Zurich Insurance Group

Embedded value report

Annual results 2018

Embedded value report

Zurich produces and reports embedded value in accordance with the Market Consistent Embedded Value (MCEV) Principles and Guidance issued by the European Insurance CFO Forum (CFO Forum) in April 2016. MCEV provides an economic view of the value of the life insurance business from a shareholders' perspective without any allowance for the value attributable to future new business, to support financial management and strategic decision making.

Contents

This report describes the development of embedded value of the Life business including the life insurance business in the Farmers segment (Farmers Life), which is reported under the Farmers section in the Group's Annual Report of the Zurich Insurance Group for the year ended December 31, 2018. For further details, see section 1 of this report.

The opening embedded value for 2018 has been adjusted to reflect changes in the covered business as a result of the recognition of new portfolios in Asia Pacific and Latin America. For further details, see section 2 of this report.

1. Basis for preparation

The statements in this report relate to a representation of the shareholders' economic value of Zurich's in-force covered life and related businesses on an MCEV basis.

MCEV is a recognized method for the measurement of the value of distributable statutory earnings arising from assets allocated to the covered business:

- MCEV looks at the value of the business created or diluted allowing for the whole policy term
- Assumptions and risk margins are explicit and best estimate
- Asset and liability cash flows are valued using risk discount rates consistent with those applied to similar cash flows in capital markets, and options and guarantees are valued using market consistent models calibrated to observable market prices
- The analysis of change captures all value movements including those caused by risk taking
- MCEV is particularly useful when there is a mismatch in timing between income receipts and benefit/expense outflows, especially for assessing new business value
- MCEV is calculated using a "bottom-up" approach with allowances for the time value of financial options and guarantees, for the frictional cost of required capital and for the cost of non-hedgeable risks. It excludes any value from future new business

Zurich produces and reports embedded value in accordance with the MCEV Principles and Guidance issued by the CFO Forum in April 2016.

The Group pursues a customer-centric strategy which is managed via a regional structure.

The Group further divides its P&C and Life business into Retail and Commercial customer units. The Group has identified the following 13 reportable segments.

Group structure

Businesses	P&C	Life	Farmers	Non-Core Businesses	Group Functions and Operations
Reportable segments	Europe, Middle East & Africa (EMEA) North America Asia Pacific Latin America Group Reinsurance	Europe, Middle East & Africa (EMEA) North America Asia Pacific Latin America Group Reinsurance	Farmers[1]	Non-Core Businesses	Group Functions and Operations
Customer units	Commercial Retail				

[1] Note that the Farmers segment includes the life insurance business (Farmers Life).

Out of the Group's 13 reportable segments, the Embedded Value Report covers EMEA (Europe, Middle East & Africa), North America, Asia Pacific, Latin America and Group Reinsurance as the reportable segments of the Life business as well as the life insurance business of Farmers (Farmers Life).

Embedded value report (continued)

Zurich has engaged PwC to review the methodology, assumptions and results in accordance with the MCEV CFO Forum Principles and Guidance as described in the "Auditor's review report on embedded value" section.

All amounts in the embedded value report, unless otherwise stated, are shown in U.S. dollars, rounded to the nearest million with the consequence that the rounded amounts may not add to the rounded total in all cases. All ratios and variances are calculated using the underlying amounts rather than the rounded amounts.

2. Covered business

Covered business relates to business written by the Life business and Farmers Life, including life reinsurance ceded to the Group, specifically the following product lines:

- Life and critical illness including riders
- Savings (with profit, non-profit, unit-linked and universal life)
- Pensions and annuities
- Long-term health and accident

Certain entities in the Life business and Farmers Life, that write business in an investment vehicle but with some life insurance features, are also included as part of covered business.

The opening balance of the embedded value has been adjusted to reflect a material reinsurance contract issued in Asia Pacific, and the acquisition of certain life insurance and investment vehicle portfolios in Latin America, valued at the end of 2018. Furthermore, the opening adjustment allows for contractual changes of a portfolio in Japan.

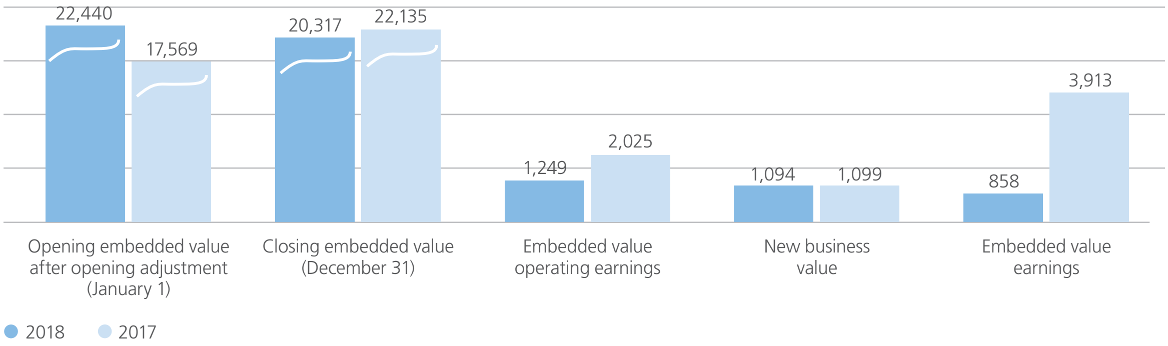
There are certain legacy life portfolios in run-off not considered core to the Group's strategy and therefore not included as part of the covered business (Non-Core Business).

For certain smaller entities in the Life business and Farmers Life, including holding companies, pension funds, asset management and purely financial shell companies, no embedded value has been calculated but these entities have been included in the embedded value result with an amount equal to IFRS shareholders' equity excluding intangibles, as calculated in accordance with Group accounting policies. The contribution from these entities to the total embedded value is less than 5 percent.

The MCEV for the entire Group would be the sum of the value of the covered business using MCEV Principles and the value of the non-covered business at the unadjusted IFRS shareholders' equity value as reported in the Group's Annual Report.

3. Embedded value report – executive summary

Key results
in USD millions, for the years ended December 31



Embedded value key results for the covered business

in USD millions, for the years ended December 31	**2018**	2017	Change
Opening embedded value before opening adjustment	22,135	17,050	5,085
Opening adjustment[1]	304	518	(214)
Opening embedded value after opening adjustment	22,440	17,569	4,871
Closing embedded value	20,317	22,135	(1,819)
Embedded value operating earnings	1,249	2,025	(776)
of which new business value	*1,094*	*1,099*	*(5)*
Embedded value earnings	858	3,913	(3,055)

All metrics are reported net of non-controlling interests.
[1] For 2018, this includes the change in covered business as noted in section 2 of this report. For 2017, this includes the change in covered business as noted in section 2 of the 2017 Embedded value report.

The Life business continues to perform in line with the Group's strategy. New business value remained fairly stable as a result of positive economic and operating variances partly offset by changes in business mix. New business margin slightly increased also as a result of favorable changes in the regional mix of new business.

The decrease in embedded value was mainly driven by capital movements, due to increased dividend payments from subsidiaries, mostly in EMEA, and unfavorable currency translation effects across major currencies. Furthermore, the embedded value decreased as a result of certain model refinements in Germany and Switzerland. This was partially offset by the stable contribution from new business and in-force books across most regions in the Life business.

New business value was USD 1,094 million. This was 0.4 percent lower than the prior period in both U.S. dollar and in local currency terms. The slightly lower performance was attributable to changes in business mix which were largely offset by favorable operating and economic variances, the latter being driven by higher swap rates in certain markets and model refinements.

Business volumes decreased largely as a result of the disposal of the UK workplace pensions and savings business in 2017. Excluding the effect of the disposal in the UK, business volumes increased by approximately 11 percent mainly due to higher corporate protection volumes in Latin America.

Embedded value operating earnings were USD 1,249 million representing a return of 5.6 percent[1], primarily driven by the contribution of the new business added to the book. The decrease in operating earnings compared to prior year was particularly driven by model refinements in Germany and Switzerland, partially mitigated by the positive impacts from expense reduction activities across the Group.

Embedded value earnings were USD 858 million representing a return of 3.8 percent[1]. The embedded value earnings were affected by negative economic variances. This was mainly driven by unfavorable market conditions including a decrease in investment returns.

[1] Returns have been calculated based on 2018 opening embedded value after opening adjustments.

Embedded value report (continued)

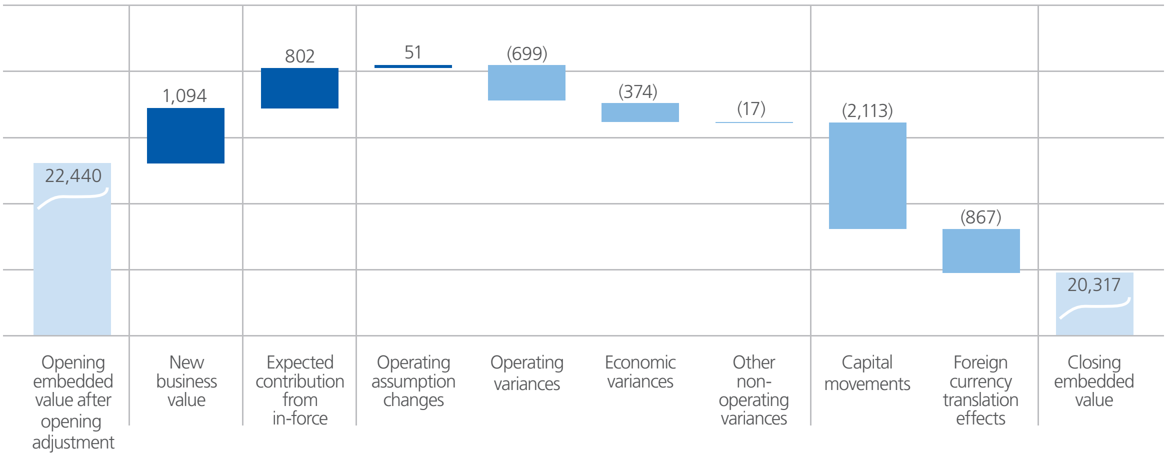
4. Analysis of embedded value earnings and value of business in-force

The graph and table below show how embedded value of the covered business has decreased from USD 22,440 million (after adjusting the opening embedded value for the change in covered business as noted in section 2 of this report) to USD 20,317 million during 2018.

