Swiss Re

Half-Year 2019 Report

Contents

Swiss Re Ltd
Swiss Re Ltd is the holding company of the Swiss Re Group. Its shares are listed in accordance with the International Reporting Standard on the SIX Swiss Exchange and trade under the symbol SREN.

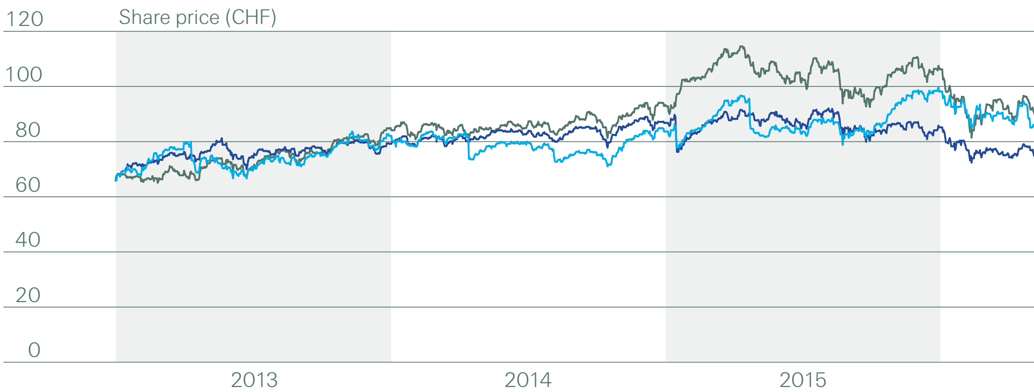
Financial highlights

For the six months ended 30 June

USD millions, unless otherwise stated	2018	2019	Change in %
Group			
Net income attributable to common shareholders	1 006	**953**	–5
Premiums earned and fee income	16 830	**18 160**	8
Earnings per share in CHF	3.13	**3.20**	2
Shareholders' equity (31.12.2018/30.06.2019)	27 930	**30 117**	8
Return on equity in %[1]	6.3	**6.6**	
Return on investments in %[2]	2.6	**4.2**	
Net operating margin in %	8.2	**6.8**	
Number of employees[3] (31.12.2018/30.06.2019)	14 943	**15 503**	4
Property & Casualty Reinsurance			
Net income attributable to common shareholders	752	**771**	3
Premiums earned	7 701	**8 719**	13
Combined ratio in %	92.9	**100.5**	
Net operating margin in %	13.0	**11.1**	
Return on equity in %[1]	14.5	**15.9**	
Life & Health Reinsurance			
Net income attributable to common shareholders	398	**459**	15
Premiums earned and fee income	6 389	**6 284**	–2
Net operating margin in %	9.9	**10.9**	
Return on equity in %[1]	11.5	**13.1**	
Corporate Solutions			
Net income/loss attributable to common shareholders	58	**–403**	–
Premiums earned	1 918	**2 063**	8
Combined ratio in %	101.7	**132.8**	
Net operating margin in %	3.8	**–21.2**	
Return on equity in %[1]	5.0	**–40.5**	
Life Capital			
Net income/loss attributable to common shareholders	34	**5**	–85
Premiums earned and fee income	822	**1 094**	33
Gross cash generation[4]	848	**460**	–46
Net operating margin in %	5.2	**6.2**	
Return on equity in %[1]	1.1	**0.2**	

[1] Return on equity is calculated by dividing annualised net income attributable to common shareholders by average common shareholders' equity.
[2] Annualised, unless otherwise stated.
[3] Regular staff.
[4] Gross cash generation is the estimated net cash arising from business activity within the Life Capital Business Unit during the reporting period, taking into account both surplus development and certain capital actions. It is calculated gross across both Swiss Re's and MS&AD's interest in ReAssure.

Creating shareholder value



Share performance & ratings

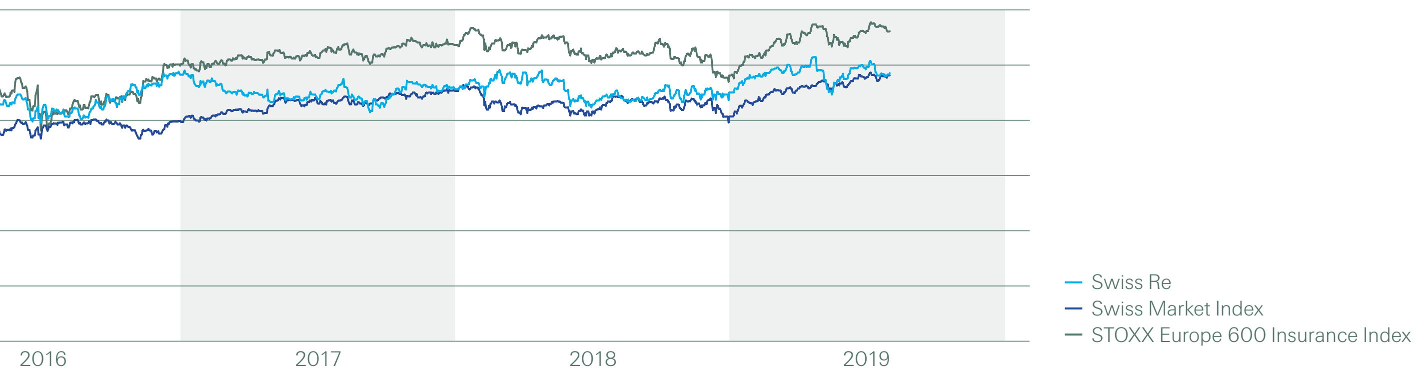
Share vs benchmarks

Performance in %	1 January 2013 to 29 July 2019 (p.a.)	Year to 29 July 2019
Swiss Re	6.1	7.7
Swiss Market Index	5.9	18.3
STOXX Europe 600 Insurance Index	8.4	16.3

As of 29 July 2019	
Share price in CHF	97.1
Market capitalisation in CHF millions	31 791

Ratings

Standard & Poor's	AA–
Moody's	Aa3
A.M. Best	A+



Letter to shareholders

953

Group net income (USD millions) for the first six months of 2019

Dear shareholders,

The macroeconomic environment in the first half of 2019 continued to be challenging. Political and trade tensions, slowing economic growth as well as the prospects of further interest rate cuts and unconventional monetary policy measures continue to dominate the headlines. As a global organisation working with many other global companies, we are concerned about the protectionist tendencies and the weaker economic outlook. As a leading provider of re/insurance coverage, we are actively contributing to building resilience and making societies stronger to withstand these tough times. We are in a strong position to deploy capital and grow in diverse risk pools. And this is good news for our clients, for the communities they serve, as well as for you, our shareholders.

As you know, the pricing environment, especially in property and casualty reinsurance, has not been easy over the past few years. Low interest rates, ample liquidity in the markets and the hunt for yield have made the reinsurance pricing cycle less pronounced than we have seen in the past. However, we benefit from efficiencies achieved through our large scale, global portfolio, diversification with Life & Health Reinsurance (L&H Re) business and client access. The 7.9% increase in our Group net premiums earned and fee income to USD 18.2 billion in the first half of 2019 and the positive renewals momentum year to date are a testament to our strong strategic position.

We are deploying more capital in Reinsurance because we see good opportunities there, and both segments reported strong performance in the first half of the year. Property & Casualty Reinsurance (P&C Re), which delivered a 15.9% return on equity in this period, achieved year-to-date premium growth of 23% from treaty renewals in an improved pricing environment. L&H Re continues to perform strongly, with a 13.1% return on equity in the first half of 2019, and offers valuable diversification for the Group. We are very pleased to see the strength of our reinsurance franchise come back to the fore. Supported by the strong Reinsurance performance and investment results in the first half of 2019, our group net income amounted to USD 953 million.

