

somewhat  
different

# MCEV Report 2014

# Contents

<b>Introduction</b>	<b>3</b>	<b>7. Assumptions</b>	<b>16</b>
<b>1. Covered Business</b>	<b>3</b>	7.1 Economic Assumptions	16
<b>2. Market Consistent Embedded Value 2014 and its Components</b>	<b>4</b>	7.1.1 Swap rates	16
2.1 Performance 2014	4	7.1.2 Volatilities	17
2.2 Comparison: Market Consistent Embedded Value 2014 and 2013	4	7.1.3 Currency Exchange Rates	18
2.3 Value In-Force – 2014 Breakdown	5	7.1.4 Credit Risk on Assets	18
2.4 Financial Options and Guarantees, Look Through and Pension Deficits	7	7.1.5 Counterparty Risk	18
2.4.1 Financial Options and Guarantees	7	7.1.6 Tax	18
2.4.2 Participating Business	7	7.2 Non-Economic Assumptions	18
2.4.3 Look Through	7	7.2.1 Cost of Residual Non-Hedgeable Risks	18
2.4.4 Pension Deficits	7	7.2.2 Mortality Improvements	18
<b>3. New Business</b>	<b>8</b>	7.3 Expenses	18
3.1 Value of New Business	8	<b>Appendix</b>	<b>19</b>
3.2 New Business Margins	9	<b>I. Methodology</b>	<b>19</b>
<b>4. Analysis of Earnings</b>	<b>10</b>	General Assumptions	19
4.1 Opening Adjustments	11	New Business	19
4.2 Expected Existing Business Contribution	11	Shareholder Net Worth	19
4.3 Experience Variances	11	Required Capital	20
4.4 Assumption Changes	11	Free Surplus	20
4.5 Other Operating Variance	12	Present Value of In-Force Business	20
4.6 Economic Variances	12	Present Value of Future Profits	20
4.7 Other Non-Operating Variance	12	Cost of Residual Non-Hedgeable Risks	20
4.8 Closing Adjustments	12	Frictional Costs of Required Capital	21
<b>5. Sensitivities</b>	<b>13</b>	Time Value of Financial Options and Guarantees	21
5.1 Sensitivities of Market Consistent Embedded Value	13	Sensitivities	21
5.2 Sensitivities of Value of New Business	14	<b>II. Glossary</b>	<b>22</b>
<b>6. Reconciliation of IFRS Equity to Market Consistent Embedded Value/Embedded Value not Recognised</b>	<b>15</b>	<b>III. Formulae and Abbreviations</b>	<b>23</b>
		<b>IV. Overview of Domestic Operations</b>	<b>24</b>
		<b>V. Overview of Foreign Operations</b>	<b>24</b>
		<b>VI. Summary of Tables and Figures</b>	<b>24</b>
		<b>VII. Disclaimer</b>	<b>25</b>
		<b>VIII. Letter of Opinion (B&amp;W Deloitte GmbH)</b>	<b>25</b>

# Introduction

Hannover Rück SE's (Hannover Re) 2014 Market Consistent Embedded Value (MCEV) disclosure generally complies with the European Insurance CFO Forum Market Consistent Embedded Value Principles® (MCEV Principles) published in June 2008. The only exception is the non-disclosure of the Group Market Consistent Embedded Value.

The CFO Forum published a revised version of the MCEV Principles in October 2009 which allows for the inclusion of a liquidity premium in addition to the reference rates. However, Hannover Re has decided not to include a liquidity premium in the calculation of the base results. A sensitivity showing the impact of a liquidity premium of 10 bps on our business has been analysed.

This report refers to the valuation date 31 December 2014.

Hannover Re's embedded value report is presented net of non-controlling interests ("after minorities") unless otherwise stated.

## 1. Covered Business

The business covered is the business reported in the life and health segment of Hannover Re's published financial statements.

All worldwide reinsurance activities of Hannover Re in the life, annuity and health (including personal accident) insurance lines are combined under the name "Hannover Re Life and Health" (Hannover Re L&H).

This disclosure document generally shows total results as well as a breakdown for the Domestic and Foreign Operations.

The Domestic Operations include the business written directly by Hannover Re and E+S Rückversicherung AG (E+S Rück) in Hannover and also the business written by Hannover Re's branches. Business retroceded by the Foreign Operations to Hannover Rück SE is also included under Domestic Operations. The life and health business written by the subsidiary Hannover ReTakaful in Bahrain has been included under Domestic Operations because this subsidiary reports directly to the Domestic Operations. Details of the Domestic Operations are shown in Appendix "IV – Overview of Domestic Operations".

The Foreign Operations include the life and health reinsurance subsidiaries of Hannover Re in South Africa, the United States, Australia and Bermuda. Hannover Re's Irish life and health and property and casualty subsidiaries merged in 2012.

All amounts in the result tables are shown in EUR million rounded to one decimal place. Small differences may therefore arise between the totals and the sum of the individual amounts.

The directors of Hannover Re acknowledge their responsibility for the preparation of the supplementary information in accordance with the Market Consistent Embedded Value Principles.

B&W Deloitte GmbH, actuaries and consultants, has been retained to review the Market Consistent Embedded Value results. The scope and conclusions of this review are shown at the end of this document.

The embedded value disclosure should not be viewed as a substitute for Hannover Re's primary financial statements.

The life and health business segment of the Irish subsidiary is also included under Foreign Operations. Details are shown in Appendix V "Overview of Foreign Operations".

Hannover Re L&H writes the following lines of business: Individual life and group life, unit linked as well as conventional business, annuities (standard, impaired and enhanced), disability income, critical illness, long-term care, medical supplement, medicare, and special (personal accident) risks.

All values shown in the disclosure are net of intra-group retrocessions and external retrocessions. In the case of intra-group retrocessions, this means that the retroceded business is excluded from the retroceding company's results and included in the results of the retrocessionaire. The values shown are post-tax.

The consolidated results allow for the elimination of the book values for all five subsidiaries of Hannover Re for which a Market Consistent Embedded Value has been determined.

All formulae, abbreviations and notations are provided in Appendix III "Formulae and Abbreviations".

## 2. Market Consistent Embedded Value 2014 and its Components

### 2.1 Performance 2014

The following table shows the key figures for the Market Consistent Embedded Value (MCEV) 2014 and 2013.

**Table 1: Performance Market Consistent Embedded Value (MCEV)**

in EUR million	2014				2013
	Before consolidation			After consolidation <sup>1</sup>	After consolidation <sup>1</sup>
	Domestic Operations	Foreign Operations	Total	Total	Total
Market Consistent Embedded Value (MCEV)	2,607.3	3,197.9	5,805.2	4,274.9	3,675.1
Return on Market Consistent Embedded Value (MCEV) <sup>2</sup>				14.5%	8.5%
Value of New Business (VNB)	102.4	346.0	448.4	448.4	308.5
New Business Margin (NBM)	1.3%	13.4%	4.2%	4.2%	4.1%

<sup>1</sup> The book values of the subsidiaries that have determined MCEV results have been eliminated. Additionally, the consolidation allows for an adjustment to avoid double counting of dividends to be paid by the US and Bermudian subsidiary to Hannover Rück SE and the elimination of the capital of the UK branch to avoid double counting.

<sup>2</sup> Excluding opening and closing adjustments

The main driver for the return on MCEV 2014 is the Value of New Business.

Please refer to Sections 3 “New Business” and 4 “Analysis of Earnings” for details on the drivers behind the excellent Value of New Business and return on MCEV.

### 2.2 Comparison: Market Consistent Embedded Value 2014 and 2013

Table 2 shows the components of the MCEV as well as the MCEV before and after consolidation adjustments.

The main drivers for the changes in the MCEV from 31 December 2013 to 31 December 2014 are explained in Section 4 “Analysis of Earnings”.