The split of the Life business and Farmers Life can be found in the segmental analysis (see section 8 of this report).

Embedded value development for the covered business

in USD millions, for the year ended December 31, 2018



Analysis of embedded value earnings for the covered business

in USD millions, for the years ended December 31	2018			2017
	Share-holders' net assets	Value of business in-force	Total	Total
Opening embedded value before opening adjustment	**10,339**	**11,797**	**22,135**	**17,050**
Opening adjustment[1]	**(685)**	**990**	**304**	**518**
Opening embedded value after opening adjustment	**9,654**	**12,786**	**22,440**	**17,569**
New business value	**(462)**	**1,556**	**1,094**	**1,099**
Expected contribution at reference rate	92	125	**217**	**209**
Expected contribution in excess of reference rate	323	263	**585**	**511**
Expected transfer to shareholders' net assets	950	(950)	**–**	**–**
Operating assumption changes	(231)	282	**51**	**(81)**
Operating variances	2	(701)	**(699)**	**287**
Embedded value operating earnings	**673**	**576**	**1,249**	**2,025**
Economic variances	(157)	(217)	**(374)**	**1,381**
Other non-operating variances	101	(118)	**(17)**	**507**
Embedded value earnings	**617**	**241**	**858**	**3,913**
Capital movements	(2,089)	(24)	**(2,113)**	**(714)**
Foreign currency translation effects	(537)	(331)	**(867)**	**1,368**
Closing embedded value	**7,645**	**12,672**	**20,317**	**22,135**

All metrics are reported net of non-controlling interests.
[1] For 2018, this includes the change in covered business as noted in section 2 of this report. For 2017, this includes the change in covered business as noted in section 2 of the 2017 Embedded value report.

Components of value of business in-force for the covered business

in USD millions, as of December 31	2018					2017
	CE[1]	FC[2]	TVFOG[3]	CRNHR[4]	Value of business in-force[5]	Value of business in-force
Life business						
North America	*585*	*(3)*	*(10)*	*(44)*	**528**	**441**
Latin America	*353*	*(33)*	*–*	*(87)*	**233**	**241**
EMEA	*8,152*	*(236)*	*(636)*	*(1,060)*	**6,220**	**6,516**
Asia Pacific	*3,105*	*(115)*	*(9)*	*(307)*	**2,676**	**1,367**
Group Reinsurance	*–*	*–*	*–*	*–*	**–**	**–**
Farmers Life	3,372	(52)	(57)	(248)	**3,015**	**3,232**
Total covered business	**15,568**	**(438)**	**(711)**	**(1,747)**	**12,672**	**11,797**

[1] CE is the certainty equivalent value of business in-force.
[2] FC is the frictional costs.
[3] TVFOG is the time value of financial options and guarantees.
[4] CRNHR is the cost of residual non-hedgeable risk (see section 9 for further details).
[5] 2018 figures allow for the change in the covered business noted in section 2 of this report with a total impact of USD 990 million.

Excluding the effect of the opening adjustment, the value of business in-force slightly decreased during the current financial year. The decrease noted in EMEA was driven by updated operating assumptions coupled with model refinements in Germany and Switzerland. In Farmers Life the decrease was also driven by updated operating assumptions. This was partially offset by an increase in Asia Pacific as a result of organic growth and in North America due to mortality assumption updates.

Maturity profile of value of business in-force

The value in-force (VIF) maturity profile sets out the time period over which the discounted VIF profits are expected to emerge into shareholders' net assets. It does not include the release of required capital to free surplus which usually accompanies the emergence of the VIF profit. The VIF emergence takes into account frictional costs, the cost of residual non-hedgeable risk and the time value of financial options and guarantees based on market consistent economic assumptions. For further details, see section 10 of this report.

The VIF maturity profile shows that 32 percent of the VIF is expected to emerge into shareholders' net assets over the next five years and an additional 24 percent over the following five years. The VIF profit profile remained fairly stable compared to prior year.

Maturity profile of value of business in-force for the covered business

in USD millions, as of December 31	2018		2017	
	VIF	% of Total	VIF	% of Total
1 to 5 years	4,058	32%	3,643	31%
6 to 10 years	2,996	24%	2,905	25%
11 to 15 years	2,163	17%	1,998	17%
16 to 20 years	1,426	11%	1,317	11%
more than 20 years	2,029	16%	1,934	16%
Total covered business	**12,672**	**100%**	**11,797**	**100%**

Embedded value report (continued)

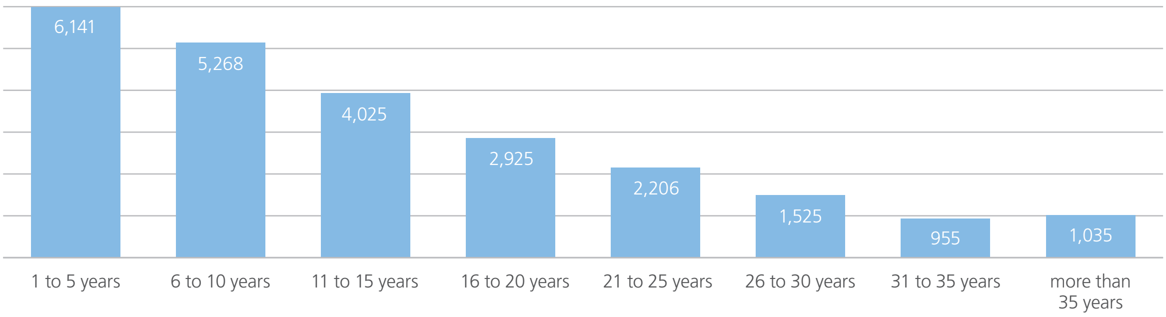
Projected profit on a real world basis

The projected profit on a "real world" basis shows the expected pattern of the undiscounted profit released by the in-force business as of December 31, 2018 (excluding future new business) estimated using real world best estimate economic assumptions (further details in section 10). This projected profit on a real world basis does not include the release of the required capital supporting the in-force business.

The projection of the profits allowing for the real world economic assumptions shows the portion of the additional expected return earned on assets covering the liabilities attributable to shareholders.

Future real world undiscounted profits for the covered business

in USD millions, for the year ended December 31, 2018



5. Value of new business

New business by geographical region for the covered business

in USD millions, for the years ended December 31	Annual premium equivalent (APE)[1,2]		New business value[3]		New business margin[3] % of APE	
	2018	2017	**2018**	2017	**2018**	2017
Life business						
North America	*82*	*224*	*15*	*66*	*18.3%*	*29.3%*
Latin America	*1,437*	*1,117*	*161*	*164*	*15.3%*	*23.2%*
EMEA	*2,890*	*3,333*	*619*	*605*	*22.8%*	*19.1%*
Asia Pacific	*231*	*195*	*186*	*165*	*82.2%*	*85.8%*
Farmers Life	84	91	113	100	134.2%	110.3%
Total covered business	**4,723**	**4,959**	**1,094**	**1,099**	**26.3%**	**25.1%**

[1] APE is measured as new annual premiums plus 10 percent of new single premiums.
[2] APE is shown gross of non-controlling interests.
[3] New business value and new business margin are shown net of non-controlling interests.

In the following two tables, the disclosure of the new business value information has been split between the Life business and Farmers Life in order to ensure comparability with the 2018 Zurich Group's Annual Report.

New business by quarter

Life business new business by quarter

in USD millions	2018					2017				
	Q1	**Q2**	**Q3**	**Q4**	**FY**	Q1	Q2	Q3	Q4	FY
APE[2]	**1,254**	**1,038**	**1,279**	**1,069**	**4,639**	**1,172**	**1,103**	**1,199**	**1,394**	**4,868**
New annual premiums	770	598	880	634	2,883	710	641	734	731	2,816
New single premiums	4,837	4,393	3,981	4,349	17,560	4,620	4,629	4,647	6,631	20,527
Present value of new business premiums (PVNBP)[1]	12,469	8,753	8,006	8,896	38,124	12,132	10,192	10,896	11,708	44,928
New business value[3]	**273**	**249**	**210**	**249**	**981**	**277**	**227**	**202**	**293**	**999**
New business margin[3] (% of APE)	**25.2%**	**27.8%**	**18.1%**	**26.7%**	**24.1%**	**27.0%**	**23.6%**	**19.1%**	**23.7%**	**23.3%**
New business margin[3] (% of PVNBP)	**2.4%**	**3.2%**	**2.9%**	**3.1%**	**2.9%**	**2.5%**	**2.4%**	**2.0%**	**2.8%**	**2.4%**

[1] PVNBP is measured as new single premiums plus the present value of new annual premiums.
[2] Premiums, APE and PVNBP are shown gross of non-controlling interests.
[3] New business value and new business margin are reported net of non-controlling interests.