We are also confident about the outlook for our Corporate Solutions Business Unit, where we today announced a number of decisive measures to address past underperformance. Swiss Re has more than 30 years' experience in the commercial insurance market, which we entered to respond to the complex risk management needs of large corporations. Over time, this business grew and delivered attractive returns on equity before hitting a downturn in 2017. Over the past months, we have conducted a thorough review of the Business Unit under the leadership of its new Chief Executive Officer Andreas Berger.

Our analysis revealed several factors that drove the recent underperformance in Corporate Solutions. Firstly, the business was hit by a combination of a prolonged market softening and a deterioration of claims trends. Structurally, our exposures were too high in some markets, such as US liability, while we were too small to be competitive in others. As part of the Swiss Re Group, the Business Unit also had low reinsurance coverage, contributing to the volatility of its earnings.

We have implemented several measures to address these issues. We reviewed Corporate Solutions' claims reserves and strengthened them in the second quarter of 2019 by USD 328 million, or less than 3% of the Business Unit's total USD 13 billion claims reserves. And we established an Adverse Development Cover with P&C Re. A similar economic protection has been in force since 2012 for all pre-2012 reserves and has shown positive performance across these years for P&C Re. These two measures will ensure prudent reserve levels going forward and significantly lower the

Walter B. Kielholz
Chairman of the Board of Directors

Christian Mumenthaler
Group CEO

impact of potential future adverse developments. We are also actively reducing risk exposures in specific lines of business. This will allow Corporate Solutions to focus on selected profitable portfolios and specific customer segments, where we are seeing an improving price environment.

Portfolio repositioning, together with the resulting efficiency improvements and the accelerating momentum in insurance rates will help Corporate Solutions return to underwriting profitability with a target normalised combined ratio of 98% in 2021. We also increased the Business Unit's capital position by USD 600 million, underlining our long-term commitment to the commercial insurance market.

In Life Capital we continue to grow our open book businesses, which give us access to the life and health insurance market through iptiQ and elipsLife. Gross premiums written in core elipsLife business increased 11% in in the first half of this year. In iptiQ, gross premiums written rose 18%, and we launched a property and casualty business in EMEA and a life and health business in Australia and New Zealand. These businesses offer us tremendous opportunities for the future, although it will still take time to build scale and weight within the Group.

We unfortunately had to suspend the planned initial public offering of ReAssure, our closed life book business in the UK, due to unfavourable conditions in the UK primary equity market, where we and other issuers saw heightened caution and weaker underlying demand from large institutional investors for initial public offerings. We continue to believe that the long-term interests of ReAssure are best served by a more diversified shareholder base, which would be in a better position to manage the large exposure to UK financial market risks than a Swiss-domiciled owner. Our objective remains to reduce Swiss Re's ownership in order to de-consolidate ReAssure. However, our top priority is to protect the value this asset represents to our shareholders, and we have no pressing need to divest ReAssure shares at a price that we consider to be unrepresentative of its value and future prospects. We remain fully committed to and supportive of the business and its management team.

As you can see, all our Business Units are going through a transformation to a greater or lesser degree, and we are optimistic for the future. We see many opportunities ahead as risk pools around the world continue to grow. And we are deploying our capital to participate in these opportunities and generate attractive returns for you, our shareholders. Our capital position remains very strong, and the current public share buy-back programme, which started on 6 May 2019, is well on track.

In these challenging, but also transformative times, we are fortunate to be able to rely on the dedication and hard work of our employees, whom we thank for their engagement.

We are pleased to announce that Urs Baertschi, currently President Reinsurance Latin America, will be joining our Group Executive Committee as the new Chief Executive Officer Reinsurance EMEA and Regional President as of 1 September 2019, succeeding Russell Higginbotham. Russell assumed a new role as the Chief Executive Officer Reinsurance Asia and Regional President earlier this month, following Jayne Plunkett's decision to pursue career opportunities outside Swiss Re. We would like to thank Jayne for her contribution over the past years and look forward to working with Urs and Russell in their new roles.

We would also like to thank you, our shareholders, for continuing to place your trust in us.

Zurich, 31 July 2019

Walter B. Kielholz
Chairman of the Board of Directors

Christian Mumenthaler
Group CEO

Key events

15 January

Swiss Re estimated its claims burden from large natural catastrophes in the fourth quarter 2018 at USD 1.0 billion; large man-made losses caused an additional USD 0.3 billion of claims.

18 February

Swiss Re completed its share buy-back programme of up to CHF 1.0 billion purchase value, launched on 7 May 2018.

21 February

Swiss Re reported full-year 2018 net income of USD 421 million, after absorbing USD 3.0 billion of large claims and a USD 599 million impact from a change in US GAAP accounting guidance. The Board of Directors put forward proposals to increase the regular dividend to CHF 5.60 per share and to launch a new share buy-back programme.

6 March

Swiss Re Institute's *sigma* study showed that emerging markets will remain the growth engine for the global economy and insurance industry over the next decade.

14 March

Swiss Re's Board of Directors proposed an increased dividend of CHF 5.60 per share and a new public share buy-back programme consisting of two tranches of each up to CHF 1.0 billion at the Annual General Meeting of shareholders (AGM) on 17 April 2019.

10 April

Swiss Re Institute's sigma study reported that global insured losses from natural catastrophes in 2018 were USD 76 billion, the fourth highest ever recorded by *sigma*, and highlighted the growing impact of secondary perils.

17 April

Swiss Re shareholders approved all proposals put forward by the Board of Directors at the company's Annual General Meeting, including an increased dividend of CHF 5.60 per share, and authorised a new public share buy-back programme consisting of two tranches of each up to CHF 1.0 billion.

3 May

Swiss Re reported net income of USD 429 million in the first quarter of 2019, reflecting excellent Life & Health Reinsurance performance and a very strong investment result, partly offset by large losses. The Group also announced that the first tranche of its share buy-back programme of up to CHF 1.0 billion was set to be launched on 6 May 2019.

22 May

Swiss Re Institute published its 2019 SONAR report, which provides insights on emerging risks that have the potential to affect the insurance industry landscape.

7 June

Swiss Re informed that its subsidiary, ReAssure Group plc, is considering proceeding with an initial public offering (IPO). Swiss Re had announced in August 2018 that it was exploring a possible IPO of ReAssure, the business that focuses exclusively on the acquisition and management of closed books of life insurance policies.

27 June

Swiss Re announced that Russell Higginbotham has been appointed CEO Reinsurance Asia and Regional President, effective 8 July 2019. He is succeeding Jayne Plunkett, who has decided to pursue career opportunities outside Swiss Re.

11 July

Swiss Re announced the suspension of its previously communicated plans for an IPO of ReAssure due to heightened caution and weaker underlying demand in the UK primary market from large institutional investors.

Business Units at a glance

Working across diversified insurance risks and businesses to maximise shareholder value

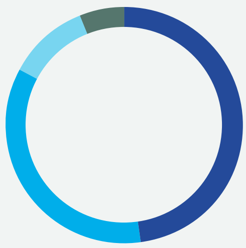
Half-year ended 30 June 2019			Net premiums earned and fee income (USD millions)	Net income (USD millions)
Reinsurance Reinsurance provides clients and brokers with reinsurance products, insurance-based capital market instruments and risk management services. Reinsurance operates globally through two segments – Property & Casualty (P&C) and Life & Health (L&H). Read more: page 12	Property & Casualty	2019 H1	8 719	771
		2018 H1	7 701	752
	Life & Health	2019 H1	6 284	459
		2018 H1	6 389	398
Corporate Solutions Corporate Solutions provides risk transfer solutions to large and mid-sized corporations around the world. Its innovative, highly customised products and standard insurance covers help to make businesses more resilient, while its industry-leading claims service provides additional peace of mind. Read more: page 15		2019 H1	2 063	–403
		2018 H1	1 918	58
Life Capital Life Capital manages closed and open life and health insurance books. It provides alternative access to the life and health risk pool, helping to generate stable returns and seize attractive new opportunities. Read more: page 16		2019 H1	1 094	5
		2018 H1	822	34
Group (after consolidation)		2019 H1	18 160	953
		2018 H1	16 830	1 006

Return on equity	Operating performance
	Combined ratio
15.9% (2018: 14.5%)	100.5% (2018: 92.9%)
	Net operating margin
13.1% (2018: 11.5%)	10.9% (2018: 9.9%)
	Combined ratio
–40.5% (2018: 5.0%)	132.8% (2018: 101.7%)
	Gross cash generation
0.2% (2018: 1.1%)	460m (2018: USD 848m)
	Net operating margin
6.6% (2018: 6.3%)	6.8% (2018: 8.2%)

Diversified and global

Net premiums earned and fee income by business segment (Total USD 18.2 billion)

- 48% P&C Reinsurance
- 35% L&H Reinsurance
- 11% Corporate Solutions
- 6% Life Capital



Group results

Swiss Re reported net income of USD 953 million, supported by strong Reinsurance performance and investment results.