**Table 2: Market Consistent Embedded Value (MCEV) 2014 and 2013**

in EUR million	2014			2013		
	Domestic Operations	Foreign Operations	Total	Domestic Operations	Foreign Operations	Total
Free Surplus (FS)	983.5	550.0	1,533.5	579.1	669.4	1,248.4
Required Capital (RC) <sup>1</sup>	623.5	1,080.0	1,703.4	704.5	922.9	1,627.4
<b>Shareholder Net Worth (SNW)</b>	<b>1,607.0</b>	<b>1,630.0</b>	<b>3,237.0</b>	<b>1,283.6</b>	<b>1,592.2</b>	<b>2,875.8</b>
Present Value of Future Profits (PVFP)	1,355.9	2,042.7	3,398.6	1,202.7	1,403.2	2,605.9
Cost of Residual Non-Hedgeable Risks (CoRNHR)	(314.7)	(389.3)	(704.0)	(150.8)	(277.2)	(428.0)
Frictional Costs of Required Capital (FCoRC)	(36.3)	(80.8)	(117.0)	(31.2)	(102.7)	(133.9)
Financial Options and Guarantees (FOGs)	(4.7)	(4.6)	(9.3)	(1.6)	(2.3)	(4.0)
<b>Value In-Force (VIF)</b>	<b>1,000.3</b>	<b>1,567.9</b>	<b>2,568.3</b>	<b>1,019.1</b>	<b>1,021.0</b>	<b>2,040.0</b>
<b>Market Consistent Embedded Value (MCEV) before consolidation</b>	<b>2,607.3</b>	<b>3,197.9</b>	<b>5,805.2</b>	<b>2,302.7</b>	<b>2,613.2</b>	<b>4,915.9</b>
Consolidation adjustments <sup>2</sup>			(1,530.3)			(1,240.8)
<b>Market Consistent Embedded Value (MCEV) after consolidation</b>			<b>4,274.9</b>			<b>3,675.1</b>

<sup>1</sup> Sum of local Required Capital (RC) before allowing for diversification between the entities of Hannover Re Life and Health.

<sup>2</sup> Elimination of the book values of the subsidiaries that have determined MCEV results and an adjustment to avoid double counting of dividends to be paid by the US and Bermudian subsidiary to Hannover Rück SE. Additionally, the capital of the UK branch is eliminated in the consolidation to avoid double counting.

The strong increase in CoRNHR is mainly caused by lower interest rates as well as higher business volume, in particular for longevity business.

## 2.3 Value In-Force – 2014 Breakdown

The reporting structure of Hannover Re Life and Health (Hannover Re L&H) is divided into Financial Solutions and Risk Solutions; the latter is further subdivided into Mortality, Longevity and Morbidity.

Financial Solutions covers all treaties in which the primary emphasis is on financing or capital management components. Reinsurance treaties focused first and foremost on transfer of the mortality risk are allocated to the Mortality category. Allocation to the Longevity and Morbidity categories is similarly determined by the underlying risks. In this context, Morbidity encompasses not only health business but also other risks such as disability and critical illness. This means that the reporting structure puts the focus on the individual risk types. The breakdown of the Value In-Force (VIF) by type of risk covered is shown in Tables 3a and 3b.

The VIF increase in comparison to 2013 is mainly caused by new business written during 2014 as well as changes in currency exchange rates. For details, please refer to Section 4 “Analysis of Earnings”.

For Domestic Operations the decrease in VIF for “Risk Solutions – Mortality” is mainly caused by the reduction in interest rates during 2014. Especially, a contractual amendment for a large UK mortality treaty in this block of business leads to a higher sensitivity against interest rate movements compared to 2013 followed by a negative impact on the VIF due to the interest rate reduction in 2014. Additionally, the negative effect is intensified by an extension of the projection horizon and higher Cost of Residual Non-Hedgeable Risks (CoRNHR). The amounts reported under “Risk Solutions – Longevity” and “Risk Solutions – Morbidity” increased mainly because of new business written in 2014. The decrease in VIF for “Financial Solutions” is mainly caused by negative effects due to changes in economic environment as well as internal retrocession such that a part of this business is now allocated to Foreign Operations.

For Foreign Operations the amounts reported under “Risk Solutions – Morbidity” and “Risk Solutions – Longevity” have not materially changed in comparison to 2013. The higher value shown under “Risk Solutions – Mortality” as well as under “Financial Solutions” is primarily caused by new treaties in the US market. The increase in VIF for “Financial Solutions” is also driven by the change in the internal retrocession as mentioned above.

**Table 3a: Value In-Force (VIF) by type of risk covered 2014**

in EUR million	Domestic Operations	Foreign Operations	Total
Risk Solutions – Mortality	301.5	984.4	1,285.9
Risk Solutions – Longevity	250.7	6.8	257.4
Risk Solutions – Morbidity	142.7	1.1	143.8
Financial Solutions	305.4	575.8	881.2
<b>Total</b>	<b>1,000.3</b>	<b>1,567.9</b>	<b>2,568.3</b>

**Table 3b: Value In-Force (VIF) by type of risk covered 2013**

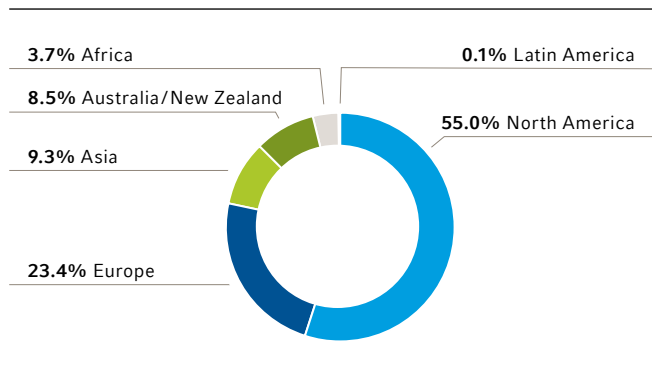
in EUR million	Domestic Operations	Foreign Operations	Total
Risk Solutions – Mortality	345.5	658.7	1,004.2
Risk Solutions – Longevity	170.1	9.6	179.7
Risk Solutions – Morbidity	83.6	3.3	87.0
Financial Solutions	419.9	349.3	769.2
<b>Total</b>	<b>1,019.1</b>	<b>1,021.0</b>	<b>2,040.0</b>

Figures 1a and 1b show the split of the total VIF by region. The region is determined according to the domicile of the cedent. This is contrary to the split shown in the Tables 3a and 3b above where the split of business into Domestic and Foreign Operations is related to where the business is reported within the Hannover Re group.

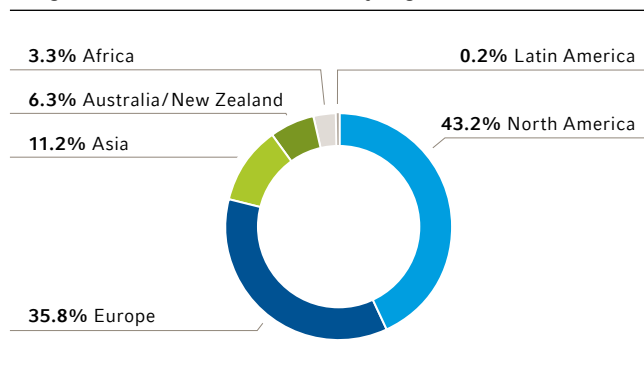
The main drivers for the change in profile by region are

- A reduction in VIF for business originated in Europe due to a statutory reserve release for UK business written in the Irish subsidiary as well as a negative effect arising from lower interest rates. The statutory reserve release is neutral for the overall MCEV because the reduction in VIF is offset by an increase in Free Surplus.
- An increase in VIF for business originated in North America mainly caused by new business written in the US market.

**Figure 1a: Value In-Force (VIF) by region 2014**



**Figure 1b: Value In-Force (VIF) by region 2013**



## 2.4 Financial Options and Guarantees, Look Through and Pension Deficits

### 2.4.1 Financial Options and Guarantees

The time value of Financial Options and Guarantees (FOGs) in Hannover Re Life and Health's portfolio originates from the US market and is mainly due to guarantees under interest-sensitive products. The value of FOGs shown for the Domestic Operations stems from the internal retrocessions from the US subsidiary. The other treaties with interest guarantees either have assets matching the liabilities or are not material.

