is shown in the table below.

Target equity implied volatilities

Equity index	31.12.2014		31.12.2013	
	EURO STOXX	S&P 500	EURO STOXX	S&P 500
%	20.8	25.9	20.6	24.5

6.3.3 Correlation coefficients

Our models have been calibrated to the coefficients shown in the table below, reflecting global long-term assumptions concerning the correlations between equities and interest rates. The coefficients have been estimated from historic market data.

Target correlation coefficients

Correlation pair	31.12.2014	31.12.2013
Equity and ten-year government bond	0.15	0.17
Equity and absolute changes in nominal short rates	-0.11	-0.10
Equity and absolute changes in real short rates	-0.04	-0.04
Equity and ten-year inflation-linked government bond	0.11	0.10

6.3.4 Expected return in excess of reference rate

The table below shows management's expectations for assigning excess return to all equities, real estate and fixed income securities, differentiated by their rating.

Expected return in excess of reference rate

	2014	2013
BP		
Equities	450	450
Real estate	300	310
Fixed income		
AAA	50	-
AA/A	80	80
BBB and worse	120	130
All other assets	-	-

6.3.5 Solvency II yield curves

Munich Re continues to follow its approach of not taking any yield curve adjustments into consideration for the base MCEV calculations. However, to give an indication of what Munich Re anticipates its MCEV will look like when this includes elements of a future Solvency II framework, we publish a corresponding sensitivity calculation.

For the Solvency II yield curve sensitivity, the respective parameters have been set taking into account the Omnibus II directive and the Delegated Acts. This covers:

- swap rates as the basis for deriving risk-free term structures from
- credit risk adjustment (CRA)
- extrapolation according to the Smith-Wilson methodology, comprising parameters for last liquid point (LLP), convergence speed (CS) and ultimate forward rate (UFR)

The parameters for the Solvency II yield curves for the major currencies are shown in the table below.

Parameters for the Solvency II yield curves

Currency	CRA BP	LLP Years	CS Years	UFR %
€	-10	20	40	4.2
US\$	-10	50	40	4.2
£	-10	50	40	4.2
Can\$	-14	30	30	4.2

We did not include any volatility adjustments, matching adjustments or transitional measures for calculating this sensitivity, and it is assumed that all other economic assumptions (e.g. volatilities) are equal to the base MCEV calculations.

7 Independent assurance report

Introduction

Based on the engagement letter dated 5 and 12 August 2014, KPMG has been engaged to audit the Market Consistent Embedded Value (MCEV) of Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft in München, (Munich Re) as at 31 December 2014 as stipulated in the accompanying MCEV Report of Munich Re. Munich Re is responsible for the preparation of the MCEV Report including the calculation of the MCEV. This includes particularly setting the operative and economic assumptions, the explanation concerning the determination of the MCEV and its roll forward, the implementation and the operativeness of the system which ensures the completeness and correctness of the data which are necessary for the calculation of the MCEV. Our responsibility is to express an opinion on the calculation of the MCEV as to whether the methodology and the assumptions used comply with the Market Consistent Embedded Value Principles[®] as published by the CFO Forum on 4 June 2008 and amended in October 2009 (Market Consistent Embedded Value Principles) except principles 17.3.37 to 17.3.45 (Group MCEV). Munich Re does not apply an illiquidity premium in the calculation of the MCEV but discloses additional sensitivities which allow the reader to understand and to assess the impact of applying an illiquidity premium as well as Solvency-II-like yield curves on the MCEV of Munich Re.

Subject matter and criteria

For the calculation of the MCEV, Munich Re applies criteria as set out in the Market Consistent Embedded Value Principles, except principles 17.3.37 to 17.3.45. The calculation of Market Consistent Embedded Values is necessarily based on numerous assumptions with respect to economic conditions, operating conditions, taxes, and other matters. Many of these are beyond the Company's control. Actual cash flows in the future are likely to be different from those assumed in the calculation, and such variation may be material.

Work performed

We conducted our audit of the MCEV in accordance with the International Standard on Assurance Engagements (3000): "Assurance engagements other than audits or reviews of historical financial information", issued by the International Auditing and Assurance Standards Board. The effectiveness of the accounting-related internal control system in the MCEV calculation is examined primarily on a test basis within the framework of the audit. The audit includes assessing the MCEV principles used and significant estimates and assumptions made by management. As a result of determining our audit strategy and audit objectives we have established Market Consistent Embedded Value Principles 3, 6, 7, 9, 11, 12, 13, 14, 15 and 16 as the special focus of our audit.