Swiss Re reported net income of USD 953 million for the first six months of 2019, largely in line with the same period in 2018. The result was impacted by natural catastrophes and man-made losses in the prior accident year, and supported by a strong Reinsurance performance and investment results. The net operating margin for the 2019 period was 6.8%, compared with 8.2% for the first six months of 2018.

Reinsurance reported net income of USD 1.2 billion in line with the same period in 2018. Property & Casualty (P&C) Reinsurance accounted for USD 771 million, an increase from USD 752 million for the first half of 2018. The current year's result was supported by profitable business growth and very strong investment performance. This was partly impacted by late claims development from Typhoon Jebi in the first quarter of 2019, in line with a material increase in the total market loss. Other losses included claims from natural catastrophes, mainly in Australia, and losses stemming from the Ethiopian Airlines crash and subsequent Boeing 737 MAX fleet grounding. The net operating margin was 11.1%, compared with 13.0% in the prior-year period.

Life & Health (L&H) Reinsurance contributed USD 459 million for the first six months of 2019, an increase from USD 398 million for the same period in 2018. The result was driven by active portfolio management, improved mortality developments in the Americas and a very strong 4.4% return on investments (ROI). The net operating margin was 10.9% in the first half of 2019 and 9.9% for the same period in 2018.

Corporate Solutions reported a net loss of USD 403 million for the first six months of 2019, compared with a net income of USD 58 million for the same period of the previous year. The 2019 result was impacted by reserve strengthening, man-made losses and a premium for an Adverse Development Cover with P&C Reinsurance, partly offset by a higher investment result.

Life Capital delivered a net income of USD 5 million for the first six months of 2019, down from USD 34 million for the same period in 2018. The decrease was mainly due to losses on equity derivatives and expenses related to the separation of ReAssure into a standalone group. Life Capital's net operating margin increased to 6.2% in the first half of 2019, compared with 5.2% in the same period of the previous year.

Shareholders' equity, excluding non-controlling interests, increased to USD 30.1 billion as of 30 June 2019 from USD 27.9 billion at the end of December 2018. The increase reflected the net income for the first six months of 2019 as well as realised gains on fixed income securities, partly offset by a payment to shareholders of USD 2.1 billion for the 2018 regular dividend and the share buy-back programmes.

Return on equity (ROE) was 6.6% for the first half of 2019, compared with 6.3% for the prior-year period. Earnings per share for the 2019 period were USD 3.19 or CHF 3.20, compared with USD 3.24 or CHF 3.13 for the first half of 2018.

Book value per share increased to USD 101.83 or CHF 99.29 at the end of June 2019, compared with USD 93.09 or CHF 91.72 at the end of December 2018. Book value per share is based on shareholders' equity and excludes non-controlling interests.

Business performance

Net premiums earned and fee income for the Group were USD 18.2 billion for the first six months of 2019, an increase from USD 16.8 billion in the same period of the previous year. The increase was mainly driven by growth across the property and casualty lines of business. At constant exchange rates, premiums and fees increased by 11.5%.

Net premiums earned by P&C Reinsurance were USD 8.7 billion, an increase from USD 7.7 billion for the same period of the previous year, reflecting large casualty transactions, mainly in the Americas, and growth in the natural catastrophe business. At constant exchange rates, premiums earned increased by 16.7%. The P&C Reinsurance combined ratio increased to 100.5% from 92.9% for the first half of 2018, mainly due to unfavourable prior-year development and a higher large loss burden.

L&H Reinsurance's net premiums earned and fee income amounted to USD 6.3 billion in the first half of 2019, a decrease from USD 6.4 billion in the prior-year period, driven by unfavourable foreign exchange rate movements and the termination of an intragroup retrocession agreement with Life Capital. At constant exchange rates, premiums earned and fee income increased by 2.2%.

Corporate Solutions' net premiums earned increased to USD 2.1 billion from USD 1.9 billion in the prior-year period, primarily driven by significant rate increases and growth in selected lines of business. At constant exchange rates, net premiums earned increased by 9.6%. The Corporate Solutions combined ratio was 132.8% for the first half of 2019, up from 101.7% for the same period of the previous year, primarily driven by claims reserve strengthening, mainly on large- and medium-sized man-made losses, and a premium for the Adverse Development Cover with P&C Reinsurance.

Income statement

For the six months ended 30 June

USD millions	2018	2019	Change in %
Revenues			
Gross premiums written	19 589	22 672	16
Net premiums written	18 334	21 356	16
Change in unearned premiums	–1 801	–3 528	96
Premiums earned	16 533	17 828	8
Fee income from policyholders	297	332	12
Net investment income – non-participating business	2 023	1 907	–6
Net realised investment gains/losses – non-participating business	–228	817	–
Net investment result – unit-linked and with-profit business	385	3 476	–
Other revenues	12	11	–8
Total revenues	19 022	**24 371**	28
Expenses			
Claims and claim adjustment expenses	–5 851	–7 967	36
Life and health benefits	–5 990	–6 392	7
Return credited to policyholders	–520	–3 237	–
Acquisition costs	–3 505	–3 617	3
Operating expenses	–1 625	–1 732	7
Total expenses before interest expenses	–17 491	**–22 945**	31
Income before interest and income tax expense	1 531	**1 426**	–7
Interest expenses	–279	–278	0
Income before income tax expense	1 252	**1 148**	–8
Income tax expense	–215	–186	–13
Net income before attribution of non-controlling interests	1 037	**962**	–7
Income/loss attributable to non-controlling interests	–7	–9	29
Net income after attribution of non-controlling interests	1 030	**953**	–7
Interest on contingent capital instruments, net of tax	–24		–100
Net income attributable to common shareholders	1 006	**953**	–5

Life Capital reported gross cash generation of USD 460 million for the first six months of 2019, compared with USD 848 million for the same period of the previous year. The current year's result was mainly driven by the 10% stake sale in ReAssure to MS&AD Insurance Group Holding Inc and proceeds from the sale of subordinated bonds issued by ReAssure, partly offset by the impact of the ReAssure recapitalisation.

Investment result and expenses

The Group's investment portfolio, excluding unit-linked and with-profit investments, increased to USD 131.9 billion as of 30 June 2019 from USD 122.6 billion at the end of 2018. The increase reflects mark-to-market gains from falling interest rates and credit spread tightening over the period.

ROI was 4.2% for the first six months of 2019, compared with 2.6% for the same period of 2018. The increase reflects strong equity market performance, as well as additional gains within the fixed income portfolio.

The Group's non-participating net investment income was USD 1.9 billion, compared with USD 2.0 billion for the first six months of 2018. The decrease reflected a reduced contribution from alternative investments. The Group's fixed income running yield for the six months period was stable at 2.9% in 2019.

The Group reported non-participating net realised gains of USD 0.8 billion for the first six months of 2019, compared with net realised losses of USD 0.2 billion for the same period in 2018. The increase was primarily related to the contribution from equity securities.

Acquisition costs for the Group increased marginally to USD 3.6 billion for the first six months of 2019 from USD 3.5 billion for the same period of the previous year.

Operating expenses increased to USD 1.7 billion in the first half of 2019 from USD 1.6 billion in the prior year period.