APE was USD 4,639 million, a decrease of USD 230 million in U.S. dollar terms or a 4.3 percent decrease on a local currency basis. The decrease in new business volumes was mainly driven by the disposal of the UK workplace pensions and savings business in 2017. Excluding the effect of this disposal, there were higher new business sales in Latin America from a large corporate protection contract in Chile, which is tendered for renewal on a two-year basis. In addition, there was an increase in sales in Asia Pacific, mainly in the individual protection business in Japan and Australia. In EMEA, the increase was driven by higher volumes in Italy, Ireland and Switzerland.

PVNBP was USD 38,124 million, a decrease of USD 6,804 million in U.S. dollar terms or a 15.8 percent decrease on a local currency basis. The decrease was mainly driven by the disposal of the UK workplace pensions and savings business.

Embedded value report (continued)

Farmers Life new business by quarter

in USD millions	2018					2017				
	Q1	Q2	Q3	Q4	FY	Q1	Q2	Q3	Q4	FY
APE[2]	**21**	**24**	**21**	**19**	**84**	**22**	**24**	**21**	**24**	**91**
New annual premiums	20	23	21	19	83	21	23	21	23	88
New single premiums	8	8	2	0	18	11	11	5	4	31
PVNBP[1]	214	233	202	185	834	228	268	233	257	987
New business value[3]	**30**	**34**	**26**	**23**	**113**	**23**	**26**	**22**	**29**	**100**

[1] PVNBP is measured as new single premiums plus the present value of new annual premiums.
[2] Premiums, APE and PVNBP are shown gross of non-controlling interests.
[3] New business value is reported net of non-controlling interests.

APE was USD 84 million, a decrease of USD 6 million or a 6.9 percent decrease in U.S. dollar terms, due to a decrease in individual protection sales.

PVNBP was USD 834 million, a decrease of USD 153 million or a 15.5 percent decrease, consistent with the APE movements noted above.

Movement of new business value and new business margins for the covered business

Analysis of new business value and margin for the covered business

in USD millions	NBV[1]	NBM[1]
New business value 2017	**1,099**	**25.1%**
Change in volumes and business mix	(44)	0.4%
Economic and operating variances	35	0.8%
Foreign currency translation effects	4	n.a.
New business value 2018	**1,094**	**26.3%**

[1] New business value and new business margin (% of APE) are reported net of non-controlling interests.

New business value was USD 1,094 million, a decrease of USD 5 million in U.S. dollar terms or a 0.4 percent decrease on a local currency basis. The slightly lower performance was attributable to changes in business mix and new business volumes, particularly in North America and EMEA. This was offset by economic variances, mainly in EMEA, and operating variances in Australia and Japan. Viewed through a products lens, the protection business continued to perform strongly and was the main contributor to the new business value results.

New business margin increased by 1.2 percentage points to 26.3 percent. This resulted from an overall improvement in economic variances, model refinements mainly in Germany and operating variances mainly from Farmers Life. The impact of the new business volumes was partially offset by the underlying regional mix.

6. Sensitivities

Sensitivities for the covered business

in USD millions, as of December 31, 2018	Change in embedded value[1]	Change in new business value[2]
Reported embedded value and new business value	**20,317**	**1,094**
Base embedded value and base new business value	**20,042**	**1,141**
Operating sensitivities		
10% decrease in maintenance expenses	3%	7%
10% increase in voluntary discontinuance rates	(4%)	(9%)
10% decrease in voluntary discontinuance rates	5%	11%
5% improvement in mortality for annuities	(1%)	(1%)
5% increase in mortality and morbidity rates for protection products	(4%)	(10%)
Economic sensitivities		
50 basis points increase in risk free yield curve	(1%)	4%
50 basis points decrease in risk free yield curve	(0%)	(5%)
10% fall in equity market values	(2%)	(1%)
100 basis points increase in credit spreads	(6%)	(1%)
100 basis points decrease in credit spreads	6%	0%
25% increase in implied volatilities for risk free yields	(1%)	(1%)

[1] Values used to calculate the embedded value sensitivities exclude the effect of the opening adjustments as noted in section 2 of this report.
[2] Values used to calculate the new business value sensitivities include the effect of using the end of year best estimate assumptions (rather than the reported new business value where beginning of quarter best estimate assumptions are used).

The key assumption changes represented by each of these sensitivities are given in section 9.

In each sensitivity calculation, all other assumptions remain unchanged except where they are directly affected by the revised assumption. The results include the impact of assumption changes on all embedded value components. The 50 basis points decrease in risk free yield curve increases the value of some products, such as short-term assurance business, with fixed future cash flows discounted at lower rates. This increase is offset by a reduction in the value of other products, such as those where lower assumed investment returns reduce profitability.

7. Reconciliation of shareholders' equity to embedded value

Reconciliation of shareholders' equity to embedded value for the covered business

in USD billions, as of December 31, 2018	Life business	Farmers Life	Total
Shareholders' equity[1]	**15.4**	**1.9**	**17.2**
Less intangible assets			
Goodwill	*(0.3)*	*0.0*	*(0.3)*
Deferred policy acquisition costs and deferred origination costs	*(12.8)*	*(1.8)*	*(14.6)*
Other intangibles and present value of future profits	*(2.5)*	*(0.1)*	*(2.5)*
Deferred front-end fees	*5.0*	*0.2*	*5.2*
Pension scheme liabilities[2]	0.9	0.0	0.9
Less non-controlling interests[3]	(0.1)	0.0	(0.1)
Other adjustments[4]	1.6	0.3	1.9
Embedded value shareholders' net assets	**7.2**	**0.5**	**7.6**
Value of business in-force	9.7	3.0	12.7
Embedded value	**16.9**	**3.5**	**20.3**

[1] Shareholders' equity is the share of total shareholders' equity for the Life business including Farmers Life (which is a subset of the Farmers segment) as reported in note 3 of the Group's Annual Report.
[2] Pension scheme liabilities are deducted from shareholders' equity but are not deducted from embedded value shareholders' net assets.
[3] Primarily from non-controlling interests in Zurich Santander and Spain.
[4] Other adjustments include tax differences, policyholders' share of intangibles, reserving differences and asset valuation differences.

8. Segmental analysis of embedded value and new business value

Analysis of embedded value earnings by segments for the covered business

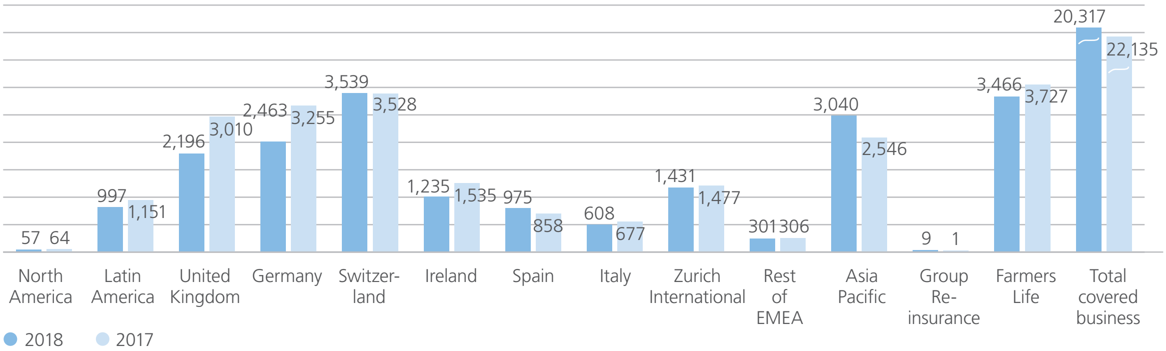
in USD millions, for the year ended December 31, 2018	Life business						Total covered business
	North America	Latin America	EMEA	Asia Pacific	Group Reinsurance	Farmers Life	
Opening embedded value before opening adjustment	**64**	**1,151**	**14,646**	**2,546**	**1**	**3,727**	**22,135**
Opening adjustment[1]	**–**	**(89)**	**–**	**393**	**–**	**–**	**304**
Opening embedded value after opening adjustment	**64**	**1,062**	**14,646**	**2,939**	**1**	**3,727**	**22,440**
New business value	**15**	**161**	**619**	**186**	**–**	**113**	**1,094**
Expected contribution at reference rate	12	74	1	44	–	87	217
Expected contribution in excess of reference rate	–	74	417	27	–	68	585
Expected transfer to shareholders' net assets	–	–	–	–	–	–	–
Operating assumption changes	83	(1)	203	55	–	(289)	51
Operating variances	(41)	25	(618)	(49)	8	(25)	(699)
Embedded value operating earnings	**69**	**332**	**622**	**263**	**8**	**(45)**	**1,249**
Economic variances	(19)	(86)	(327)	44	–	14	(374)
Other non-operating variances	49	45	(89)	17	–	(40)	(17)
Embedded value earnings	**99**	**292**	**207**	**323**	**8**	**(71)**	**858**
Capital movements	(106)	(137)	(1,567)	(113)	–	(190)	(2,113)
Foreign currency translation effects	–	(220)	(539)	(109)	–	–	(867)
Closing embedded value	**57**	**997**	**12,747**	**3,040**	**9**	**3,466**	**20,317**

All metrics are reported net of non-controlling interests.
[1] This includes the change in covered business as noted in section 2 of this report.