A summary of the FOGs is shown in Table 4.

The main reasons for the increase in FOGs are the lower interest rates as well as a change in modelling dynamic management interaction.

**Table 4: Time Value of Financial Options and Guarantees (FOGs)**

in EUR million	2014	2013
Domestic Operations	4.7	1.6
Foreign Operations	4.6	2.3
<b>Total</b>	<b>9.3</b>	<b>4.0</b>
in % of Market Consistent Embedded Value (MCEV)	0.2%	0.1%

### 2.4.2 Participating Business

Hannover Re L&H has a few reinsurance treaties where the returns to the reinsurer are dependent on the policyholder profit participation in the underlying products. The gross

written premium and the contribution to the VIF from these treaties are not material. The profit participation elements have therefore not been modelled explicitly.

### 2.4.3 Look Through

The level of services provided by affiliated companies within Hannover Re is not material. Consequently, the MCEV calculations do not explicitly allow for the profits generated within such service companies.

### 2.4.4 Pension Deficits

Pension liabilities for the majority of the pension obligations are based on a defined contribution scheme or reinsured outside of the group. As a result of this Hannover Re L&H has no material Pension Deficits. Pension Deficits only arise from a small part of Hannover Re L&H's pension liabilities. They are determined as the difference between the respective IFRS and statutory pension liability.

**Table 5: Pension Deficits**

in EUR million	2014	2013
Domestic Operations	2.0	0.0

## 3. New Business

### 3.1 Value of New Business

The Value of New Business (VNB) for the year 2014 is shown in Table 6.

The new business contribution in 2014 for the Domestic Operations is driven by Regular Premium Annuity Treaties (RPATs) in the UK and France as well as profitable business written in

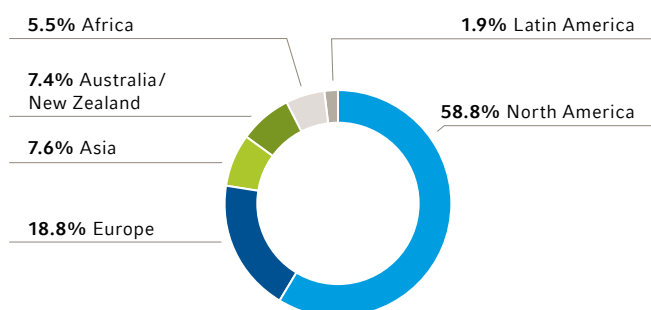
the branches. The new business value for the Foreign Operations mainly stems from traditional US mortality business and structured Yearly Renewable Term (YRT) transactions written by the US and Irish subsidiaries.

**Table 6: Value of New Business (VNB)**

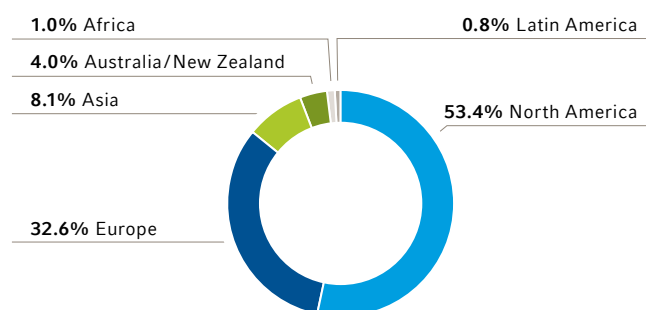
in EUR million	Domestic Operations	Foreign Operations	Total
Profit/Loss on New Business during year (P/L)	(76.4)	9.8	(66.6)
Present Value of New Business Profits (PVNB)	256.2	377.8	634.0
Cost of Residual Non-Hedgeable Risks (CoRNHR)	(69.3)	(32.0)	(101.3)
Frictional Costs of Required Capital (FCoRC)	(8.1)	(9.7)	(17.8)
Financial Options and Guarantees (FOGs)	0.0	0.0	0.0
<b>Value of New Business (VNB)</b>	<b>102.4</b>	<b>346.0</b>	<b>448.4</b>

Figures 2a and 2b show the split of the total VNB by region. The region is determined according to the domicile of the cedent.

**Figure 2a: Value of New Business (VNB) by region 2014**



**Figure 2b: Value of New Business (VNB) by region 2013**





## 3.2 New Business Margins

The New Business Margin (NBM) and the Annual Premium Equivalent Margin (APEM) are defined as the VNB in percent of the new business premiums (New Business Premium in 2014 (NBP) plus Present Value of New Business Premiums (PVNBP)) and in percent of the Annual Premium Equivalent (APE), respectively. Table 7 shows the New Business Margins separately for the Domestic and Foreign Operations.

The New Business Margin in total remains stable against last year. In the Domestic Operations, several Regular Premium Annuity Treaties (RPATs) considerably increased the present value of new business premium. The New Business Margin for the Foreign Operations is dominated by the subsidiaries in Ireland, Bermuda and in the US, where for a significant amount of new business the premiums in the calculation of the margins are set equal to the fees.

**Table 7: New Business Margins**

in EUR million	Domestic Operations	Foreign Operations	Total
Value of New Business (VNB)	102.4	346.0	448.4
New Business Premium in 2014 (NBP)	1,660.3	167.0	1,827.3
Present Value of New Business Premiums (PVNBP)	6,365.8	2,424.2	8,790.0
New Business Regular Premium (NBRP)	1,178.7	272.4	1,451.1
New Business Single Premium (NBSP)	493.8	0.0	493.8
<b>New Business Margin (NBM)<sup>1</sup></b>	<b>1.3%</b>	<b>13.4%</b>	<b>4.2%</b>
<b>Annual Premium Equivalent Margin (APEM)<sup>1</sup></b>	<b>8.3%</b>	<b>127.0%</b>	<b>29.9%</b>

<sup>1</sup> The statutory accounting principles in Bermuda and Ireland are similar to IFRS, i.e. deposit accounting treaties and similar arrangements are shown with zero premium in the local financial statements. The premiums shown above also include the fees under these treaties.

## 4. Analysis of Earnings

The following table shows the key drivers for the change in the Market Consistent Embedded Value (MCEV) from the beginning to the end of the reporting year.

**Table 8: Analysis of Market Consistent Embedded Value (MCEV) Earnings**

	Before consolidation				After consolidation
	Free Surplus	Required Capital	Value In-Force	Market Consistent Embedded Value	Market Consistent Embedded Value
in EUR million					
<b>Opening Market Consistent Embedded Value (MCEV)</b>	<b>1,248.4</b>	<b>1,627.4</b>	<b>2,040.0</b>	<b>4,915.9</b>	<b>3,675.1</b>
Opening adjustments	120.9	36.8	8.4	166.1	(44.8)
Capital Injection	0.0	0.0	0.0	0.0	0.0
Dividend payments	210.9	0.0	0.0	210.9	0.0
Other implications	(90.1)	36.8	8.4	(44.8)	(44.8)
<b>Adjusted opening Market Consistent Embedded Value (MCEV)</b>	<b>1,369.3</b>	<b>1,664.2</b>	<b>2,048.5</b>	<b>5,082.0</b>	<b>3,630.3</b>
Value of New Business (VNB)	(509.3)	442.7	514.9	448.4	448.4
Expected existing business contribution (reference rate)	4.9	10.3	73.9	89.1	85.2
Expected existing business contribution (in excess of reference rate)	9.0	13.0	0.0	22.0	21.5
Transfers from Value In-Force (VIF) and Required Capital (RC) to Free Surplus (FS)	648.2	(459.9)	(188.3)	0.0	0.0
Experience variances	(198.8)	3.9	203.3	8.5	(8.6)
Assumption changes	40.5	(41.6)	(133.3)	(134.4)	(134.4)
Other operating variance	(25.1)	0.0	(63.1)	(88.2)	(88.2)
Model changes	(25.1)	0.0	(63.1)	(88.2)	(88.2)
Other operating variance	0.0	0.0	0.0	0.0	0.0
<b>Operating MCEV earnings</b>	<b>(30.5)</b>	<b>(31.6)</b>	<b>407.5</b>	<b>345.3</b>	<b>323.8</b>
Economic variances	267.1	22.1	(92.3)	197.0	201.4
Other non-operating variance	(12.1)	12.1	(0.1)	(0.1)	(0.1)
<b>Total MCEV earnings</b>	<b>224.5</b>	<b>2.6</b>	<b>315.1</b>	<b>542.2</b>	<b>525.1</b>
<b>Closing adjustments</b>	<b>(60.3)</b>	<b>36.6</b>	<b>204.7</b>	<b>181.1</b>	<b>119.5</b>
Capital injection	121.2	0.0	0.0	121.2	119.5
Dividend payments	(162.1)	0.0	0.0	(162.1)	(207.3)
Change in currency exchange rates	(19.4)	36.6	204.7	221.9	207.4
<b>Closing Market Consistent Embedded Value (MCEV)</b>	<b>1,533.5</b>	<b>1,703.4</b>	<b>2,568.3</b>	<b>5,805.2</b>	<b>4,274.9</b>