Interest expenses were USD 278 million, in line with the 2018 period.

The Group reported a tax expense of USD 186 million on a pre-tax income of USD 1.1 billion for the first six months of 2019, compared with a tax expense of USD 215 million on a pre-tax income of USD 1.3 billion for the same period in 2018. This translates into an effective tax rate in the current and prior-year reporting periods of 16.2% and 17.2%, respectively. The lower rate in the first half of 2019 was driven by tax benefits from the effective settlement of tax audits and the release of valuation allowances on net operating losses, partly offset by tax charges from other income-based taxes.

Reinsurance

The Reinsurance Business Unit, which comprises the segments Property & Casualty Reinsurance and Life & Health Reinsurance, reported a strong performance in the first six months of 2019.

Property & Casualty Reinsurance

Net income for the first six months of 2019 was USD 771 million, compared with USD 752 million in the same period of 2018. This result reflected profitable business growth and a very strong investment performance. Additionally, the segment provided an Adverse Development Cover to the Corporate Solutions Business Unit in the second quarter.

The underwriting performance was supported by large transactions and successful renewals. The result included claims resulting from the North Queensland floods and hail and storm losses in Australia, as well as the impact of the Ethiopian Airlines crash and the subsequent Boeing 737 MAX fleet grounding. Late claims for Typhoon Jebi in the first quarter further impacted the result. The net operating margin was 11.1% compared with 13.0% in the previous period.

The investment result was 132% higher in the first six months of 2019 compared with the same period in 2018, largely related to market value gains on equity securities and gains within the fixed income portfolio.

Premiums

Gross premiums written increased by 30% to USD 12.4 billion in the first six months of 2019. Net premiums earned were USD 8.7 billion for the first six months of 2019, up from USD 7.7 billion in the prior period. The increase was driven by large casualty transactions, mainly in the Americas, as well as growth in the natural catastrophe business.

Combined ratio

P&C Reinsurance reported a combined ratio of 100.5% for the first half of 2019, compared with 92.9% in the prior-year period. The deterioration was driven by an unfavourable prior-year development and a higher large loss burden from both natural catastrophe and man-made losses, compared with the same period of 2018.

Administrative expense ratio
The administrative expense ratio decreased to 6.7% in the first six months of 2019, compared with 7.4% in the same period of 2018, due to higher net premiums earned.

Lines of business
The property combined ratio increased to 100.5% in the first six months of 2019 from 83.6% in the first six months of last year. The increase was driven by an unfavourable prior-year development, particularly due to Typhoon Jebi in Japan, and less favourable large loss experience, most notably from weather events in Australia.

The casualty combined ratio slightly increased to 105.5% in the first six months of 2019 from 105.4% in 2018. Both periods experienced reserve strengthening in the US, partly offset by favourable developments in other regions.

The specialty combined ratio increased to 82.7% for the first six months of 2019 from 72.3% in the first six months of 2018, reflecting the impact of the Ethiopian Airlines crash and Boeing 737 MAX fleet grounding.

Investment result
The ROI was 4.4% for the first six months of 2019, compared with 2.1% in the same period of 2018, reflecting an increase in the investment result of USD 664 million.

Net investment income increased by USD 68 million to USD 655 million for the first six months of 2019, driven by a higher average invested asset base.

Net realised gains were USD 513 million for the first six months of 2019, compared with net realised losses of USD 84 million for the prior period. The increase was largely related to the contribution from equity securities, reflecting strong equity market performance, as well as gains within the fixed income portfolio during the first half of 2019.

Insurance-related investment results and foreign exchange gains/losses are not included in the figures above.

Shareholders’ equity
Shareholders’ equity increased to USD 10.0 billion as of 30 June 2019 from USD 9.5 billion as of 31 December 2018, primarily driven by a net change in unrealised gains and net income, partly offset by dividends paid to the Group. ROE for the first six months of 2019 was 15.9%, compared with 14.5% in the same period of 2018.

Outlook
Renewals of loss-affected natural catastrophe business experienced favourable rate increases. Property & Casualty Reinsurance had opportunities to grow its natural catastrophe business in North America at attractive terms. In non-loss affected markets, rates are overall stable, with some small ups and downs. The Business Unit observed rate increases for loss affected lines and markets within specialty lines and otherwise stable terms and conditions. For casualty, rates increased in segments where improvements were needed due to claims trends. Other casualty renewals demonstrated stable rates. The Business Unit continued to see some good opportunities for transactions and participated in those that meet its return requirements.

Life & Health Reinsurance

Net income was USD 459 million for the first six months of 2019, an increase from USD 398 million in the same period a year earlier. The increase was driven by active portfolio management and improved mortality developments in the Americas. The investment result was very strong, reflecting higher net realised gains stemming from favourable equity markets development and gains within the fixed income portfolio. ROE was 13.1%, higher than the 11.5% reported for the same period of 2018.

Premiums

Net premiums earned and fee income decreased by 1.6% to USD 6.3 billion from USD 6.4 billion for the prior-year period. Gross premiums written in the first half of 2019 decreased by USD 0.4 billion, or 5.7%, to USD 7.0 billion, compared with the first six months of 2018. The decline was driven by unfavourable foreign exchange rate movements and the termination of an intragroup retrocession agreement with Life Capital.

Net operating margin

The net operating margin was 10.9% for the first six months of 2019, an increase from 9.9% in the same period of 2018, driven by a better underwriting result.

Management expense ratio

The management expense ratio was 5.4%, an increase compared with 5.0% in the prior-year period.

Lines of business

Earnings before interest and income tax expenses (EBIT) for the life business increased to USD 431 million in the first six months of 2019, from USD 378 million in the prior-year period. Results for the current period benefited from active portfolio management and improved mortality experience in the Americas. This was partly offset by lower investment income allocation.

EBIT for the health business was USD 135 million in the first six months of 2019, compared with USD 206 million in the prior-year period. The 2019 result reflected the impact from an update of the assumptions for the group business in Asia, experience and model improvements in EMEA and lower investment income allocation.

Investment result

The ROI was 4.4% in the first six months of 2019, compared with 3.6% in the same period of 2018, reflecting an increase in the investment result of USD 118 million.

Net investment income decreased by USD 34 million to USD 536 million for the first six months of 2019, driven by equity accounted impairments in the current period. The fixed income running yield was 3.4% in the reporting period.

Net realised gains were USD 227 million for the first six months of 2019, compared with USD 75 million for the same period in 2018, reflecting improved equity market performance as well as additional gains within the fixed income portfolio.

Insurance-related investment results as well as foreign exchange gains/losses are not included in the figures above.

Shareholders' equity

Shareholders' equity increased to USD 7.7 billion as of 30 June 2019 from USD 6.3 billion as of 31 December 2018. The increase was primarily driven by a change in net unrealised gains and net income for the period, partly offset by the dividend paid to the Group.

ROE was 13.1% for the first six months of 2019, compared with 11.5% for the same period of 2018.

Outlook

The Business Unit expects increases in life and health treaty reinsurance new business to be driven by high-growth markets, and with more modest growth in mature markets. In mature markets, the prolonged low interest rate environment continues to have an unfavourable impact on long-term life business. Cession rates are expected to be broadly stable in major markets. The Business Unit sees a continued strong focus on capital, risk and balance sheet optimisation in mature markets, leading to ongoing opportunities for large transactions.

Swiss Re will continue to pursue growth opportunities in high-growth markets and in large transactions, including longevity deals. L&H Reinsurance is responding to the expanding need for health protection driven by ageing societies, and it will apply its risk knowledge experience to help reduce the protection gap in all regions.

Corporate Solutions

Results were impacted by reserve strengthening, mainly on man-made losses, and a premium for an Adverse Development Cover with P&C Reinsurance.

Corporate Solutions reported a net loss of USD 403 million in the first six months of 2019, compared with a net profit of USD 58 million in the same period of 2018, with a net operating margin of –21.2%, compared with 3.8% for the previous period. The result was impacted by claims reserve strengthening, mainly on large- and medium-sized man-made losses, and a premium for an Adverse Development Cover with P&C Reinsurance, but supported by a higher investment result.