Embedded value report (continued)

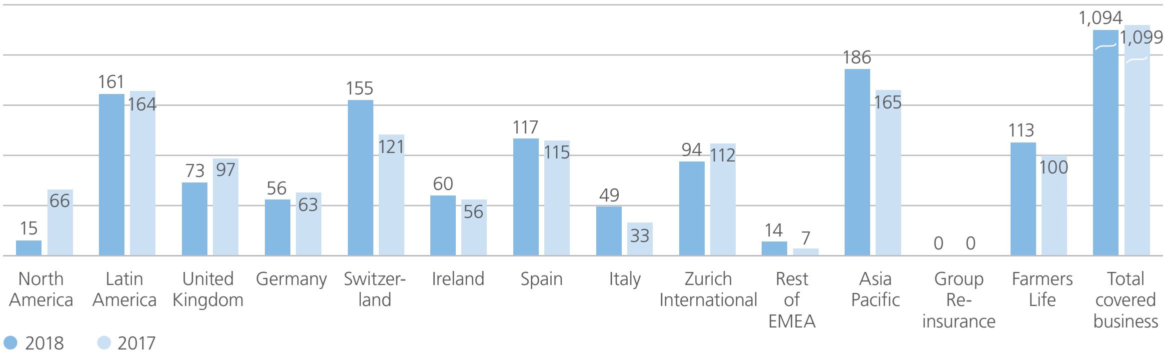
Embedded value by geographical region

in USD millions, for the years ended December 31



New business value by geographical region

in USD millions, for the years ended December 31



EMEA

New business

EMEA analysis of new business value and margin

in USD millions	NBV[1]	NBM[1]
New business value 2017	**605**	**19.1%**
Change in volumes and business mix	(5)	3.8%
Economic and operating variances	(2)	(0.1%)
Foreign currency translation effects	21	n.a.
New business value 2018	**619**	**22.8%**

[1] New business value and new business margin (% of APE) are reported net of non-controlling interests.

New business value was USD 619 million, representing an increase of USD 14 million in U.S. dollar terms, but a 0.9 percent decrease on a local currency basis. Business volumes decreased significantly as a result of the disposal of the UK workplace pensions and savings business. Excluding the effect of the disposal in the UK, higher corporate business volumes occurred in Switzerland and Ireland. Furthermore, an increase in individual savings business was noted both in Italy and Spain. Lower business volumes decreased the new business value despite the positive contribution from the underlying product mix.

New business margin benefitted primarily from a more favorable business mix across countries in the region.

Volumes and business mix changes negatively impacted the new business value by USD 5 million. The main negative contributors were:

- UK, as a result of the disposal of the workplace pensions and savings business, partially offset by higher margins in individual protection business
- Germany, due to lower margins in the unit-linked portfolio

The main positive contributors were:

- Italy, due to higher unit-linked volumes and favorable business mix in individual savings business
- Spain, mostly due to growth in individual protection business
- Switzerland, due to higher corporate savings and pensions business volumes

Positive economic variances were mainly noted in Italy and Switzerland as a result of beneficial developments in the interest rate environment.

Negative operating variances were driven by unfavorable persistency assumption updates in Spain and the UK. This was partially offset by positive impacts from model refinements in Germany.

Embedded value report (continued)

Embedded value development

EMEA analysis of embedded value earnings

in USD millions, for the years ended December 31	2018 Share-holders' net assets	2018 Value of business in-force	2018 Total	2017 Total
Opening embedded value before opening adjustment	**8,131**	**6,516**	**14,646**	**11,861**
Opening adjustment[1]	**–**	**–**	**–**	**7**
Opening embedded value after opening adjustment	**8,130**	**6,516**	**14,646**	**11,868**
New business value	**(218)**	**837**	**619**	**605**
Expected contribution at reference rate	(4)	4	**1**	**40**
Expected contribution in excess of reference rate	155	262	**417**	**348**
Expected transfer to shareholders' net assets	542	(542)	**–**	**–**
Operating assumption changes	(214)	417	**203**	**(264)**
Operating variances	130	(747)	**(618)**	**309**
Embedded value operating earnings	**392**	**231**	**622**	**1,039**
Economic variances	(227)	(99)	**(327)**	**1,072**
Other non-operating variances	100	(189)	**(89)**	**19**
Embedded value earnings	**264**	**(58)**	**207**	**2,130**
Capital movements	(1,543)	(24)	**(1,567)**	**(591)**
Foreign currency translation effects	(324)	(214)	**(539)**	**1,240**
Closing embedded value	**6,528**	**6,220**	**12,747**	**14,646**

All metrics are reported net of non-controlling interests.
[1] For 2017, this includes the change in covered business as noted in section 2 of the 2017 Embedded value report.

Embedded value decreased mostly due to capital movements, operating variances arising from model refinements, unfavorable currency translation effects across the region and adverse economic variances from lower investment returns.

Positive operating assumption change impacts mainly related to an overall improvement in mortality and morbidity assumptions across the region. In addition, positive developments in updating expense assumptions were noted in the region, particularly in Switzerland and Germany. This was partly offset by negative impacts from persistency assumption updates in the UK and Ireland.

Negative operating variances were mainly related to model refinements, primarily in Germany, including refinements related to a change in profit distribution to policyholder and updates to product modeling. To a lesser extent, there were also regulatory-related model refinements in Germany and general model refinements in Switzerland.

Negative economic variances included an overall deterioration in investment results in the region, particularly in Italy with lower returns in fixed income portfolios. This was partially offset by favorable investment results in Germany.

Other non-operating variances decreased the embedded value due to regulatory-driven variances in the UK and changes in the risk profile used for the calculation of the CRNHR in Germany. This was partially offset by favorable currency translation effects in the multi-currency business sold by Zurich International.

Capital movements decreased embedded value, mostly due to dividend payments. In particular, dividend payments increased significantly in the UK, Germany and Switzerland compared to the prior year.

Unfavorable currency translation effects across the EMEA segment included the weakening of all relevant currencies against the U.S. dollar.

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Embedded value report (continued)

Embedded value results EMEA

in USD millions, for the years ended December 31

	United Kingdom		Germany	
	2018	2017	**2018**	2017
Embedded value information:				
Opening embedded value before opening adjustment	**3,010**	**3,169**	**3,255**	**1,856**
Opening adjustment[1]	**–**	**–**	**–**	**–**
Opening embedded value after opening adjustment	**3,010**	**3,169**	**3,255**	**1,856**
New business value	73	97	56	63
Expected contribution at reference rate	20	10	5	25
Expected contribution in excess of reference rate	30	36	55	25
Expected transfer to shareholders' net assets	–	–	–	–
Operating assumption changes	(119)	(193)	148	24
Operating variances	6	(80)	(582)	345
Embedded value operating earnings	**10**	**(131)**	**(318)**	**482**
Economic variances	(116)	(73)	181	479
Other non-operating variances	(76)	(41)	(66)	126
Embedded value earnings	**(182)**	**(245)**	**(203)**	**1,088**
Capital movements	(491)	(192)	(459)	(12)
Foreign currency translation effects	(141)	279	(131)	323
Closing embedded value	**2,196**	**3,010**	**2,463**	**3,255**
New business information:[2]				
Annual premiums	312	722	175	176
Single premiums	2,955	4,971	779	899
APE	608	1,219	252	265
PVNBP	7,923	16,005	2,576	2,919
New business value	**73**	**97**	**56**	**63**
New business margin (% of APE)	12.1%	8.0%	22.5%	24.5%
New business margin (% of PVNBP)	0.9%	0.6%	2.2%	2.2%

[1] For 2017, this includes the change in covered business as noted in section 2 of the 2017 Embedded value report.
[2] Premiums, APE and PVNBP are reported gross of non-controlling interests.
[3] Mainly includes business written through licenses into Asia-Pacific, Middle East and Luxembourg.

	EMEA											
	Switzerland		Ireland		Spain		Italy		Zurich International[3]		Rest of EMEA	
	2018	2017	**2018**	2017	**2018**	2017	**2018**	2017	**2018**	2017	**2018**	2017
	3,528	**2,562**	**1,535**	**1,360**	**858**	**700**	**677**	**559**	**1,477**	**1,402**	**306**	**253**
	–	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**(29)**	**–**	**35**
	3,528	**2,562**	**1,535**	**1,360**	**858**	**700**	**677**	**559**	**1,477**	**1,373**	**306**	**288**
	155	121	60	56	117	115	49	33	94	112	14	7
	(69)	(36)	1	2	7	11	23	17	6	5	8	7
	211	182	24	22	34	27	18	15	35	30	10	12
	–	–	–	–	–	–	–	–	–	–	–	–
	286	113	(83)	(32)	(11)	(49)	(17)	(27)	27	(92)	(29)	(7)
	(100)	100	(56)	(3)	14	(69)	14	–	(21)	22	108	(6)
	483	**479**	**(54)**	**45**	**162**	**35**	**87**	**38**	**142**	**77**	**110**	**13**
	(28)	499	(52)	38	19	20	(206)	58	(97)	46	(27)	5
	(43)	44	–	–	(16)	12	39	–	75	(121)	–	(1)
	412	**1,022**	**(107)**	**83**	**164**	**66**	**(81)**	**96**	**119**	**2**	**84**	**18**
	(367)	(173)	(130)	(94)	(3)	(8)	41	(56)	(84)	(21)	(74)	(35)
	(34)	116	(64)	186	(45)	100	(30)	79	(80)	121	(15)	36
	3,539	**3,528**	**1,235**	**1,535**	**975**	**858**	**608**	**677**	**1,431**	**1,477**	**301**	**306**
	238	222	215	183	145	104	92	76	271	261	57	55
	1,908	1,552	3,145	2,942	2,316	2,437	2,245	1,446	290	842	211	266
	429	377	529	477	377	347	317	220	300	345	78	82
	4,430	3,535	4,404	4,020	3,508	3,342	3,071	1,901	2,250	2,811	619	805
	155	**121**	**60**	**56**	**117**	**115**	**49**	**33**	**94**	**112**	**14**	**7**
	36.1%	32.1%	11.4%	11.8%	58.9%	61.7%	15.5%	14.8%	31.3%	32.6%	17.9%	9.1%
	3.5%	3.4%	1.4%	1.4%	6.4%	6.5%	1.6%	1.7%	4.2%	4.0%	2.2%	0.9%

Embedded value report (continued)

North America

New business

North America analysis of new business value and margin

in USD millions	NBV[1]	NBM[1]
New business value 2017	**66**	**29.3%**
Change in volumes and business mix	(47)	(6.3%)
Economic and operating variances	(4)	(4.7%)
Foreign currency translation effects	–	n.a.
New business value 2018	**15**	**18.3%**

[1] New business value and new business margin (% of APE) are reported net of non-controlling interests.