## 4.1 Opening Adjustments

### Dividend payments

The consolidation process for the UK branch was adjusted in line with the internal statutory segmentation. As a consequence, the dividends paid by the UK branch last year are now shown in the Shareholder Net Worth (SNW) of Domestic Operations and removed in the consolidation. The overall effect is neutral.

Additionally, the dividends paid by the subsidiary in Bermuda to Hannover Rück SE last year are now shown under Foreign Operations and removed in the consolidation.

### Other Implications

The internal retrocession agreement between Hannover Rück SE and E+S Rück was recaptured as at 1 January 2014. This recapture does not have a neutral impact on the MCEV because the figures shown are after minorities and the bridge financing decreased (for details see Section 6. "Reconciliation of IFRS Equity to Market Consistent Embedded Value/Embedded Value not Recognised"). The latter is a result of the offsetting of the transfer price and the reserve transmission.

Additionally, the market value of assets for Hannover Rück L&H was restated. Smaller effects arise from a slight change in the minority share of E+S Rück.

## 4.2 Expected Existing Business Contribution

### At the reference rate

This includes the unwinding for one year of the discount rates (i. e. the reference rates) in respect of the Value In-Force (VIF) and a release from risk for the Cost of Residual Non Hedgeable

Risks (CoRNHR) and the Frictional Costs of Required Capital (FCoRC). The expected contribution on the Free Surplus (FS) and the Required Capital (RC) is equal to the reference rates less tax.

### In excess of the reference rate

This reflects the management's best estimate of the expected investment returns in the year to the valuation date.

## 4.3 Experience Variances

The overall experience variances are slightly negative. The negative change in the SNW is partly due to statutory reserve strengthening for US mortality business. This is neutral for the MCEV because the VIF increases by the same amount. Additionally, higher claims and lower net premiums for US mortality business than expected as well as the extension of a large UK financing treaty lead to a reduction in SNW. For the latter it was expected that the treaty would be recaptured in

2014 leading to repayment of the financing amount. As this was not the case, the impact on the SNW is negative and the impact on the VIF is positive.

The consolidation adjustment applied to the experience variances ensures that the change in capital for the UK branch is not double counted.

## 4.4 Assumption Changes

The negative change in the VIF is mainly driven by mortality and lapse assumption changes for US post level term business.

## 4.5 Other Operating Variance

### Change of model

The negative effect on the SNW reflects a change in contract boundaries for certain business written by the branches as well as by the Australian subsidiary to improve consistency with future Solvency II reporting.

The negative effect on the VIF can be explained by various model improvements. Certain smaller portfolios of US mortality business are now modelled more granularly and were

updated to allow for the latest in force data. Additionally, contract boundaries were changed for certain business written by the branches and the Australian subsidiary. For certain US business dynamic management interactions were removed in the base run to be consistent with Solvency II.

These negative effects are partly offset by a change in expense allocation and expense drivers for the whole US business.

## 4.6 Economic Variances

The main driver for the positive economic variances of the SNW is higher than expected investment returns for the current year. These returns refer not only to the investment returns earned on the SNW, but also to the returns earned on the assets backing liabilities.

The negative economic variances for the VIF result from the overall effect of the reduction in interest rates during 2014. The lower interest rates have a positive impact on the Present Value

of Future Profits (PVFP) due to lower discounting. However, the negative effects from lower future investment returns as well as higher CoRNHR exceed the discounting effect.

Additionally, the increase in book-to-market value adjustments is shown under this position. These changes have an impact on both, SNW and VIF.

## 4.7 Other Non Operating Variance

Changes to the regulatory capital requirements in Bermuda lead to a slight overall increase in the RC and a corresponding decrease in the FS. The increase in RC also causes an increase of FCoRC.

## 4.8 Closing Adjustments

### Capital injection

The capital injection includes the increase in the intra-company bridge financing (for details see Section 6 “Reconciliation of IFRS Equity to Market Consistent Embedded Value/Embedded Value not Recognised”).

### Dividend payments

The dividend payments show the portion of the dividends paid by Hannover Rück SE which was allocated to Hannover Re Life and Health.

This position also includes an adjustment to allow for the timing differences between the payment and receipt of dividends from the Bermudian and US subsidiary to Hannover Rück SE.

### Change in currency exchange rates

The Euro has weakened against many currencies yielding a strong positive result.

## 5. Sensitivities

### 5.1 Sensitivities of Market Consistent Embedded Value

Table 9 shows the sensitivity of the Market Consistent Embedded Value (MCEV) to changes in specified economic and non-economic assumptions. The sensitivities are described in the Appendix “Sensitivities”. Table 9 shows the absolute deviation from the base value. The sensitivities do not allow for the impact of the sensitivity on the economic capital requirements used to determine the Cost of Residual Non Hedgeable Risks (CoRNHR).

Only non-symmetric sensitivities are shown in both directions.

For Domestic Operations changes to the portfolio of the UK branch and model changes lead to a turnaround in interest rate sensitivities compared to the 2013 sensitivity. For Foreign Operations the impact is similar to the 2013 sensitivities. As a result, the overall interest rate exposure decreased for the MCEV.

The base MCEV does not include any liquidity premium. Therefore, the sensitivity “Liquidity premium +10 bps” implies a 10 bps liquidity premium applied to all treaties where a liquidity premium could be earned.

The portfolio and model changes in the UK branch lead to an increased impact of a Liquidity Premium sensitivity for the Domestic Operations. For Foreign Operations this sensitivity has an immaterial impact.

The overall lapse sensitivity decreases in comparison to last year mainly due to assumption changes for the Foreign Operations. This can be explained by post level term assumption changes for certain US business (also refer to section 4.4 “Assumption Changes”).

The relative variation of the overall mortality/morbidity sensitivities is nearly unchanged in comparison to last year. However, the mortality/morbidity sensitivities for annuity business increased slightly in comparison to 2013 because of new business written in 2014 as well as the extension of the projection horizon for longevity business.