Premiums
Gross premiums written increased by 7.7% to USD 2.2 billion in the first six months of 2019 from USD 2.0 billion in the same period of 2018.
Net premiums earned increased by 7.6% to USD 2.1 billion in the first six months of 2019 as significant rate increases and growth in selected lines of business more than offset active pruning of several underwriting portfolios.

Combined ratio
The combined ratio increased to 132.8% in the first six months of 2019, compared with 101.7% in the same period of 2018, primarily driven by claims reserve strengthening, mainly on large- and medium-sized man-made losses, and a premium for the Adverse Development Cover with P&C Reinsurance.

Lines of business
The property combined ratio for the first six months of 2019 deteriorated by 25.6 percentage points to 117.3%, driven by higher large man-made losses and an unfavourable natural catastrophe reserve development.

The casualty combined ratio increased to 156.2% in the first six months of 2019, compared with 108.1% in the same period of 2018. Both periods were impacted by large man-made losses, and 2019 saw a significant negative reserve development.

The specialty combined ratio for the first six months of 2019 deteriorated by 16.1 percentage points to 121.2%, impacted by a significant increase in small- to medium-sized losses.

Investment result
The ROI was 3.2% in the first six months of 2019, compared with 2.2% in the same period of 2018, reflecting higher net realised gains.

Net investment income increased by USD 16 million to USD 122 million in the first six months of 2019, mainly due to a higher fixed income running yield.

Net realised gains were USD 33 million compared with USD 1 million in the first six months of 2018, reflecting improved equity market performance in the first half of 2019.

Insurance-related derivative results and foreign exchange gains/losses are not included in the investment figures.

Corporate Solutions offers insurance protection against weather perils and other risks, which is accounted for as derivatives. Insurance in derivative form reported net realised gains of USD 52 million in the first six months of 2019, compared with USD 8 million in the same period of 2018. The previous period was impacted by the cold spell in the US in early 2018.

Shareholders' equity
Shareholders' equity increased to USD 2.2 billion since the end of 2018, due to the Group's injection of USD 600 million capital in the second quarter of 2019 and unrealised gains for the first half of the year, partly offset by the net loss for the period. ROE was –40.5% in the first six months of 2019, compared with 5.0% in the same period of 2018.

Outlook
Corporate Solutions is taking decisive actions to address recent underperformance and is targeting a nomalised combined ratio of 98%* in 2021. In addition to increasing reserves and reinsurance protection, these actions include portfolio pruning measures to ensure a more focused, profitable commercial lines business.

The market momentum has substantially accelerated in the first six months of 2019, and terms and conditions have tightened in parallel. Swiss Re expects the positive momentum in commercial insurance rates to continue after achieving a broad-based 9% price quality increase in the first half of 2019. Further rate hardening is required until the price level is sufficient across all lines of business.

* Assuming an average large natural catastrophe loss burden and excluding prior-year reserve developments.

Life Capital

Life Capital continues to focus on becoming a dynamic primary B2B(2C) business creating improved access to attractive primary L&H and P&C risk pools. In the closed book business, ReAssure will continue to pursue selective business growth.

During the first six months of 2019, net income for Life Capital was USD 5 million compared with USD 34 million for the same period in 2018. The current period's result was supported by net realised gains within the fixed income portfolio and offset by losses on equity derivatives and expenses related to the separation of ReAssure into a standalone group.

The net operating margin in the first six months of 2019 was 6.2%, compared with 5.2% in the prior year.

Life Capital reported gross cash generation of USD 460 million during the first six months of 2019, mainly driven by the 10% stake sale in ReAssure to MS&AD Insurance Group Holding Inc and proceeds from the sale of subordinated bonds issued by ReAssure, partly offset by the impact of ReAssure recapitalisation. This compares with exceptional gross cash generation of USD 848 million during the first six months of 2018. The 2018 result was driven by strong underlying emerging surplus on the ReAssure business, proceeds from the sale of the initial 5% stake in ReAssure to MS&AD in 2017 and the finalisation of the 2017 Solvency II position.

Premiums

Gross premiums written on the open books businesses increased by 16.8% when measured at constant exchange rates. Net premiums earned and fee income increased to USD 1.1 billion in the first half of 2019, from USD 822 million in the prior-year period, due to growth in the open book life and health insurance businesses and changes to intragroup retrocessions.

Investment result

The ROI was 3.2% in the first six months of 2019, compared with 3.4% in the same period in 2018, reflecting a decrease in the investment result of USD 70 million.

Net investment income decreased by USD 39 million to USD 398 million in the first six months of 2019, mainly due to run-off within the closed book portfolios, as well as the impact of foreign exchange rate movements.

Net realised gains decreased by USD 31 million to USD 27 million in the first six months of 2019, largely due to additional losses on equity derivatives.

Insurance-related investment results as well as foreign exchange gains/losses are not included in the figures above.

Operating expenses

Operating expenses were USD 325 million in the first six months of 2019, compared with USD 238 million in the same period last year, with the increase driven by expenses related to the separation of ReAssure into a standalone group and investment into the growth of the open books businesses.

Shareholders’ equity

Shareholders’ equity increased by USD 0.8 billion to USD 5.9 billion for the first six months of 2019, compared with 31 December 2018. The increase was mainly driven by USD 0.5 billion of unrealised investment gains.

ROE was 0.2% for the first six months of 2019, compared with 1.1% for 2018. The year-on-year decrease was mainly due to the decline in net income in the current period.

Outlook

During the first half of 2019, the open books businesses saw strong growth in premiums written and the number of policies sold. The businesses further developed with the introduction of iptiQ EMEA P&C and iptiQ ANZ L&H. For the closed books business, the strategy is to continue to pursue selective growth. Swiss Re retains the objective to reduce its ownership in order to de-consolidate ReAssure.

Life Capital continues to pursue growth of its individual and group open books businesses in Europe and the US, with Asia planned in the near future. Our goal is to build a leading primary insurance business globally with attractive returns for shareholders and an ambition to grow via innovation and the use of digital technology, as well as through partnering with trusted brands and intermediaries.

Group financial statements (unaudited)

Income statement

For the six months ended 30 June

USD millions	Note	2018	2019
Revenues			
Gross premiums written	4	19 589	**22 672**
Net premiums written	4	18 334	**21 356**
Change in unearned premiums		–1 801	**–3 528**
Premiums earned	3	16 533	**17 828**
Fee income from policyholders	3	297	**332**
Net investment income – non-participating business[1]	7	2 023	**1 907**
Net realised investment gains/losses – non-participating business[2]	7	–228	**817**
Net investment result – unit-linked and with-profit business	7	385	**3 476**
Other revenues		12	**11**
Total revenues		19 022	**24 371**
Expenses			
Claims and claim adjustment expenses	3	–5 851	**–7 967**
Life and health benefits	3	–5 990	**–6 392**
Return credited to policyholders		–520	**–3 237**
Acquisition costs	3	–3 505	**–3 617**
Operating expenses		–1 625	**–1 732**
Total expenses before interest expenses		–17 491	**–22 945**
Income before interest and income tax expense		1 531	**1 426**
Interest expenses		–279	**–278**
Income before income tax expense		1 252	**1 148**
Income tax expense		–215	**–186**
Net income before attribution of non-controlling interests		1 037	**962**
Income/loss attributable to non-controlling interests		–7	**–9**
Net income after attribution of non-controlling interests		1 030	**953**
Interest on contingent capital instruments, net of tax		–24	
Net income attributable to common shareholders		1 006	**953**
Earnings per share in USD			
Basic	11	3.24	**3.19**
Diluted	11	3.07	**3.09**
Earnings per share in CHF[3]			
Basic	11	3.13	**3.20**
Diluted	11	2.96	**3.09**

[1] Total impairments for the six months ended 30 June of nil in 2018 and USD 18 million in 2019, respectively, were fully recognised in earnings.
[2] Total impairments for the six months ended 30 June of USD 5 million in 2018 and USD 5 million in 2019, respectively, were fully recognised in earnings.
[3] The translation from USD to CHF is shown for informational purposes only and has been calculated using the Group's average exchange rates.