We believe that our audit provides a reasonable basis for our opinion.

Regarding our independence, we comply with the requirements of the IFAC Code of Ethics for Professional Accountants.

Conclusion

In our opinion, the methodology and the assumptions used comply with the Market Consistent Embedded Value Principles except principles 17.3.37 to 17.3.45. Munich Re does not apply an illiquidity premium in the calculation of the MCEV but discloses additional sensitivities which allow the reader to understand and to assess the impacts of applying an illiquidity premium as well as Solvency-II-like yield curves on the MCEV of Munich Re. In particular:

- The calculated MCEV is the present value of shareholders' interests in the earnings distributable from assets allocated to the covered business after sufficient allowance for the aggregate risks in the covered business. Section 5 sets out the methodology of making allowance for the aggregate risks, in particular by the use of
 - a level of required capital derived from internal risk models and additional regulatory restrictions,
 - a market-consistent assessment of the time value of financial options and guarantees, and
 - a deduction for frictional cost of required capital based on the cost of double taxation, investment expenses and, where applicable, policyholder participation on assets backing the required capital,
 - a deduction for the cost of residual non-hedgeable risks.
- The operating assumptions have been set with appropriate regard to past, current and expected future experience.
- The economic assumptions used are internally consistent and consistent with observable market data.
- For the primary participating business, the assumed bonus distribution, asset allocation, allocation of profit between policyholders and shareholders, and other management actions are consistent with other assumptions used in the projections, and with local market practice.
- We have also performed limited high-level checks on the results of the calculations. We have not, however, performed detailed checks on all the models and processes involved.

We have provided the services described above on behalf of Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft in München. We have carried out our engagement on the basis of the General Engagement Terms included in our engagement agreement dated 1 January 2002. By taking note of and using the information as contained in our Assurance Report, each recipient confirms to have taken note of the terms and conditions stipulated in the aforementioned General Engagement Terms (including the liability limitations to €4m for negligence specified in item No. 9 included therein) and acknowledges their validity in relation to us.

Cologne, 10 March 2015

KPMG Bayerische Treuhandgesellschaft Aktiengesellschaft
Wirtschaftsprüfungsgesellschaft
Steuerberatungsgesellschaft

Hanno Reich
Partner

Stefan Hensen
Manager

8 Statement by directors

I confirm that the MCEV of Munich Re as at 31 December 2014 has been prepared in accordance with the Market Consistent Embedded Value Principles® (MCEV principles) issued by the CFO Forum on 4 June 2008 and amended in October 2009. In particular I confirm that

- Non-economic assumptions for future experience have been set with regard to past, current and expected future experience and to any other relevant data.
- The economic assumptions used are internally consistent and consistent with observable market data.
- Management actions are consistent with other assumptions used in the projections and assumptions used for other purposes, e.g. projections required in the annual planning of profits and losses. The investment strategy and the realisation of unrealised capital gains are in line with management's expectations. For participating business, assumptions on future bonus rates and profit allocation between policyholders and shareholders are made on a basis consistent with the projection assumptions, established company practice and local market practice.
- Dynamic policyholder behaviour is, where material, taken into consideration in the time value of financial options and guarantees.

However, the following Group-wide items of non-compliance exist:

- Munich Re does not publish a Group MCEV according to MCEV principles 17.3.37 to 17.3.45.

Munich, 10 March 2015



Dr. Jörg Schneider
CFO

9 Disclaimer

This report contains forward-looking statements that are based on current assumptions and forecasts of the management of Munich Re. Known and unknown risks, uncertainties and other factors could lead to material differences between the forward-looking statements given here and actual developments, in particular in the results, financial situation and performance of our Company. The Company assumes no liability for updating these forward-looking statements or for adjusting them to reflect future events or developments.

10 Glossary and abbreviations

Aa **Acquired (divested) business** Business acquired (divested) through acquisition (sale) of stakes in insurance or reinsurance companies

Adjusted net worth (ANW) Also known as shareholders' net worth or adjusted net asset value. MCEV Principles distinguish between free surplus and required capital.