**Table 9: Sensitivities of the Market Consistent Embedded Value (MCEV)**

in EUR million	Domestic Operations	Foreign Operations	Total	After consolidation
				Total
<b>Basic Market Consistent Embedded Value (MCEV)</b>	<b>2,607.3</b>	<b>3,197.9</b>	<b>5,805.2</b>	<b>4,274.9</b>
<b>Sensitivities to economic assumptions</b>				
Interest rate environment +100 bps	28.7	(246.3)	(217.6)	(217.6)
Interest rate environment -100 bps	(20.8)	307.7	286.9	286.9
Equity/property market value -10%	(1.2)	0.0	(1.2)	(1.2)
Swaption implied volatilities +25%	(5.7)	(2.0)	(7.6)	(7.6)
Liquidity premium +10 bps	29.9	(0.1)	29.8	29.8
<b>Sensitivities to non-economic assumptions</b>				
Expenses -10%	34.8	53.3	88.0	88.0
Lapse +10%	(37.1)	(212.1)	(249.2)	(249.2)
Lapse -10%	46.4	253.9	300.3	300.3
Mortality/morbidity +5%	(40.7)	(927.5)	(968.2)	(968.2)
Life/disability business only	(295.0)	(928.6)	(1,223.6)	(1,223.6)
Annuity business only	254.3	1.1	255.4	255.4
Mortality/morbidity -5%	17.3	946.0	963.3	963.3
Life/disability business only	288.2	947.1	1,235.3	1,235.3
Annuity business only	(270.9)	(1.1)	(272.0)	(272.0)
<b>Required Capital (RC)</b>				
Required Capital (RC) = Minimum solvency capital	0.0	31.1	31.1	31.1

## 5.2 Sensitivities of Value of New Business

Sensitivities have also been calculated for the Value of New Business (VNB). The following table shows the absolute deviation from the base value.

**Table 10: Sensitivities of Value of New Business (VNB)**

in EUR million	Domestic Operations	Foreign Operations	After consolidation
			Total
<b>Basic Value of new business (VNB)</b>	<b>102.4</b>	<b>346.0</b>	<b>448.4</b>
<b>Sensitivities to economic assumptions</b>			
Interest rate environment +100 bps	(6.2)	(29.9)	(36.1)
Interest rate environment -100 bps	4.0	33.8	37.7
Equity/property market value -10%	0.0	0.0	0.0
Swaption implied volatilities +25%	0.0	0.0	0.0
Liquidity premium +10 bps	2.0	(1.8)	0.1
<b>Sensitivities to non-economic assumptions</b>			
Expenses -10%	6.0	4.6	10.6
Lapse +10%	(8.0)	(19.6)	(27.6)
Lapse -10%	7.7	20.0	27.7
Mortality/morbidity +5%	3.2	(48.7)	(45.5)
Life/disability business only	(46.9)	(48.9)	(95.8)
Annuity business only	50.1	0.2	50.4
Mortality/morbidity -5%	(8.9)	48.9	40.0
Life/disability business only	44.3	49.1	93.4
Annuity business only	(53.2)	(0.2)	(53.4)
<b>Required Capital (RC)</b>			
Required Capital (RC) = Minimum solvency capital	0.0	3.1	3.1

## 6. Reconciliation of IFRS Equity to Market Consistent Embedded Value/Embedded Value not Recognised

One of Hannover Re Life and Health's (Hannover Re L&H) strategic business fields is writing financing reinsurance business. The acquisition of large volumes of financing business is only possible due to the financial support provided by the property and casualty segment of Hannover Re.

Within the segmental reporting this historic financing is shown as an inter-segmental liability from the life and health segment to the property and casualty segment ("bridge financing"). The impact of the bridge financing on the Hannover Re Group balance sheet is neutral as the liability for the life and health segment and the asset for the property and casualty segment cancel each other out.

Bridge financing on an after-minorities basis is EUR 1,024.3 million in 2014 compared to EUR 900.0 million in 2013. Bridge financing is shown as an asset for the property and casualty segment in the IFRS segment reporting. It is, however, not treated as a liability within the embedded value for the life and health business because the Market Consistent Embedded Value (MCEV) is based on local statutory accounts.

The "intra-company surplus notes" are the subordinated debt issued by the property and casualty segment to the Hannover Re L&H subsidiaries. Under IFRS the property and casualty segment does not show this subordinated debt as an asset and therefore the subordinated debt is included in the IFRS equity for the life and health segment. A part of this subordinated debt is included in the Shareholder Net Worth (SNW) of the US subsidiary, and therefore in the MCEV. The subordinated debt that is not included in the SNW has to be deducted to achieve the reconciliation between the IFRS equity and the MCEV.

Table 11 shows the reconciliation of the IFRS equity for the life and health segment to the MCEV. The Embedded Value not Recognised (EVNR) quantifies the shareholder interest in the life and health business in excess of the IFRS equity. The IFRS equity for a participation in which Hannover Re's share is smaller than 50% is eliminated from the IFRS equity because this company has been excluded from Hannover Re's MCEV results. The amount reported under "Other adjustments" includes the elimination of the capital of the UK branch to avoid double counting.

**Table 11: Reconciliation and Embedded Value not Recognised (EVNR) – after consolidation**

in EUR million	2014	2013
<b>IFRS equity before minorities</b>	<b>2,483.0</b>	<b>2,062.7</b>
thereof minority capital	54.4	50.4
<b>IFRS equity</b>	<b>2,428.6</b>	<b>2,012.2</b>
Intra-company surplus notes	(287.6)	(247.1)
Bridge financing	1,024.3	900.0
Elimination of minor company shares	(5.9)	0.0
<b>Adjusted IFRS equity</b>	<b>3,159.3</b>	<b>2,665.2</b>
Valuation differences	(1,183.8)	(1,038.1)
Value In-Force (VIF)	2,568.3	2,040.0
Other adjustments	(268.8)	8.0
<b>Embedded Value not Recognised (EVNR)</b>	<b>1,115.6</b>	<b>1,009.9</b>
<b>Market Consistent Embedded Value (MCEV)</b>	<b>4,274.9</b>	<b>3,675.1</b>

# 7. Assumptions

## 7.1 Economic Assumptions

### 7.1.1 Swap rates

The reference rates have been calibrated to the swap curves as shown below. A risk-neutral approach has been applied and all asset classes are assumed to yield the reference rates.

The reference rates do not include any liquidity premium. The interest rates are adjusted by a credit risk adjustment according to EIOPA Solvency II requirements.

**Table 12: Swap yield curves as at year end 2014**

in %	EUR	USD	GBP	AUD	ZAR
1 Year	0.06	0.34	0.64	2.41	6.25
2 Years	0.08	0.80	0.83	2.29	6.63
3 Years	0.12	1.20	1.04	2.26	6.87
4 Years	0.18	1.48	1.21	2.31	7.05
5 Years	0.26	1.68	1.35	2.41	7.20
6 Years	0.34	1.83	1.46	2.53	7.34
7 Years	0.43	1.95	1.55	2.65	7.47
8 Years	0.52	2.05	1.62	2.74	7.58
9 Years	0.62	2.13	1.69	2.82	7.69
10 Years	0.71	2.19	1.75	2.90	7.79
20 Years	1.22	2.54	2.09	3.43	8.29
30 Years	1.71	2.62	2.14	3.58	8.17

For the Market Consistent Embedded Value (MCEV) 2013 the following swap rates were used.

**Table 13: Swap yield curves as at year end 2013**

in %	EUR	USD	GBP	AUD	ZAR
1 Year	0.40	0.31	0.71	2.66	5.55
2 Years	0.54	0.48	1.02	2.96	6.12
3 Years	0.78	0.86	1.44	3.36	6.63
4 Years	1.00	1.33	1.82	3.51	7.05
5 Years	1.26	1.79	2.14	3.77	7.36
6 Years	1.49	2.17	2.38	4.01	7.62
7 Years	1.69	2.47	2.58	4.19	7.83
8 Years	1.86	2.71	2.74	4.34	7.99
9 Years	2.02	2.92	2.87	4.47	8.12
10 Years	2.16	3.09	2.99	4.59	8.24
20 Years	2.72	3.80	3.41	5.00	8.82
30 Years	2.93	3.93	3.43	5.01	8.81



## 7.1.2 Volatilities

Hannover Re Life and Health's (Hannover Re L&H) portfolio includes Financial Options and Guarantees (FOGs) in the United States. The economic scenarios for calculating the FOGs were generated using the 2 Factor Black-Karasinski Model with 1,000 scenarios.