The accompanying notes are an integral part of the Group financial statements.

Statement of comprehensive income

For the six months ended 30 June

USD millions	2018	2019
Net income/loss before attribution of non-controlling interests	1 037	**962**
Other comprehensive income, net of tax:		
Change in net unrealised investment gains/losses	–1 693	**3 224**
Change in other-than-temporary impairment		**2**
Change in cash flow hedges	11	**1**
Change in foreign currency translation	–192	**17**
Change in adjustment for pension benefits	32	**7**
Change in credit risk of financial liabilities at fair value option	–1	**–1**
Impact of sale to non-controlling shareholder	–259	**–56**
Other comprehensive income attributable to non-controlling interests	140	**263**
Total comprehensive income/loss before attribution of non-controlling interests[1]	–925	**4 419**
Interest on contingent capital instruments, net of tax	–24	
Comprehensive income attributable to non-controlling interests	–147	**–272**
Total comprehensive income/loss attributable to common shareholders[1]	–1 096	**4 147**

[1] The Group revised the presentation of the impact of the Accounting Standard Updates (ASUs) 2016-01, 2016-16 and 2018-02 and presented the comparative information for 2018 without the impact of these ASUs totalling USD –139 million. The revision had no impact on the Group's financial position, net income and cash flow.

RECLASSIFICATION OUT OF ACCUMULATED OTHER COMPREHENSIVE INCOME

For the six months ended 30 June

2018 USD millions	Net unrealised investment gains/losses[1]	Other-than-temporary impairment	Cash flow hedges[1]	Foreign currency translation[1, 2]	Adjustment for pension benefits[3]	Credit risk of financial liabilities at fair value option	Accumulated other comprehensive income
Balance as of 1 January	4 746	−2	−10	−5 548	−820	0	−1 634
Impact of sale to non-controlling shareholder	−325		1	52	13		−259
Impact of Accounting Standards Update[4]	−127				−17	5	−139
Change during the period	−2 235		8	−113	5	−1	−2 336
Amounts reclassified out of accumulated other comprehensive income	143		3	−3	36		179
Tax	399			−76	−9		314
Balance as of period end	2 601	−2	2	−5 688	−792	4	−3 875

2019 USD millions	Net unrealised investment gains/losses[1]	Other-than-temporary impairment	Cash flow hedges[1]	Foreign currency translation[1, 2]	Adjustment for pension benefits[3]	Credit risk of financial liabilities at fair value option	**Accumulated other comprehensive income**
Balance as of 1 January	1 905	−3	6	−5 904	−828	5	**−4 819**
Impact of net purchase/sale to non-controlling shareholder	−128		1	64	7		**−56**
Change during the period	4 474		−2	15	1	−1	**4 487**
Amounts reclassified out of accumulated other comprehensive income	−443		3	−6	9		**−437**
Tax	−807	2		8	−3		**−800**
Balance as of period end	**5 001**	**−1**	**8**	**−5 823**	**−814**	**4**	**−1 625**

[1] Reclassification adjustment included in net income is presented in "Net realised investment gains/losses – non-participating business".
[2] Reclassification adjustment is limited to translation gains and losses realised upon sale or upon complete or substantially complete liquidation of an investment in a foreign entity.
[3] Reclassification adjustment included in net income is presented in "Operating expenses".
[4] Impact of ASU 2018-02, ASU 2016-16 and ASU 2016-01 for the six months ended 30 June 2018. Please refer to the Annual Report 2018 for more details.

The accompanying notes are an integral part of the Group financial statements.

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Balance sheet

ASSETS

USD millions	Note	31.12.2018	30.06.2019
Investments	7, 8, 9		
Fixed income securities:			
Available-for-sale (including 11 502 in 2018 and 11 069 in 2019 subject to securities lending and repurchase agreements) (amortised cost: 2018: 89 673; 2019: 91 601)		92 538	**98 682**
Trading (including 2 599 in 2018 and 2 920 in 2019 subject to securities lending and repurchase agreements)		3 414	**3 914**
Equity securities at fair value through earnings (including 480 in 2018 and 56 in 2019 subject to securities lending and repurchase agreements)		3 036	**2 997**
Policy loans, mortgages and other loans		4 542	**4 728**
Investment real estate		2 411	**2 504**
Short-term investments (including 552 in 2018 and 1612 in 2019 subject to securities lending and repurchase agreements)		5 417	**6 352**
Other invested assets		6 398	**7 103**
Investments for unit-linked and with-profit business (including fixed income securities trading: 4 938 in 2018 and 4 506 in 2019, equity securities at fair value through earnings: 23 123 in 2018 and 25 912 in 2019)		29 546	**31 676**
Total investments		147 302	**157 956**
Cash and cash equivalents (including 717 in 2018 and 691 in 2019 subject to securities lending, and 1 175 in 2018 and 968 in 2019 backing unit-linked and with-profit contracts)		5 985	**6 540**
Accrued investment income		1 052	**1 017**
Premiums and other receivables		13 789	**16 719**
Reinsurance recoverable on unpaid claims and policy benefits		7 058	**7 102**
Funds held by ceding companies		9 009	**9 298**
Deferred acquisition costs	6	8 217	**8 726**
Acquired present value of future profits	6	1 818	**1 603**
Goodwill		4 071	**4 075**
Income taxes recoverable		526	**430**
Deferred tax assets		5 411	**6 059**
Other assets		3 332	**5 599**
Total assets		207 570	**225 124**

The accompanying notes are an integral part of the Group financial statements.

LIABILITIES AND EQUITY

USD millions	Note	31.12.2018	30.06.2019
Liabilities			
Unpaid claims and claim adjustment expenses	5	67 446	**69 462**
Liabilities for life and health policy benefits	8	39 593	**41 113**
Policyholder account balances		31 938	**33 721**
Unearned premiums		11 721	**15 635**
Funds held under reinsurance treaties		3 224	**3 223**
Reinsurance balances payable		920	**691**
Income taxes payable		597	**455**
Deferred and other non-current tax liabilities		6 471	**7 876**
Short-term debt	10	1 633	**1 349**
Accrued expenses and other liabilities	7	6 798	**9 465**
Long-term debt	10	8 502	**10 342**
Total liabilities		178 843	**193 332**
Equity			
Common shares, CHF 0.10 par value			
2018: 338 619 465; 2019: 338 619 465 shares authorised and issued		32	**32**
Additional paid-in capital		496	**528**
Treasury shares, net of tax		–2 291	**–2 716**
Accumulated other comprehensive income:			
Net unrealised investment gains/losses, net of tax		1 905	**5 001**
Other-than-temporary impairment, net of tax		–3	**–1**
Cash flow hedges, net of tax		6	**8**
Foreign currency translation, net of tax		–5 904	**–5 823**
Adjustment for pension and other post-retirement benefits, net of tax		–828	**–814**
Credit risk of financial liabilities at fair value option, net of tax		5	**4**
Total accumulated other comprehensive income		–4 819	**–1 625**
Retained earnings		34 512	**33 898**
Shareholders' equity		27 930	**30 117**
Non-controlling interests		797	**1 675**
Total equity		28 727	**31 792**
Total liabilities and equity		207 570	**225 124**

The accompanying notes are an integral part of the Group financial statements.