New business value was USD 15 million, a decrease of USD 51 million or 77.2 percent. The main contributor to the decrease related to a substantial premium paid by a large corporate client in the prior year which was not repeated in the current year. Negative operating variances resulted from acquisition expense assumption updates effective from the start of the current year.

Embedded value development

North America analysis of embedded value earnings

in USD millions, for the years ended December 31	2018			2017
	Share-holders' net assets	Value of business in-force	Total	Total
Opening embedded value before opening adjustment	**(377)**	**441**	**64**	**(177)**
Opening adjustment[1]	**–**	**–**	**–**	**155**
Opening embedded value after opening adjustment	**(377)**	**441**	**64**	**(23)**
New business value	**(21)**	**36**	**15**	**66**
Expected contribution at reference rate	–	12	**12**	**5**
Expected contribution in excess of reference rate	–	–	**–**	**–**
Expected transfer to shareholders' net assets	35	(35)	**–**	**–**
Operating assumption changes	–	83	**83**	**(1)**
Operating variances	10	(51)	**(41)**	**12**
Embedded value operating earnings	**24**	**45**	**69**	**82**
Economic variances	(12)	(7)	**(19)**	**(10)**
Other non-operating variances	–	49	**49**	**25**
Embedded value earnings	**12**	**87**	**99**	**97**
Capital movements	(106)	–	**(106)**	**(11)**
Foreign currency translation effects	–	–	**–**	**–**
Closing embedded value	**(471)**	**528**	**57**	**64**

All metrics are reported net of non-controlling interests.
[1] For 2017, this includes the change in covered business as noted in section 2 of the 2017 Embedded value report.

Embedded value slightly decreased mostly as a result of capital movements. This was largely offset by operating assumption changes coupled with a favorable change in the tax regime.

Positive operating assumption changes were observed from updating mortality assumptions in the individual protection business.

Negative operating variances were mainly related to development costs.

Other non-operating variances increased embedded value due to the U.S. Tax Cuts and Jobs Act of 2017, recognized in the current financial period.

Capital movements and dividend payments decreased the embedded value.

Embedded value report (continued)

Latin America

New business

Latin America analysis of new business value and margin

in USD millions	NBV[1]	NBM[1]
New business value 2017	**164**	**23.2%**
Change in volumes and business mix	28	(6.8%)
Economic and operating variances	(13)	(1.2%)
Foreign currency translation effects	(18)	n.a.
New business value 2018	**161**	**15.3%**

[1] New business value and new business margin (% of APE) are reported net of non-controlling interests.

New business value was USD 161 million, a decrease of USD 3 million but an increase of 11.5 percent on a local currency basis.

The new business value increased due to higher corporate business volumes in the Zurich operations in Chile due to organic growth as a result of a large protection scheme. Furthermore, positive business mix impacts were noted in Brazil in Zurich Santander due to an increasing proportion of profitable individual protection business.

This was partially offset by the negative operating variance in the Zurich operations in Chile due to unfavorable expense assumption updates.

Overall, unfavorable currency translation effects were noted in most relevant currencies across the region.

New business margin decreased mainly as a result of the large corporate protection scheme written in the Zurich operations in Chile.

Embedded value development

Latin America analysis of embedded value earnings

in USD millions, for the years ended December 31	2018			2017
	Share-holders' net assets	Value of business in-force	Total	Total
Opening embedded value before opening adjustment	**910**	**241**	**1,151**	**1,041**
Opening adjustment[1]	**(117)**	**28**	**(89)**	**–**
Opening embedded value after opening adjustment	**793**	**269**	**1,062**	**1,041**
New business value	**(19)**	**180**	**161**	**164**
Expected contribution at reference rate	36	38	**74**	**81**
Expected contribution in excess of reference rate	74	–	**74**	**58**
Expected transfer to shareholders' net assets	61	(61)	**–**	**–**
Operating assumption changes	(1)	(1)	**(1)**	**(68)**
Operating variances	37	(12)	**25**	**20**
Embedded value operating earnings	**189**	**144**	**332**	**255**
Economic variances	47	(133)	**(86)**	**64**
Other non-operating variances	(1)	46	**45**	**8**
Embedded value earnings	**235**	**57**	**292**	**326**
Capital movements	(137)	–	**(137)**	**(207)**
Foreign currency translation effects	(127)	(93)	**(220)**	**(9)**
Closing embedded value	**764**	**233**	**997**	**1,151**

All metrics are reported net of non-controlling interests.
[1] For 2018, this includes the change in covered business as noted in section 2 of this report.

Embedded value decreased in Latin America from unfavorable currency translation effects and capital movements in the region mainly due to dividend payments. This was partially offset by the contribution form the in-force and new business books.

Opening adjustment related to the acquisition of certain life insurance and investment vehicle portfolios from EuroAmerica in the Zurich operations in Chile; the adjustment is reported based on the end of period value.

The embedded value operating earnings benefited from the expected returns, especially in Brazil in Zurich Santander and in the Zurich operations in Chile, together with the contribution from new business.

Negative economic variances reflect the impact of adverse interest rate developments in the Zurich operations in Chile.

Other non-operating variances relate to favorable currency translation effects in the U.S. dollar denominated business sold in the Zurich operations in Argentina.

Capital movements reduced the embedded value in Latin America as a result of dividend payments, primarily in Zurich Santander.

Foreign currency translation effects decreased the embedded value as a result of the weakening of all relevant currencies in the region against the U.S. dollar.

Embedded value report (continued)

Asia Pacific

New business

Asia Pacific analysis of new business value and margin

in USD millions	NBV[1]	NBM[1]
New business value 2017	**165**	**85.8%**
Change in volumes and business mix	(14)	(18.3%)
Economic and operating variances	34	14.7%
Foreign currency translation effects	2	n.a.
New business value 2018	**186**	**82.2%**

[1] New business value and new business margin (% of APE) are reported net of non-controlling interests.

New business value was USD 186 million, an increase of USD 22 million or a 12.2 percent increase on a local currency basis. This increase was mostly driven by the positive operating variances noted in Australia mainly due to morbidity assumption updates and to a lesser extent in Japan following updates to expense assumptions in the individual protection business.

Higher business volumes in the region were offset by the underlying business mix, particularly due to lower margins in the individual protection businesses in Australia and Japan.

Embedded value development

Asia Pacific analysis of embedded value earnings

in USD millions, for the years ended December 31	2018			2017
	Share-holders' net assets	Value of business in-force	Total	Total
Opening embedded value before opening adjustment	**1,179**	**1,367**	**2,546**	**2,037**
Opening adjustment[1]	**(568)**	**961**	**393**	**–**
Opening embedded value after opening adjustment	**611**	**2,328**	**2,939**	**2,037**
New business value	**(123)**	**309**	**186**	**165**
Expected contribution at reference rate	31	13	**44**	**33**
Expected contribution in excess of reference rate	26	1	**27**	**27**
Expected transfer to shareholders' net assets	136	(136)	**–**	**–**
Operating assumption changes	(5)	60	**55**	**33**
Operating variances	(138)	89	**(49)**	**(19)**
Embedded value operating earnings	**(72)**	**335**	**263**	**238**
Economic variances	23	21	**44**	**68**
Other non-operating variances	2	15	**17**	**20**
Embedded value earnings	**(48)**	**371**	**323**	**326**
Capital movements	(113)	–	**(113)**	**46**
Foreign currency translation effects	(86)	(23)	**(109)**	**137**
Closing embedded value	**365**	**2,676**	**3,040**	**2,546**

All metrics are reported net of non-controlling interests.
[1] For 2018, this includes the change in covered business as noted in section 2 of this report.

Embedded value increased in Asia Pacific as a result of embedded value earnings. Opening adjustment reflect the recognition of a large reinsurance contract with ANZ Banking Group Limited in Australia, valued at end of period. Additionally, the opening adjustment also included a positive impact from the contractual changes of a portfolio in Japan, shifting this business from fee-based business to a full life insurance portfolio. Embedded value operating earnings benefited from the continuous strong new business value growth particularly in Japan and Australia. In addition, positive operating assumption changes occurred predominantly in Australia due to re-pricing activities in certain protection portfolios.

Operating variances decreased the embedded value mainly due to adverse experience variances in Malaysia.

Embedded value decreased also due to capital movements in the composite business in Malaysia and dividend payments in Australia.

Unfavorable currency translation effects decreased the embedded value due to weakening of the Australian dollar against the U.S. dollar.