The economic scenarios were calibrated using the following swaption implied volatilities. The FOGs were calculated based on economic assumptions as at the end of September 2014. The result was adjusted to reflect the change in the market between 30 September 2014 and 31 December 2014.

**Table 14: US Dollar swaption volatilities as at 30 September 2014**

in %	Swap term										
option period	1 year	2 years	3 years	4 years	5 years	7 years	10 years	15 years	20 years	25 years	30 years
1 year	53.06	44.11	38.86	35.55	33.48	30.11	26.83	23.94	22.87	22.23	21.65
2 years	41.29	36.56	34.11	32.28	30.76	28.61	26.23	23.68	22.44	21.86	21.33
3 years	36.12	33.75	31.96	30.40	29.06	27.39	25.56	23.08	21.92	21.37	20.98
4 years	33.28	31.50	30.06	28.82	27.67	26.27	24.80	22.30	21.37	20.91	20.51
5 years	30.62	28.99	28.08	27.23	26.40	25.17	24.01	21.68	20.69	20.27	19.92
7 years	27.60	26.34	25.61	24.91	24.22	23.47	22.67	20.50	19.55	19.22	18.87
10 years	23.69	23.14	22.62	22.22	21.70	21.28	20.47	19.19	17.87	17.63	17.45
15 years	20.43	19.75	19.30	18.84	18.45	18.35	18.02	16.53	15.87	15.66	15.66
20 years	17.91	17.36	17.13	16.91	16.72	16.58	16.28	15.03	14.72	14.49	14.36
25 years	16.53	16.24	16.25	16.25	16.26	16.28	16.28	15.08	15.14	15.09	13.15
30 years	15.61	15.78	15.91	16.04	16.12	16.15	16.12	15.38	15.70	15.70	15.12

The FOGs for the MCEV 2013 were calculated based on volatilities as at 30 September 2013. These volatilities are also model-based.

**Table 15: US Dollar swaption volatilities as at 30 September 2013**

in %	Swap term										
option period	1 year	2 years	3 years	4 years	5 years	7 years	10 years	15 years	20 years	25 years	30 years
1 year	24.49	24.10	23.66	23.23	22.72	21.69	20.25	18.24	16.77	18.16	17.24
2 years	24.16	23.92	23.50	23.06	22.59	21.66	20.35	18.54	17.16	15.48	14.60
3 years	24.02	23.65	23.25	22.83	22.41	21.56	20.36	18.66	17.35	16.95	16.09
4 years	23.90	23.55	23.18	22.77	22.36	21.54	20.36	18.67	17.39	16.21	15.39
5 years	23.57	23.23	22.86	22.48	22.09	21.31	20.18	18.56	17.31	16.70	15.87
7 years	22.88	22.52	22.16	21.80	21.43	20.70	19.62	18.08	16.88	16.20	15.37
10 years	21.90	21.55	21.18	20.81	20.43	19.67	18.58	17.14	16.07	15.16	14.37
15 years	20.09	19.72	19.34	18.96	18.58	17.84	17.02	15.70	14.55	13.60	12.79
20 years	18.48	18.09	17.73	17.44	17.17	16.62	15.78	14.45	13.29	12.32	11.56
25 years	17.27	16.93	16.58	16.22	15.87	15.27	14.54	13.33	12.22	11.30	10.54
30 years	16.16	15.87	15.57	15.27	14.96	14.32	13.45	12.32	11.30	10.43	9.72

### 7.1.3 Currency Exchange Rates

The following closing values were used for consolidation purposes:

**Table 16: Equivalent in EUR of 1 unit of the original currency**

Year	USD	GBP	AUD	ZAR
2014	0.82271	1.27799	0.67207	0.07072
2013	0.72644	1.19663	0.64462	0.06926

### 7.1.4 Credit Risk on Assets

The credit risk on assets is reflected in the initial market value of the assets. All assets are then assumed to earn risk free returns.

### 7.1.5 Counterparty Risk

Counterparty risk under the reinsurance treaties is reflected within the Cost of Residual Non-Hedgeable Risks (CoRNHR).

These risks mainly reflect the possible loss of unamortised initial financing in case the ceding company becomes insolvent.

### 7.1.6 Tax

The currently applicable average tax rates are:

**Table 17: Tax rates in percentages**

Australia	China	Bahrain Life	Bahrain Takaful	Bermuda
30.00	25.00	15.83	1.60	0.00
France	Germany	Hong Kong	Ireland	Korea
38.00	31.93	21.26	12.50	22.00
Malaysia	South Africa	Sweden	UK	US
25.00	33.01	22.00	20.00	33.13

The projections allow for tax losses to be carried forward.

## 7.2 Non-Economic Assumptions

### 7.2.1 Cost of Residual Non Hedgeable Risks

The cost of capital approach is described in Appendix I – “Methodology”. The capital charge was set up to 4.5% and the capital was determined at the 99.5% confidence level.

### 7.2.2 Mortality Improvements

Mortality improvement assumptions were used for the Domestic Operations’ annuity business in the UK market and also for certain mortality risk business, mainly reinsurance treaties covering

UK term assurances and traditional risk reinsurance business in the United States.

## 7.3 Expenses

The total administration expenses for the year 2014 have been taken into account in deriving the expense assumptions. The expenses have been allocated to the treaties and projected into the future allowing for expense inflation.

# Appendix

## I. Methodology

Hannover Re has adopted the MCEV Principles. The embedded value calculations are performed using market consistent economic assumptions. Investment returns for all asset classes

are assumed to be equal to the reference rates and explicit allowance is made to cover the Cost of Residual Non Hedgeable Risks (CoRNHR).

### General Assumptions

- All calculations are based on the going concern approach, i. e. all entities remain in operation and continue writing new business.
- The Market Consistent Embedded Value (MCEV) is calculated using best estimate assumptions.
- All values are post-tax.
- Expense inflation was recognised for the MCEV calculations.
- Overhead expenses are included within the administrative expenses.
- No future new business is included in the calculations.
- No productivity gains are considered.

### New Business

New business is defined as new reinsurance treaties written or new policies written under existing treaties during the year. External retrocession of new business treaties is assumed to be negative new business.

The Value of New Business (VNB) is calculated at the point of sale and includes the profit or loss during the year in which the new business was sold.

### Shareholder Net Worth

The Shareholder Net Worth (SNW) corresponds to the consolidated market value of the assets backing shareholders' funds after deduction of intangible assets, subordinated debt and any other element accounted for the in-force business. The SNW is divided into Required Capital (RC) and Free Surplus (FS).

Hannover Re holds 100% of the shares of all life and health subsidiaries with the exception of the life and health segment of E+S Rück in which the shareholding is 64.79%.

The SNW is derived from the consolidation of the Net Asset Values of the following companies:

Hannover Re and E+S Rück are both composite reinsurance companies writing life and property and casualty reinsurance business. The Net Asset Value of the companies included in the scope of the MCEV has been derived by making adjustments to the IFRS equity for the life and health segment.

For the subsidiary in Ireland, the SNW is derived separately for the life and health and property and casualty segments.

- Domestic Operations:
  - Hannover Rück SE (Hannover Re) – life and health segment
  - E+S Rückversicherung AG (E+S Rück) – life and health segment
- Foreign Operations (life and health subsidiaries):
  - Hannover Life Reassurance Africa Ltd, Johannesburg
  - Hannover Life Reassurance Company of America, Orlando
  - Hannover Life Re of Australasia Ltd, Sydney
  - Hannover Life Reassurance Bermuda Ltd, Hamilton
  - The life and health business of Hannover Re (Ireland) Ltd, Dublin

## Required Capital

The RC is the amount of capital required to support covered business, i.e. the market value of the assets attributed to the covered business over and above those required to back liabilities for covered business, the distribution of which to shareholders is restricted.

The RC is always at least equal to the local Statutory Minimum Solvency Margin. The level of the RC for each business centre is set equal to the maximum of:

- The level of capital at which the local regulators are empowered to take action
- The level of capital required by rating agencies (in order to maintain the desired rating)

- The target capital level of the business unit
- Any other level of capital to achieve internal management objectives

The RC was set between 100% and 250% of the local Statutory Minimum Solvency Margin. The RC for the US subsidiary includes intra-company surplus notes from the property and casualty segment to the extent that these are required to meet the target RC.