Assumption changes Aggregate impact of changes in the operating assumptions on the embedded value

Bb **Best-estimate assumption** An assumption that represents the expected outcome from the range of possible outcomes of future experience

Cc **Capital movements** Dividends and capital contributions

Costs of residual non-hedgeable risks (CRNHR) Allowance for risks not already included in the PVFP or TVFOG. Munich Re uses a cost-of-capital approach with a unique cost rate applied to the projected risk capital for non-hedgeable risks.

Covered business The business for which the embedded value is reported

Currency movements Aggregate impact of currency movements on the embedded value

Ee **Economic assumptions** These include reference rates, discount rates, inflation rates and assumptions on the volatility of economic parameters

Economic variances Sum of the difference between projected and actual investment return in the reporting year and effects on the embedded value from changes in capital market parameters

Embedded value Present value of shareholders' interests in the earnings distributable from assets allocated to the business covered after sufficient allowance for the aggregate risks in business covered

Expected return at reference rate Return for the reporting year if all assumptions of the previous year remained constant (risk-free roll-forward of the embedded value at the beginning of the year)

Expected return in excess of reference rate Additional return for one year expected by management due to assumed risk premiums for certain asset classes

Experience variances The impact on the embedded value of differences between the actual operating experience in the reporting year and the operating result assumed in the previous embedded value calculation

- Ff** **Free surplus (FS)** Amount of capital allocated to the business in excess of the required capital
- Frictional costs of required capital (FCRC)** Allowance for taxation and investment costs on the assets backing up required capital. For German primary insurance business, unrealised gains and losses on required capital are allocated to FCRC. Additionally, for German health primary business, FCRC includes the cost of profit sharing of investment income on assets backing up required capital.
- li** **IFRS** International Financial Reporting Standard
- LI** **Look-through basis** A basis on which the impact of an item on the whole Group, rather than on a particular part, is measured
- Mm** **Market Consistent Embedded Value (MCEV)** Embedded value according to the European Insurance CFO Forum Market Consistent Embedded Value Principles ("MCEV Principles"), Copyright Stichting CFO Forum Foundation 2008. Published in June 2008, available online at <http://www.cfoforum.nl>. Currently we do not make use of any illiquidity premiums in line with the amendment to the MCEV Principles, published by the CFO Forum in October 2009.
- Oo** **Opening/closing adjustments** Change in embedded value due to capital movements, foreign-exchange variance or acquired/divested business
- Operating assumptions** All assumptions relating to demographic assumptions (e.g. mortality, morbidity), expenses, policyholder participation and policyholder behaviour
- Operating MCEV earnings** The sum of expected return, value of new business, experience variances, assumption changes and other operating variance
- Other non-operating variance** Impacts of legal or regulatory changes including taxation
- Other operating variance** Effects from a change or improvement in models and tax-planning action
- Pp** **Participating business** Primary insurance business in which policyholders have the right to participate in the performance of a specified pool of assets or contracts
- Present value of future profits (PVFP)** The value of future profits from the in-force covered business and the assets backing the associated liabilities; net of tax, policyholder participation and minorities
- Present value of new business premiums (PVNBP)** Present value of future premiums from new business

- Rr** **Reference rate** Proxy for a risk-free rate
- Required capital (RC)** The amount of surplus assets whose distribution to shareholders is restricted
- RfB** The “Rückstellung für Beitragsrückerstattung (RfB)” is the provision for premium refunds in German primary insurance
- Risk-free (interest) rates** Prospective yields on securities considered to be free of default and credit risk
- Ss** **Solvency II** EU legislative programme introducing a new, harmonised EU-wide insurance regulatory regime
- Statutory basis** Valuation basis used for reporting financial statements to local regulators
- Tt** **Time value of financial options and guarantees (TVFOG)** The time value of financial options and guarantees is part of the VIF; the VIF before deduction of the allowance for the time value of financial options and guarantees reflects their intrinsic value
- Vv** **Value of in-force business (VIF)** The value of in-force covered business is the present value of future shareholder cash flows (PVFP) reduced by costs of residual non-hedgeable risks (CRNHR), the frictional costs of required capital (FCRC) and the time value of financial options and guarantees (TVFOG)
- Value of new business (VNB)** The value added through the activity of writing new business

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Responsible for content

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