Embedded value report (continued)

Farmers Life

New business

Farmers Life analysis of new business value

in USD millions	NBV[1]
New business value 2017	**100**
Change in volumes and business mix	(6)
Economic and operating variances	20
Foreign currency translation effects	–
New business value 2018	**113**

[1] New business value is reported net of non-controlling interests.

New business value was USD 113 million, an increase of USD 13 million or 13.2 percent. The increase in value resulted from positive operating variances, primarily due to mortality assumption updates, partially offset by persistency assumption updates in the individual protection business.

Embedded value development

Farmers Life analysis of embedded value earnings

in USD millions, for the years ended December 31	2018			2017
	Share-holders' net assets	Value of business in-force	Total	Total
Opening embedded value before opening adjustment	**495**	**3,232**	**3,727**	**2,646**
Opening adjustment	**–**	**–**	**–**	**–**
Opening embedded value after opening adjustment	**495**	**3,232**	**3,727**	**2,646**
New business value	**(81)**	**195**	**113**	**100**
Expected contribution at reference rate	29	59	**87**	**50**
Expected contribution in excess of reference rate	68	–	**68**	**78**
Expected transfer to shareholders' net assets	176	(176)	**–**	**–**
Operating assumption changes	(12)	(276)	**(289)**	**219**
Operating variances	(45)	20	**(25)**	**(36)**
Embedded value operating earnings	**133**	**(178)**	**(45)**	**411**
Economic variances	12	2	**14**	**187**
Other non-operating variances	–	(40)	**(40)**	**435**
Embedded value earnings	**146**	**(216)**	**(71)**	**1,034**
Capital movements	(190)	–	**(190)**	**48**
Foreign currency translation effects	–	–	**–**	**–**
Closing embedded value	**451**	**3,015**	**3,466**	**3,727**

All metrics are reported net of non-controlling interests.

Embedded value decreased mostly as a result of negative operating assumption changes and capital movements.

Operating earnings decreased the embedded value due to a negative expense assumption and a mortality assumption update for certain individual protection products. This was partially offset by the positive contribution from the in-force and new business books.

Capital movements decreased the embedded value due to dividend payments made by Farmers New World Life Insurance Company to Farmers Group, Inc.

9. Embedded value methodology

The Group applies MCEV Principles and Guidance issued by the European Insurance CFO Forum in April 2016 for its embedded value report for the companies and businesses included in the covered business. The embedded value methodology adopted by the Group is based on a bottom-up market consistent approach to allow explicitly for market risk. In particular, asset and liability cash flows are valued using risk discount rates consistent with those applied to similar cash flows in capital markets, and options and guarantees are valued using market consistent models calibrated to observable market prices. Where markets exhibit a limited data availability, the valuation is based on historical averages. Embedded value excludes any value from future new business.

a) Reporting of embedded value

In line with MCEV Principles, embedded value is split between shareholders' net assets and value of business in-force. See details in next two sections.

The results are disclosed in a format aligned with the segmental reporting in the Group's Annual Report.

b) Shareholders' net assets

Shareholders' net assets represent the market value of net assets held in respect of the covered business under local statutory requirements, and consist of the required capital and free surplus. The level of required capital reflects the amount of capital considered by the directors of each legal entity to be appropriate to manage the business. This is set at least at the level equal to the regulatory required capital of each legal entity, at which the regulator would intervene to request a capital injection and in addition, for the main companies, an adequate buffer to cover short-term volatilities in solvency due to financial and non-financial risks or to achieve the capital required to maintain the desired credit rating.

In Switzerland, required capital for embedded value is based on both the Swiss Solvency Test "SST" and constraints arising from tied assets requirements as defined by Swiss regulation. The SST regime has been included in the MCEV required capital starting from January 1, 2016.

For other European countries, the required capital for embedded value is based on Solvency II. The Solvency II regime has been included in the MCEV required capital starting from January 1, 2016.

Solvency margin (SM) represents the shareholders' portion of the local minimum solvency margins as follows:

Covered business required capital (% SM)

	2018 Required capital (% SM)	2017 Required capital (% SM)
Life business		
North America	*300%*	*300%*
Latin America	*123%*	*127%*
EMEA	*166%*	*155%*
Asia Pacific	*131%*	*137%*
Group Reinsurance	*–*	*–*
Farmers Life	310%	310%
Total covered business	**161%**	**153%**

Shareholders' net assets are based on local statutory and regulatory accounting. In the UK and Ireland local regulatory balance sheets are based on Solvency II methodology. Adjustments are made to embedded value where appropriate, for example in respect of any unrealized gains attributable to shareholders. Any such adjustments are made consistently with the calculation of the value of business in-force.

c) Value of business in-force

The value of business in-force is the present value of future projected profits, distributable after tax to shareholders from the covered business. It is defined as the certainty equivalent value of business in-force less frictional costs, the time value of financial options and guarantees, and the cost of residual non-hedgeable risk. These components are explained below. The methodology for the calculation of the value of business in-force continues to the based on the full economic boundaries of the life business, with the exception of the run-off life insurance operations in Hong Kong where Solvency II contract boundaries were applied.

Embedded value report (continued)

Certainty equivalent (CE) value is the value calculated using risk discount rates aligned with those applied to the underlying cash flows in the capital markets. It includes the intrinsic value but excludes the time value of financial options and guarantees which is allowed for separately, as described below.

Frictional costs (FC) reflect a deduction for the cost of holding the required capital. Under the market consistent framework, the FC represents tax in respect of the future investment return on required capital together with the cost of future investment management expenses on required capital.

For the purpose of these calculations, required capital is assumed to run-off in line with existing business.

The allowance for FC is included both in the value of business in-force and in new business value. For new business value, FC is applied to the required capital to be held in respect of that business.

Time value of financial options and guarantees (TVFOG) represents additional costs in excess of the intrinsic value of options and guarantees which are already allowed for in the CE value. These are based on the variability of investment returns which need to be allowed for explicitly under MCEV Principles. The time value is calculated on a market consistent basis using stochastic modeling techniques, and after making allowance for expected management and policyholder behaviors.

For products with significant guarantees, the time value has been calculated on a market consistent basis by deducting the average present value of shareholder cash flows using 1,000 stochastic economic simulations from the CE value (both for the value of business in-force and separately for new business value).

For most products, the average value has been calculated using Monte Carlo simulations. For a small number of products, the TVFOG has been derived using closed form solutions.

Where appropriate, the calculation of the TVFOG makes allowance for:

- Dynamic actions that would be taken by management under different economic simulations, for example to implement a life business' investment strategy
- Dynamic policyholder behavior, for example changes in surrender behavior as interest rates rise or fall, or take-up rates of guaranteed annuity options

The **cost of residual non-hedgeable risk (CRNHR)** is an explicit deduction for non-hedgeable financial risks (non-hedgeable asset/liability management risks and reinsurance credit risk), and non-financial risks (mortality, persistency, expenses and operational risk). The CE value allows for best estimate shareholder cash flows. The CRNHR is largely an allowance for uncertainty in shareholder cash flows, and for risks which are not already considered in the CE value or the TVFOG, such as operational risk. Most residual non-hedgeable risks have a symmetric impact on embedded value apart from operational risk.

CRNHR is calculated as a charge on the capital held for residual non-hedgeable risks. This is calculated according to Zurich's internal risk based capital model by applying 2,000 shocks to the embedded value assumptions. To align with the MCEV Principles the risk based capital is scaled to a 99.5 percent confidence level by using empirical distributions where available, or by assuming probability distributions as appropriate.

The capital is projected over the lifetime of the business using appropriate risk drivers for each risk type. The present value of the risk capital is calculated by applying the swap curve as of the valuation date. The CRNHR allows for diversification across risk types and across geographical businesses. No allowance for diversification between covered and non-covered business is made for in line with MCEV principles and guidance set by the CFO Forum.

A 4 percent cost of capital charge has been applied to the diversified present value of non-hedgeable risk based capital.

d) New business

New business covers new contracts sold during the reporting period and includes recurring single premiums, new premiums written during the period on existing contracts and variations to premiums on existing contracts where these premiums and variations have not previously been assumed to be part of the business in-force. Where recurring single premiums are projected over time to derive the corresponding new business value, they are treated as annual premium for the volume definition. Corporate life business valued with a contract renewal assumption is treated as annual premium. The methodology for the calculation of the new business value continues to be based on the full economic boundaries of the life business.

New business is valued at the point of sale. Explicit allowance is made for FC, TVFOG, and CRNHR. New business value is valued using actual new business volumes.

The value generated by new business written during the period is the present value of the projected stream of after tax distributable profits from that business.

In certain profit sharing funds, the new business written can affect the TVFOG for business written in prior years. This effect is taken into account in the new business value by valuing the new business on a marginal approach, the difference between embedded value with and without the new business. This captures the effect of cross-subsidies between business in-force and new business due to, for example, different interest rate guarantees operating in a shared common pool of assets.

New business is valued on a discrete quarter basis. Once calculated and reported, new business value for a quarter does not change in subsequent quarters. For details on the assumptions used for new business see section 10.

New business amounts in the embedded value report are reported after the effect of non-controlling interests.

The analysis of the developments of the new business value during the financial year has been performed as follows:

- Change in volumes and business mix includes the variance in business volumes written during the current year assuming previous year margins and the change in the type of covered business written during the current year with the most updated margins
- Economic and operating variances include the effect of changes in economic and non-economic operating assumptions, any effect of model changes impacting the new business value and the change in operating and economic variances. New business operating assumptions are reviewed annually and updated as appropriate with effect from the first quarter of the next calendar year. In general, operating assumptions remain unchanged throughout the year
- Foreign currency translation effects include the variance in exchange rates from the beginning of period to the end of the period

e) Asset and liability data

The majority of the Group's embedded value has been calculated using a "hard close" approach, such that all asset and liability data reflect the actual position as of the valuation date.