Statement of shareholders' equity

For the twelve months ended 31 December and the six months ended 30 June

USD millions	2018	2019
Contingent capital instruments		
Balance as of 1 January	750	**0**
Changes during the period	–750	
Balance as of period end	0	**0**
Common shares		
Balance as of 1 January	33	**32**
Cancellation of shares bought back	–1	
Balance as of period end	32	**32**
Additional paid-in capital		
Balance as of 1 January	368	**496**
Impact of net purchase/sale to non-controlling shareholder[1]	123	**27**
Contingent capital instrument issuance costs	11	
Cancellation of shares bought back	–85	
Share-based compensation	–6	**–19**
Realised gains/losses on treasury shares	85	**24**
Balance as of period end	496	**528**
Treasury shares, net of tax		
Balance as of 1 January	–1 842	**–2 291**
Purchase of treasury shares	–1 454	**–512**
Cancellation of shares bought back	1 032	
Issuance of treasury shares, including share-based compensation to employees	–27	**87**
Balance as of period end	–2 291	**–2 716**
Net unrealised investment gains/losses, net of tax		
Balance as of 1 January	4 746	**1 905**
Impact of net purchase/sale to non-controlling shareholder[1]	–325	**–128**
Impact of ASU 2018-02[2]	176	
Impact of ASU 2016-16[2]	44	
Impact of ASU 2016-01[2]	–347	
Changes during the period	–2 389	**3 224**
Balance as of period end	1 905	**5 001**
Other-than-temporary impairment, net of tax		
Balance as of 1 January	–2	**–3**
Changes during the period	–1	**2**
Balance as of period end	–3	**–1**
Cash flow hedges, net of tax		
Balance as of 1 January	–10	**6**
Impact of net purchase/sale to non-controlling shareholder[1]	1	**1**
Changes during the period	15	**1**
Balance as of period end	6	**8**
Foreign currency translation, net of tax		
Balance as of 1 January	–5 548	**–5 904**
Impact of net purchase/sale to non-controlling shareholder[1]	52	**64**
Changes during the period	–408	**17**
Balance as of period end	–5 904	**–5 823**

USD millions	2018	2019
Adjustment for pension and other post-retirement benefits, net of tax		
Balance as of 1 January	–820	**–828**
Impact of net purchase/sale to non-controlling shareholder[1]	13	**7**
Impact of ASU 2018-02[2]	–17	
Changes during the period	–4	**7**
Balance as of period end	–828	**–814**
Credit risk of financial liabilities at fair value option, net of tax		
Balance as of 1 January	0	**5**
Impact of ASU 2016-01[2]	5	
Changes during the period		**–1**
Balance as of period end	5	**4**
Retained earnings		
Balance as of 1 January	36 449	**34 512**
Net income after attribution of non-controlling interests	462	**953**
Interest on contingent capital instruments, net of tax	–41	
Dividends on common shares	–1 592	**–1 659**
Cancellation of shares bought back	–946	
Impact of ASU 2018-02[2]	–159	
Impact of ASU 2016-16[2]	–3	
Impact of ASU 2016-02[3]		**92**
Impact of ASU 2016-01[2]	342	
Balance as of period end	34 512	**33 898**
Shareholders' equity	27 930	**30 117**
Non-controlling interests		
Balance as of 1 January	170	**797**
Transactions with non-controlling interests	688	**606**
Income/loss attributable to non-controlling interests	19	**9**
Other comprehensive income attributable to non-controlling interests		
Change in unrealised investment gains/losses	191	**322**
Change in foreign currency translation	–109	**–51**
Other	–10	**–8**
Dividends to non-controlling interests	–152	
Balance as of period end	797	**1 675**
Total equity	28 727	**31 792**

[1] In 2018, MS&AD Insurance Group Holdings Inc (MS&AD) acquired a 15% non-controlling interest in ReAssure, a subsidiary of the Group. In February 2019, MS&AD Insurance Group Holdings Inc (MS&AD) acquired an additional 10% stake, increasing its total non-controlling interest to 25%. In June 2019, MS&AD restructured its 25% holding within ReAssure.

[2] Impact of Accounting Standards Update in 2018. Please refer to the Annual Report 2018 for more details.

[3] Impact of Accounting Standards Update. Please refer to Note 1 for more details.

The accompanying notes are an integral part of the Group financial statements.

Statement of cash flows

For the six months ended 30 June

USD millions	2018	2019
Cash flows from operating activities		
Net income attributable to common shareholders	1 006	**953**
Add net income/loss attributable to non-controlling interests	7	**9**
Adjustments to reconcile net income to net cash provided/used by operating activities:		
Depreciation, amortisation and other non-cash items	269	**267**
Net realised investment gains/losses	384	**–3 751**
Income from equity-accounted investees, net of dividends received	–38	**62**
Change in:		
Technical provisions and other reinsurance assets and liabilities, net	–787	**6 372**
Funds held by ceding companies and under reinsurance treaties	–152	**–268**
Reinsurance recoverable on unpaid claims and policy benefits	195	**–27**
Other assets and liabilities, net	–115	**101**
Income taxes payable/recoverable	–333	**–144**
Trading positions, net	123	**–159**
Net cash provided/used by operating activities	559	**3 415**
Cash flows from investing activities		
Fixed income securities:		
Sales	24 220	**22 616**
Maturities	2 674	**3 224**
Purchases	–25 522	**–27 661**
Net purchases/sales/maturities of short-term investments	–278	**–819**
Equity securities:		
Sales	1 264	**1 634**
Purchases	–683	**–1 094**
Securities purchased/sold under agreement to resell/repurchase, net	537	**155**
Cash paid/received for acquisitions/disposals and reinsurance transactions, net	–11	
Net purchases/sales/maturities of other investments	169	**–491**
Net purchases/sales/maturities of investments held for unit-linked and with-profit business	334	**548**
Net cash provided/used by investing activities	2 704	**–1 888**
Cash flows from financing activities		
Policyholder account balances, unit-linked and with-profit business:		
Deposits	296	**262**
Withdrawals	–1 552	**–1 334**
Issuance/repayment of long-term debt	380	**2 439**
Issuance/repayment of short-term debt	–441	**–878**
Purchase/sale of treasury shares	–826	**–418**
Dividends paid to shareholders	–1 592	**–1 659**
Dividends paid to non-controlling interests	–152	
Transactions with non-controlling interests	811	**634**
Net cash provided/used by financing activities	–3 076	**–954**

The accompanying notes are an integral part of the Group financial statements.

USD millions	2018	2019
Total net cash provided/used	187	**573**
Effect of foreign currency translation	–174	**–18**
Change in cash and cash equivalents	13	**555**
Cash and cash equivalents as of 1 January	6 806	**5 985**
Cash and cash equivalents as of 30 June	6 819	**6 540**

Interest paid was USD 198 million and USD 173 million (thereof USD 23 million and USD 10 million for letter of credit fees) for the six months ended 30 June 2018 and 2019, respectively. Tax paid was USD 542 million and USD 330 million for the six months ended 30 June 2018 and 2019, respectively.

Cash and cash equivalents include restricted cash and restricted cash equivalents, for instance pledged cash and cash equivalents (please refer to Note 7, "Investments").

The accompanying notes are an integral part of the Group financial statements.

Notes to the Group financial statements

1 Organisation and summary of significant accounting policies

Nature of operations

The Swiss Re Group, which is headquartered in Zurich, Switzerland, comprises Swiss Re Ltd (the parent company) and its subsidiaries (collectively, the "Swiss Re Group" or the "Group"). The Swiss Re Group is a wholesale provider of reinsurance, insurance and other insurance-based forms of risk transfer. Working through brokers and a network of offices around the globe, the Group serves a client base made up of insurance companies, mid- to large-sized corporations and public-sector clients.

Basis of presentation

The accompanying consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America (US GAAP). All significant intra-group transactions and balances have been eliminated on consolidation. The year-end balance sheet data presented was derived from audited financial statements. These interim financial statements do not include all disclosures that US GAAP requires on an annual basis and therefore they should be read in conjunction with the Swiss Re Group's audited financial statements for the year ended 31 December 2018.