## Free Surplus

The FS is the market value of any assets allocated to, but not required to support, the covered business.

## Present Value of In-Force Business

The Present Value of In-Force Business (VIF) consists of:

- Present Value of Future Profits (PVFP)
- Time Value of Financial Options and Guarantees (FOGs)
- Cost of Residual Non-Hedgeable Risks (CoRNHR)
- Frictional Costs of Required Capital (FCoRC)

## Present Value of Future Profits

The PVFP is the present value of projected statutory shareholders' profits (net of taxes) from the covered business in-force calculated on a certainty equivalent basis. The discount rates are derived from the reference rates.

## Cost of Residual Non-Hedgeable Risks

The MCEV Principles require an allowance for the cost of non-hedgeable risks not already allowed for in FOGs or PVFP.

The CoRNHR has been determined based on a cost of capital approach using an internal economic capital model. The capital has been determined consistent with a 99.5% confidence level over a one-year time horizon. Diversification benefits have been allowed within the non-hedgeable risks, but not between hedgeable and non hedgeable risks. The economic capital is projected forward using appropriate risk drivers (e.g. the premiums or mathematical reserves) and the present value is calculated using the reference rates.

The CoRNHR covers the following non-financial risks:

- Mortality risk
- Longevity risk
- Morbidity risk
- Disability risk
- Lapse risk
- Expense risk
- Pandemic risk
- Operational risk

as well as the cedents' counterparty risk and non hedgeable financial risks.

## Frictional Costs of Required Capital

The FCoRC are defined as the tax on the projected investment returns and investment costs on assets backing the RC over the projected lifetime of the underlying risks.

## Time Value of Financial Options and Guarantees

The majority of treaties either do not have significant FOGs or the assets and liabilities are well matched. The PVFP for these treaties has been calculated using deterministic projections.

Stochastic models have been used to estimate the FOGs for the US business with minimum interest guarantees. The time value of the FOGs is derived as the difference between PVFP on a certainty equivalent basis and the arithmetic mean of PVFP derived from a large number of stochastic scenarios.

In order to improve run times a simplified stochastic model is used to determine the FOGs. The assets are modelled as cash rather than using a synthetic asset portfolio. This approach increases the volatility of investment returns as well as the duration gap in the model. The simplified model produces a reasonable estimate of the FOGs.

## Sensitivities

### Interest rate environment +/-100 bps

A parallel shift in the risk free yield curve is assumed under this sensitivity. As a consequence current market values of fixed interest assets and future reinvestment rates also change. This

sensitivity is not performed in isolation and there are associated impacts on most of the other economic assumptions.

### Equity/property market value -10%

This sensitivity indicates the impact of a sudden fall in the market values of these assets.

### Swaption implied volatilities +25%

This sensitivity shows the impact of an increase in swaption implied volatilities on the cost of options and guarantees.

### Liquidity Premium +10 bps

This sensitivity shows the impact of a liquidity premium of 10 bps applied to the forward rate for products where a liquidity premium could be earned. As the base run does not include

any liquidity premium, this sensitivity implies a 10 bps liquidity premium applied to all treaties where a liquidity premium could be earned.

### Expenses -10%

This sensitivity applies to the projected level of expenses without a change in the expense inflation.

### Lapse +/-10%

A 10% proportional increase/decrease in lapse rates is applied here, i. e. a multiplicative change in lapse rates.

### Mortality/morbidity +/-5%

The sensitivity has been performed for three different situations:

1. Mortality and Morbidity are proportionately reduced for all classes of business at the same time.

2. The sensitivity is performed only for life, disability, medical insurances and related products.

3. Mortality is changed only for the annuity policies.

## Required Capital

For the sensitivity 'Required Capital = minimum solvency capital' the amount of RC is set equal to the level of solvency capital at which the regulator is empowered to take action.

## II. Glossary

<b>APE</b>	<b>Annual Premium Equivalent</b>
<b>APEM</b>	<b>Annual Premium Equivalent Margin</b>
<b>CoRNHR</b>	<b>Cost of Residual Non-Hedgeable Risks</b> Explicit allowance for residual non-hedgeable financial and non-financial risks
<b>EVNR</b>	<b>Embedded Value not Recognised</b> Shareholder interest in the life and health business in excess of the IFRS equity
<b>FCoRC</b>	<b>Frictional Costs of Required Capital</b> Taxation and cost of asset management on the assets backing the Required Capital
<b>FOGs</b>	<b>Financial Options and Guarantees</b> Time value of financial options und guarantees; determined with stochastic techniques consistent with the methodology and assumptions used in the underlying MCEV
<b>FS</b>	<b>Free Surplus</b> The market value of any capital and surplus allocated to, but not required to support, the in-force covered business at the valuation date
<b>MCEV</b>	<b>Market Consistent Embedded Value</b> Defined as the present value of future distributable earnings of the business in-force plus the portion of capital and surplus that is not needed to support the business in-force; methodology in line with the MCEV Principles of the CFO-Forum
<b>NBM</b>	<b>New Business Margin</b>
<b>NBP</b>	<b>New Business Premium current year</b>
<b>NBRP</b>	<b>New Business Regular Premium</b>
<b>NBSP</b>	<b>New Business Single Premium</b>
<b>P/L(NB)</b>	<b>Profit or Loss on New Business during the year</b>
<b>PVFP</b>	<b>Present Value of Future Profits</b> The present value of future shareholder profits projected to emerge from the assets backing liabilities of the in-force covered business
<b>PVNB</b>	<b>Present Value of New Business Profits</b>
<b>PVNBSP</b>	<b>Present Value of New Business Premium</b>
<b>RC</b>	<b>Required Capital</b> Assets attributed to the covered business over and above those required to back liabilities for covered business, the distribution of which to shareholders is restricted
<b>SNW</b>	<b>Shareholder Net Worth</b> FS plus RC
<b>VIF</b>	<b>Value In-Force</b> The present value of future shareholder profits projected to emerge from the in-force covered business and the assets backing the associated liabilities after allowance for FOGs, CoRNHR and FCoRC
<b>VNB</b>	<b>Value of New Business</b>

### III. Formulae and Abbreviations

<b>MCEV = SNW + VIF</b>	
MCEV	Market Consistent Embedded Value
SNW	Shareholder Net Worth
VIF	Value of In-Force covered business
<b>SNW = FS + RC</b>	
SNW	Shareholder Net Worth
FS	Free Surplus
RC	Required Capital
<b>VIF = PVFP – CoRNHR – FCoRC – FOGs</b>	
VIF	Value of In-Force covered business
PVFP	Present Value of Future Profits based on a certainty equivalent approach including Pension Deficits and Look Through
CoRNHR	Cost of Residual Non-Hedgeable Risks
FCoRC	Frictional Costs of Required Capital
FOGs	Time Value of Financial Options and Guarantees
<b>CoRNHR = CoCF * EC</b>	
CoRNHR	Cost of Residual Non-Hedgeable Risks
CoCF	Cost of Capital Factor (percentage)
EC	Economic Capital (present value) based on the 99.5% percentile confidence level
<b>FOGs = PVFP – Mean Stochastic PVFP</b>	
FOGs	Time Value of Financial Options and Guarantees
PVFP	Present Value of Future Profits based on a certainty equivalent approach including Pension Deficits and Look Through
Mean Stochastic PVFP	Derived from a large number of stochastic scenarios
<b>Return on MCEV = <math>\frac{\text{Closing MCEV} - \text{Closing Adjustments} - \text{Adjusted Opening MCEV}}{\text{Adjusted Opening MCEV}}</math></b>	
<b>VNB = P/L + PVNB – CoRNHR – FCoRC – FOGs</b>	
VNB	Value of New Business
P/L	Profit or Loss on New Business during the current year
PVNB	Present Value of New Business future profits
CoRNHR	Cost of Residual Non-Hedgeable Risks on New Business
FCoRC	Frictional Costs of Required Capital on New Business
FOGs	Value of FOGs on New Business
<b>NBM = <math>\frac{\text{VNB}}{\text{NBP} + \text{PVNBP}}</math></b>	
NBM	New Business Margin
VNB	Value of New Business
NBP	New Business Premium during the current year
PVNBP	Present Value of New Business future Premium
<b>APEM = <math>\frac{\text{VNB}}{\text{APE}} = \frac{\text{VNB}}{\text{NBRP} + 10\% \text{ NBSP}}</math></b>	
APEM	Annual Premium Equivalent Margin
VNB	Value of New Business
APE	Annual Premium Equivalent
NBRP	New Business Regular Premium
NBSP	New Business Single Premium