Germany has followed an approach where liability model points are set up in advance, using the structure of a previous run, and then projected to the valuation date by scaling to match the actual balance sheet figures.

f) Market consistent discounting

The Group has adopted a bottom-up market consistent approach for the projection and discounting of future cash flows in the calculation of embedded value. As a result, the risks inherent in the cash flows are allowed for in a way that is consistent with the way the market is expected to allow for such risks.

In principle, this method values each cash flow using a risk discount rate consistent with that applied to such a cash flow in the capital markets. For example, an equity cash flow is valued using an equity risk discount rate, and a debt security cash flow is valued using a debt security discount rate. If a higher return is assumed for equities, the equity cash flow is discounted at this higher rate.

In practice, the Group has applied a computational method known as a "risk neutral" approach. This involves projecting the assets and liabilities using a distribution of asset returns where all asset types, on average, earn the same risk free rate. The projection and discounting are based on the same risk free yield curve.

The risk free yield curve assumptions are based on the swap curve in each major currency (i.e., mainly U.S. dollar, Euro, British pound and Swiss franc). For each entity subject to Solvency II (i.e., mainly Euro countries and the UK), the MCEV yield curve is fully aligned to the Solvency II yield curve used for local solvency calculations, including the Volatility Adjustment where applicable. Further details are set out under economic assumptions in section 10.

For liabilities having material options and guarantees, economic scenarios were used to capture the TVFOG, in addition to deterministic techniques (referred to as "certainty equivalent").

Embedded value report (continued)

g) Economic scenario generator

All operations use actual yield curves observable as of the valuation date for the calculation of the certainty equivalent value of business in-force.

The calculation of the TVFOG is based on stochastic simulations using an economic scenario generator provided by Moody's Analytics. The simulations have been calibrated to conform to the economic parameters specified by the Group.

The simulations used for calculation of TVFOG reflect the actual yield curves and implied volatilities observable as of the valuation date. Further details are set out under section 10.

Simulations are produced for the economies in the U.S., the UK, Switzerland and the Eurozone.

Risk free nominal interest rates are modeled using an improved interest rate model, which is a variant of the LIBOR market model with displacement diffusion and stochastic volatility (i.e., so called LMMPlus). This model allows for the modeling of negative nominal interest rates.

The excess return on other asset classes (e.g., equity, property, etc.) relative to the total returns on risk free assets are then modeled using a multifactor lognormal model.

Hong Kong uses U.S. dollar simulations because its principal liabilities are U.S. dollar denominated. Chile uses closed form solutions rather than simulations. Other operations, not mentioned above, have no significant options and guarantees. Further details are set out under economic assumptions in section 10.

h) Holding companies

Holding companies allocated to the Life business have been included in embedded value at IFRS shareholders' equity excluding intangibles. Related expenses have been included in the projection assumptions. Holding companies outside the covered business are not included in this report.

i) Consolidation adjustments

Where a reinsurance arrangement exists between two life companies within the Life business, the value of the reinsurance is shown in embedded value of the region to which the ceding company belongs.

j) Debt

Where a loan exists between a company in the Life business and a Group company outside the Life business, the loan is included in embedded value at its market value.

k) "Look through" principle – service companies

There are some companies within the Life business that provide administration and distribution services. These are valued on a look through basis. The results do not include any Group service companies outside the Life business.

In Germany, the majority of distribution and administration is provided by service companies. These are valued on a look through basis. These companies also provide limited services to companies outside the Life business. The value of business in-force and new business value reflect the services provided to companies within the Life business. The shareholders' net assets of the Life business include, however, the full shareholders' net assets of these service companies.

In Switzerland, an investment management company provides, within others, asset management services to pension schemes written in foundations and other pension funds. The present value of the net asset management fees only related to those activities, after tax, is included in embedded value and new business value.

l) Employee pension schemes

In the Group's Annual Report, actuarial gains and losses arising from defined benefit pension and other defined benefit post-retirement plans are recognized in full in the period in which they occur and are presented on a separate line in the statement of comprehensive income, with a liability recognized for employee benefit deficits under IAS 19. This adjustment has not been made in the detailed embedded value described in this embedded value report. If the adjustment had been made, embedded value as of the valuation date would have been lower by USD 887 million. The actuarial and economic assumptions used for this adjustment are consistent with those used for the equivalent allowance made in the Group's Annual Report.

Expense assumptions for each life business include expected pension scheme costs in respect of future service entitlements.

m) Change in legislation or solvency regime

The impacts of changes in legislation or solvency regimes are included in economic variance for the analysis of movement when they occur.

n) Translation to Group presentation currency

To align embedded value reporting with the Group's Annual Report, relevant results have been translated to the Group presentation currency, U.S. dollar, using average exchange rates for the period. This applies to new business value and new business volumes (APE and PVNBP) for the current period and comparative figures. This approach has also been applied to the analysis of movement. Valuations as at a specified date are translated at end-of-period exchange rates.

The rates can be found in note 1 of the Group's Annual Report as of December 31, 2018.

o) Sensitivities

The sensitivities have been adjusted to better reflect the nature of the business and financial risks. The key assumption changes represented by each of the sensitivities in section 6 are as follows:

Operating sensitivities

A 10 percent decrease in maintenance expenses means that, for example, a base assumption of USD 30 per annum would decrease to USD 27 per annum.

A 10 percent increase/decrease in voluntary discontinuance rates means that, for example, a base assumption of 5 percent per annum would increase/decrease to 5.5/4.5 percent per annum.

A 5 percent improvement in mortality assumptions for annuities means that, for example, if the actuarial mortality assumption for annuities was 90 percent of a particular table, this would decrease to 85.5 percent.

A 5 percent increase in the mortality and morbidity rates for protection products means that, for example, if the actuarial mortality and morbidity rates for protection products was 80 percent of a particular table, this would increase to 84 percent.

Economic sensitivities

A 50 basis points increase and decrease was applied to the risk free forward yield curve across all durations.

A 10 percent fall in equity was assessed for both the embedded value and the new business value.

A 100 basis points increase and decrease in credit spreads shows the impact of a widening or narrowing in credit spreads on corporate bond assets. For credit spread increases, the market value of assets will fall since future defaults are expected to rise. For credit spread decreases, the market value of assets will rise since future defaults are expected to decline.

A 25 percent increase in implied risk free volatilities means that, for example, a volatility of 20 percent per annum would increase to 25 percent per annum.

In each sensitivity calculation, all other assumptions remain unchanged except where they are directly affected by the revised conditions. The results include any impact of the assumption changes on all the embedded value components, including the time value of financial options and guarantees.

p) Expected contribution

Expected contribution at reference rate

The expected contribution at reference rate is the projected change in embedded value over the year using risk free investment returns applicable at the start of the year. It also allows for the release of the FC, CRNHR and TVFOG of the current year.

Expected contribution in excess of reference rate

The expected contribution in excess of reference rate is the additional embedded value expected to be created if real world expected investment returns applicable at the start of the year were to emerge.

Embedded value report (continued)

Expected transfer to shareholders' net assets

The expected transfer to shareholders' net assets shows the profits expected to emerge during the year in respect of business in-force at the start of the year. The net effect on embedded value is zero, because the change in the value of business in-force is offset by an equal and opposite change in shareholders' net assets.

q) Operating and economic variances

Operating assumption changes

Changes in assumptions about future operating experience also have an impact on operating variances, including mortality and morbidity, persistency, expenses and other assumptions.

Operating variances

Operating variances include:

- Operating experience variances: operating experience variances measure the difference between actual experience during the period and that implied by the operating assumptions. Experience variances occur in the normal course of business as short-term experience fluctuates around long-term assumptions
- Other operating variances: include modeling changes, development and one-off expenses and other operating variances not captured elsewhere

Economic variances

Economic variances arise from the difference between actual economic experience during the year and the expected experience implied by the economic assumptions at the start of the year.

Other non-operating variances

Other non-operating variances include the impact of legal, tax and regulatory changes implemented during the year as well as other one-off items.

10. Embedded value assumptions

Projections of future shareholder cash flows expected to emerge from covered business and for new business are determined using best estimate operating assumptions. These assumptions, including mortality, morbidity, persistency and expenses, reflect recent experience and are reviewed annually and updated as appropriate. Allowance is made for future improvements in annuitant mortality based on experience and externally published data. Favorable changes in future operating efficiency are not anticipated in the assumptions, in particular for expenses and persistency.

For the purposes of calculating the value of business in-force, future economic assumptions, for example, investment returns and inflation, are based on period end conditions and assumed risk discount rates are consistent with these conditions.

For the purposes of calculating new business value, for each discrete quarter of new business, economic assumptions are based on market conditions at the start of the quarter. New business operating assumptions are reviewed annually and updated as appropriate with effect from the first quarter of the next calendar year. In general operating assumptions remain unchanged throughout the year.

a) Economic assumptions

Market consistent framework

The Group has adopted a computational method known as "risk neutral market consistent". With this method the key economic assumptions are:

- Risk free rates
- Volatilities implied by different asset prices
- Correlations between different asset returns

All asset classes are expected to provide an average return in line with the risk free rates, although with different volatilities.