## IV. Overview of Domestic Operations

### Covered business Domestic Operations

Hannover Rück SE, Hannover  
E+S Rückversicherung AG, Hannover  
Hannover Rück SE Succursale Française, Paris  
Hannover Rück SE Tyskland Filial, Stockholm  
Hannover Rück SE Malaysian Branch, Kuala Lumpur  
Hannover Rück SE Hong Kong Branch, Hong Kong  
Hannover Rück SE Korea Branch, Seoul  
Hannover Rück SE Shanghai Branch, Shanghai  
Hannover Re Takaful B.S.C. (c), Bahrain  
Hannover Re UK Life Branch, London

## V. Overview of Foreign Operations

### Covered business Foreign Operations

Hannover Life Reassurance Africa Ltd, Johannesburg  
Hannover Life Reassurance Company of America, Orlando  
Hannover Life Re of Australasia Ltd, Sydney  
Hannover Life Reassurance Bermuda Ltd, Hamilton  
The life and health business of Hannover Re (Ireland) Ltd, Dublin

## VI. Summary of Tables and Figures

Table 1: Performance Market Consistent Embedded Value (MCEV)  
Table 2: Market Consistent Embedded Value (MCEV) 2014 and 2013  
Table 3a: Value In-Force (VIF) by type of risk covered 2014  
Table 3b: Value In-Force (VIF) by type of risk covered 2013  
Table 4: Time Value of Financial Options and Guarantees (FOGs)  
Table 5: Pension Deficits  
Table 6: Value of New Business (VNB)  
Table 7: New Business Margins  
Table 8: Analysis of Market Consistent Embedded Value (MCEV) Earnings  
Table 9: Sensitivities of the Market Consistent Embedded Value (MCEV)  
Table 10: Sensitivities of Value of New Business (VNB)  
Table 11: Reconciliation and Embedded Value not Recognised (EVNR) – after consolidation  
Table 12: Swap yield curves as at year end 2014  
Table 13: Swap yield curves as at year end 2013  
Table 14: US Dollar swaption volatilities as at 30 September 2014  
Table 15: US Dollar swaption volatilities as at 30 September 2013  
Table 16: Equivalent in EUR of 1 unit of the original currency  
Table 17: Tax rates in percentages  
Figure 1a: Value In-Force (VIF) by region 2014  
Figure 1b: Value In-Force (VIF) by region 2013  
Figure 2a: Value of New Business (VNB) by region 2014  
Figure 2b: Value of New Business (VNB) by region 2013



## VII. Disclaimer

The information provided in this report in no way whatsoever constitutes legal, accounting, tax, or other professional advice.

While Hannover Re has endeavoured to include in this report information it believes to be reliable, complete and up-to-date, the company does not make any representation or warranty, express or implied, as to the accuracy, completeness or updated status of such information.

Some of the information in this report may be forward-looking information or information on future expectations based on currently available information. Such information naturally is subject to risks and uncertainties. Factors such as the development of general economic conditions, future market conditions, unusual catastrophic loss events, changes in the

capital markets and other circumstances may cause the actual events or results to be materially different from those anticipated by such information. Hannover Re assumes no obligation to update any forward-looking information contained in this report.

It should be noted that all calculations are based on data reported by the ceding companies of Hannover Re and its subsidiaries, mainly bulk data, which do not allow exact specifications as to the portfolio composition.

Therefore, in no case whatsoever will Hannover Re and its affiliated companies or directors, officers or employees be liable to anyone for any decision made or action taken in conjunction with the information in this report or for any related damages.

## VIII. Letter of Opinion (B&W Deloitte GmbH)

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6 March 2015

### **Review of the Market Consistent Embedded Value of the Life & Health segment of Hannover Rück SE as at 31st December 2014**

The Life and Health Reinsurance Business of Hannover Rück SE (“Hannover Re”), as reported under the “life and health reinsurance” segment in the financial statements, is written by Hannover Rück SE and E+S Rückversicherung AG, together with their subsidiaries, branches and offices (together “Hannover Re Life and Health” or “Hannover Re LGH”).

Hannover Re has determined the Market Consistent Embedded Value (MCEV) of Hannover Re L&H for 2014 as set out in the Statements of Embedded Value (together “the Statements”) on a basis consistent with the requirements of the Market Consistent Embedded Value Principles<sup>® (1)</sup> published by the CFO Forum (the “MCEV Principles”). These Statements, the methodologies applied and the assumptions underlying them are each the sole responsibility of the Board of Directors of Hannover Re.

The Statements have been prepared by Hannover Re as the aggregate of separate Market Consistent Embedded Values determined for each significant operating unit making due allowance for inter group transactions including retrocessions, any minority interests together with the elimination of the book values of the businesses for which a Market Consistent Embedded Value has been calculated.

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The calculation of embedded values necessarily makes numerous assumptions with respect to economic conditions, operating conditions, taxes, and other matters, many of which are beyond Hannover Re's control. Although the assumptions used represent estimates which the Directors believe are together reasonable, actual experience in future may vary from that assumed in the calculation of MCEV and such variation may be material. Deviations from assumed experience are normal and are to be expected.

The resulting MCEV does not purport to be a market valuation of Hannover Re and should not be interpreted in that manner since it does not purport to encompass all of the many factors that may bear upon a market value.

### **Scope of B&W Deloitte's Review**

We have reviewed the methodology adopted and assumptions and calculations made by the Directors to determine the MCEV for the businesses concerned and their aggregation into the consolidated MCEV of Hannover Re L&H. The non hedgeable risk based capital, which is the basis for the calculation of the cost of residual non hedgeable risks, has been determined by Hannover Re L&H with an internal capital model. We have not reviewed the internal model or the level of non hedgeable risk based capital. Hannover Re has decided to not publish the Group Embedded Value as required by the MCEV Principles.

Our work was conducted in accordance with generally accepted actuarial practices and processes. It comprised a combination of such reasonableness checks, analytical review and checks of clerical accuracy as we considered necessary to provide reasonable assurance that the Statements have been compiled free of significant error. However, we have relied upon the completeness and accuracy of the data and information supplied by Hannover Rück SE and its subsidiaries, including the book value of the net assets as disclosed in Hannover Rück SE's financial statements on which the Statements are based. Accordingly, as is customary, we have not audited, verified or otherwise substantiated that data and information.

### **Opinion**

In our opinion, with the exception noted in the scope of the B&W Deloitte review noted above, the MCEV methodology as approved by the Directors of Hannover Rück SE is appropriate, the assumptions taken together are reasonable and the estimate of the consolidated Market Consistent Embedded Value have been accurately compiled consistent with the "MCEV Principles".

This report is made solely to Hannover Rück SE's Executive Management as a body. To the fullest extent permitted by law we do not accept or assume responsibility to anyone other than Hannover Rück SE for our work in respect of this report or for the conclusions that we have reached.

Yours faithfully



B&W Deloitte GmbH

Sitz der Gesellschaft: Köln  
Amtsgericht Köln, HRB 27972  
Geschäftsführer:  
Bharat Bhayani  
Dr. Helmut Hofmeier  
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