Choice of "risk free yield curve"

The risk free yield curve assumptions are based on the swap curve in each major currency (i.e., U.S. dollar, Euro, British pound and Swiss franc). For each entity subject to Solvency II (i.e., Euro and British pound countries in Europe), the MCEV yield curve is fully aligned to Solvency II yield curve used for local solvency calculations, including the Volatility Adjustment where applicable (i.e., Germany, Italy, Spain and Ireland). For other entities, the risk free yield curve is derived by Zurich from mid-market swap rates as of the valuation date, applying a flat extrapolation after the latest market data point available. For few less material currencies where a swap market is not available, government rates are used instead. Domestic yield curves are used by each business unit except Hong Kong and Argentina which use the U.S. dollar, as their liabilities are principally U.S. dollar-denominated.

Implied asset volatility and correlations

The Group's embedded value model is based on market consistent economic assumptions.

The modeled interest rate volatilities are based on at-the-money and away from the money swaption quotes for different terms and tenors expressed according to the "nominal volatility" market convention. The modeled equity volatilities are based on at-the-money equity quotes from major investment banks. Quotations as of end of December have been used.

Volatilities of property investments are derived from historical returns. Assumptions for long-term equity volatilities and long-term correlations between equity, property and bond indices are derived taking into account available historical data.

Inflation

Inflation assumptions have been derived from the yields on index linked government bonds relative to the corresponding nominal government yield curve, where such index linked government bonds exist. Where appropriate, allowance has been made for expense inflation to exceed the assumed level of price inflation reflecting the contribution of salary related expenses to life company expenses. In Switzerland, in absence of index linked government bonds, an internal estimate from Zurich's Group Investment Management function is used.

Embedded value report (continued)

Risk discount rate

Under the risk neutral approach, risk discount rates are based on the same risk free yield curves as those used to project the investment return.

For stochastic modeling, the risk discount rates are simulation specific and also vary by calendar year consistently with the projected risk free yields in each simulation.

Real world assumptions and expected contribution

The expected contribution for the analysis of embedded value earnings is based on a projection from the start of period to the end of period. This requires assumptions regarding the investment returns expected to be achieved over the period on different asset classes. The investment return assumptions (for this purpose only) are based on the real world returns expected by the Group. The use of real world investment assumptions gives a more realistic basis for the expected contribution calculation and allows for the risk underlying each asset. Any under or over performance will be reported through economic variances. Future real world undiscounted profits are also calculated with the same real world assumptions.

For fixed interest assets, the real world investment return assumptions are based on the gross redemption yield on the assets, less an allowance for defaults where appropriate, together with an adjustment to reflect the change over the period implied in the yield curve assumptions.

For equity assets for units where there is a substantial equity allocation, the investment return assumption is based on the long-term real world expected return. For equity assets for units without a material equity allocation the investment return assumption is based on the 10-year swap rate at the start of period plus a margin to reflect the additional risk associated with investment in this asset class. The equity risk premium was set equal to 420 basis points to be added on top of the 10 year swap rate of the relevant currency as of December 31, 2018.

For property assets, the investment return assumptions are based on the 10-year swap rate at the start of period plus a margin to reflect the additional risk associated with investment in this asset class. The property risk premium was set equal to 200 basis points to be added on top of the 10 year swap rate of the relevant currency as of December 31, 2018.

These assumptions have been set by asset class and separately for each sub-fund in each life business in order to best reflect the actual assets held.

Participating business

Rates of future bonus or crediting rates have been set at levels consistent with the risk neutral investment return assumptions and current bonus plans. In the UK, bonus rates have been set so as to exhaust any remaining assets in the relevant long-term funds. In certain scenarios shareholder injections may be required to meet existing guaranteed benefits and this additional cost is included in the TVFOG.

In other European life businesses and in the U.S., bonuses have been set to be consistent with the investment return assumptions and with the book value approach used by these life businesses. Existing practice, contractual and regulatory requirements as well as reasonable expectations of policyholders are considered in setting bonuses.

Taxation

Current income tax legislation and rates have been assumed to continue unaltered, except where future changes to such tax rates or tax legislation have been substantively enacted.

b) Operating assumptions

Demographic assumptions

The assumed future mortality, morbidity and lapse rates have been derived from recent operating experience and relevant industry statistics. Where operating experience or industry statistics are limited, the assumptions are derived from a best estimate of future developments and are subject to a regular review as more experience emerges. Where appropriate, surrender and option take-up rate assumptions that vary according to the investment simulation under consideration have been used, based on an assessment of likely policyholder behavior.

Expense assumptions

Management expenses have been analyzed between expenses related to acquisition of new business, the maintenance of business in-force and, where appropriate, development expenses and one-off expenses. Future expense assumptions allow for expected levels of maintenance expenses. Headquarters' expenses relating to covered business have been allocated to business units.

The maintenance expenses assumptions allow for the expected cost of providing future service benefits in respect of the Group staff pension schemes. An adjustment to embedded value is noted in section 9 for pension scheme liabilities and no allowance is made in the expense assumptions for any contributions as a result of past service benefits.

No allowance has been made for future productivity improvements in the expense assumptions.

Where service companies have been valued on a look through basis, the value of profits or losses arising from these services have been included in embedded value and new business value.

The Group is liable for payments to be made to various distributors, each payment being dependent on preceding sales volumes or profits or other factors, in accordance with distribution agreements. As part of the economic valuation, for each such agreements, a liability is included in embedded value shareholders' net assets for the best estimate of the next potential payment attributable to the business issued to date.

In countries where significant development work is performed these are shown under "operating variances".

Any expense excluded from the unit cost base used for assumptions setting requires approval from the Head of Group Planning and Performance Management.

Expenses excluded from the unit cost base are included in the operating variances and are related to development expenses and one-off expenses. Development expenses relate to expenses incurred to improve the long-term capacity of the business or to reduce its future unit costs, and include certain expenses for start-up operations not reflected in the long-term assumptions of the business units. They also include certain project-based costs and certain distribution expenses. One-off expenses are those that are not expected to recur and are short-term in nature.

All expenses in embedded value are net of tax appropriate to the business unit to which the expense is charged.

c) Dynamic decisions

To reflect more realistically the outcome of stochastic simulations, the assumptions for each simulation make allowance for the behavior of policyholders and management actions in response to the investment conditions modeled.

In many life businesses, policyholders can exercise an option against the life company in certain circumstances, such as to surrender a policy. For example an increase in the lapse rates could be assumed when interest rates rise (or a corresponding reduction when interest rates fall). This dynamic effect in relation to lapse rates has been allowed for in the stochastic models.

The stochastic models allow, where appropriate, for management actions to change investment strategy in response to market conditions.

Embedded value report (continued)

Disclaimer & Cautionary Statement

Statement by Directors

Statement by Directors

This Embedded value report has been prepared in all material respects in accordance with the Market Consistent Embedded Value Principles and Guidance issued by the European Insurance CFO Forum in April 2016.

The methodology and assumptions underlying the report are described in sections 9 and 10.

Auditor's report on embedded value

Auditor's review report on embedded value

Report on the Review of the Embedded Value Report to the Board of Directors of Zurich Insurance Group Ltd

We have selectively reviewed specific sections of the accompanying Embedded Value Report of Zurich Insurance Group Ltd and its subsidiaries (the Group) for the year ended December 31, 2018.

Our review covered specific sections of the Embedded Value Report, which consists of pages 1 to 6, table "Life business new business by quarter" on page 9, table "Farmers Life new business by quarter" on page 10 and the methodology and assumptions within pages 27 to 35.

Board of Directors responsibility for the Embedded Value

The Board of Directors is responsible for the preparation and fair presentation of the Embedded Value Report in accordance with the Market Consistent Embedded Value (MCEV) Principles issued by the European Insurance CFO Forum, and for such internal control as the Board of Directors determines is necessary to enable the preparation of an Embedded Value Report that is free from material misstatement, whether due to fraud or error.

Practitioner's Responsibility

Our responsibility is to express a conclusion on specific sections (as noted above) of the Embedded Value Report. We conducted our review in accordance with International Standard on Review Engagements (ISRE) 2400 (Revised), Engagements to Review Historical Financial Statements. ISRE 2400 (Revised) requires us to conclude whether anything has come to our attention that causes us to believe that the specific sections of the Embedded Value Report is not prepared in all material respects in accordance with the MCEV Principles issued by the European Insurance CFO Forum. This Standard also requires us to comply with relevant ethical requirements.

A review of the specific sections (as noted above) of the Embedded Value Report in accordance with ISRE 2400 (Revised) is a limited assurance engagement. The practitioner performs procedures, primarily consisting of making inquiries of management and others within the Group, as appropriate, and applying analytical procedures, and evaluates the evidence obtained.

The procedures performed in a review are substantially less in scope than those performed in an audit conducted in accordance with International Standards on Auditing or Swiss Auditing Standards. Accordingly we do not express an audit opinion on the Embedded Value Report.

Conclusion

Based on our review and our scope noted above, nothing has come to our attention that causes us to believe that the specific sections of the accompanying Embedded Value Report have not been prepared, in all material respects, in accordance with the MCEV Principles issued by the European Insurance CFO Forum.

Basis of Accounting

Without modifying our conclusion, we draw attention to sections 9 and 10 of the Embedded Value Report, which describe the basis of accounting. The Embedded Value Report prepared in compliance with the MCEV Principles referred to above, may not be suitable for another purpose. This report does not extend to any financial statements of the Group.

PricewaterhouseCoopers AG

Peter Eberli Alex Finn

Zurich, February 6, 2019