Use of estimates in the preparation of financial statements

The preparation of financial statements requires management to make significant estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses as well as the related disclosures, including contingent assets and liabilities. The Group's liabilities for unpaid claims and claim adjustment expenses and policy benefits for life and health include estimates for premium, claim and benefit data not received from ceding companies at the date of the financial statements. In addition, the Group uses certain financial instruments and invests in securities of certain entities for which exchange trading does not exist. The Group determines these estimates based on historical information, actuarial analysis, financial modelling and other analytical techniques. Actual results could differ significantly from the estimates described above.

Valuation of financial assets

The fair value of the majority of the Group's financial instruments is based on quoted prices in active markets or observable inputs. These instruments include government and agency securities, commercial paper, most investment-grade corporate debt, most high-yield debt securities, exchange-traded derivative instruments, most mortgage- and asset-backed securities and listed equity securities. In markets with reduced or no liquidity, spreads between bid and offer prices are normally wider compared to spreads in highly liquid markets. Such market conditions affect the valuation of certain asset classes of the Group, such as some asset-backed securities as well as certain derivative structures referencing such asset classes.

The Group considers both the credit risk of its counterparties and own risk of non-performance in the valuation of derivative instruments and other over-the-counter financial assets. In determining the fair value of these financial instruments, the assessment of the Group's exposure to the credit risk of its counterparties incorporates consideration of existing collateral and netting arrangements entered into with each counterparty. The measure of the counterparty credit risk is estimated with incorporation of the observable credit spreads, where available, or credit spread estimates derived based on the benchmarking techniques where market data is not available. The impact of the Group's own risk of non-performance is analysed in the manner consistent with the aforementioned approach, with consideration of the Group's observable credit spreads. The value representing such risk is incorporated into the fair value of the financial instruments (primarily derivatives), in a liability position as of the measurement date. The change in this adjustment from period to period is reflected in realised gains and losses in the income statement.

For assets or derivative structures at fair value, the Group uses market prices or inputs derived from market prices. A separate internal price verification process, independent of the trading function, provides an additional control over the market prices or market input used to determine the fair values of such assets. Although management considers that appropriate values have been ascribed to such assets, there is always a level of uncertainty and judgement over these valuations. Subsequent valuations could differ significantly from the results of the process described above. The Group may become aware of counterparty valuations, either directly through the exchange of information or indirectly, for example, through collateral demands. Any implied differences are considered in the independent price verification process and may result in adjustments to initially indicated valuations. As of 30 June 2019, the Group has not provided any collateral on financial instruments in excess of its own market value estimates.

Subsequent events

Subsequent events for the current reporting period have been evaluated up to 30 July 2019. This is the date on which the financial statements are available to be issued.

Adoption of new accounting standards

In February 2016, the FASB issued ASU 2016-02 "Leases", which creates topic 842, "Leases". The core principle of topic 842 is that a lessee should recognise the assets and liabilities that arise from leases. A lessee should recognise in the statement of financial position a liability to make lease payments (the lease liability) and a right-of-use asset representing the right to use the underlying asset for the lease term. This accounting treatment applies to finance leases and operating leases. The accounting applied by a lessor is largely unchanged from that applied under the former lease guidance. The ASU also requires that for qualifying sale-leaseback transactions the seller recognises any gain or loss (based on the estimated fair value of the asset at the time of sale) when control of the asset is transferred instead of amortising it over the lease period. The Group adopted ASU 2016-02 on 1 January 2019 together with the following related ASUs on topic 842, "Leases": ASU 2018-01, ASU 2018-10, ASU 2018-11, ASU 2018-20 and ASU 2019-01. In line with the adoption method provided by ASU 2018-11"Targeted Improvements", the Group applied the new leases standard to its leases on the adoption date and recognised at the same time a cumulative-effect adjustment to the opening balance of retained earnings. For operating leases, the adoption on 1 January 2019 led to the balance sheet recognition of a lease liability of USD 538 million and a right-of-use asset of USD 490 million, which equals the lease liability adjusted by existing lease incentive and straight-line rent reserve balances. The lease right-of-use asset is included in "other assets" and the lease liability is included in "accrued expenses and other liabilities" on the balance sheet. The Group elected a package of practical expedients under the transition guidance within the new standard, which among other things allowed to carry forward the historical lease classification. The cumulative-effect adjustment to the opening balance of retained earnings of USD 92 million resulted from the release of deferred profit of past sale-leaseback transactions which was carried in accrued expenses and other liabilities. The deferred profit release can be found in the statement of shareholders' equity.

In March 2017, the FASB issued ASU 2017-08, ''Premium Amortization on Purchased Callable Debt Securities'', an update to subtopic 310-20, ''Receivables – Nonrefundable Fees and Other Costs''. The update applies to certain purchased callable debt securities held at a premium. The ASU requires that those premiums should be amortised to the earliest call date and not to the maturity date. The Group adopted ASU 2017-08 on a modified retrospective basis on 1 January 2019. The adoption did not have a material impact on the Group's financial statements.

In July 2017, the FASB issued ASU 2017-11, ''Accounting for Certain Financial Instruments with Down Round Features'', an update to topic 260, ''Earnings Per Share'', topic 480, ''Distinguishing Liabilities from Equity'' and topic 815, ''Derivatives and Hedging''. A down round feature is a provision in an equity-linked financial instrument (or embedded features) that reduces the exercise price if the entity later sells stock for a lower price or issues an equity-linked instrument with a lower exercise price than the instrument's original exercise price. The amendments in this update change the classification analysis of certain equity-linked financial instruments (or embedded features) with down round features and require that a down round feature no longer precludes equity classification when assessing whether the instrument is indexed to an entity's own stock. The Group adopted ASU 2017-11 on 1 January 2019. The adoption did not have an impact on the Group's financial statements.

In August 2017, the FASB issued ASU 2017-12, ''Targeted Improvements to Accounting for Hedging Activities'', an update to topic 815, ''Derivatives and Hedging''. The update expands and refines hedge accounting for both nonfinancial and financial risk components and aligns the recognition and presentation of the effects of the hedging instrument and the hedged item in the financial statements. The ASU eliminates the requirement to separately measure and report hedge ineffectiveness and requires presentation of all items that affect earnings in the same income statement line as the hedged item. The new standard also provides alternatives for applying hedge accounting to additional hedging strategies and for measuring the hedged item in fair value hedges of interest rate risk. Further, the standard reduces the cost and complexity of applying hedge accounting by easing the requirements for effectiveness testing, hedge documentation and application of the critical terms match method. The Group adopted ASU 2017-12 on 1 January 2019. The adoption did not have a material impact on the Group's financial statements.

In June 2018, the FASB issued ASU 2018-07, ''Improvements to Nonemployee Share-Based Payment Accounting'', an update to topic 718, ''Compensation – Stock Compensation''. The update expands the scope of topic 718 to include share-based payment transactions for acquiring goods and services from nonemployees. The Group adopted ASU 2018-07 on 1 January 2019. The adoption did not have an impact on the Group's financial statements.

In June 2018, the FASB issued ASU 2018-08, ''Clarifying the Scope and the Accounting Guidance for Contributions Received and Contributions Made'', an update to topic 958, ''Not-for-Profit Entities''. The amendments in this update clarify and improve the former guidance about whether a transfer of assets (or the reduction, settlement, or cancellation of liabilities) is a contribution or an exchange transaction. The Group adopted ASU 2018-08 on a modified prospective basis on 1 January 2019. The adoption did not have an impact on the Group's financial statements.

In October 2018, the FASB issued ASU 2018-16, ''Inclusion of the Secured Overnight Financing Rate (SOFR) Overnight Index Swap (OIS) Rate as a Benchmark Interest Rate for Hedge Accounting Purposes'', an update to topic 815, ''Derivatives and Hedging''. The amendments in this update permit the use of the OIS rate based on SOFR as a US benchmark interest rate in order to facilitate the LIBOR to SOFR transition. The Group adopted ASU 2018-16 on 1 January 2019. The adoption did not have an impact on the Group's financial statements.

Future adoption of new accounting standards

In June 2016, the FASB issued ASU 2016-13, "Measurement of Credit Losses", an update to topic 326, "Financial Instruments – Credit Losses". ASU 2016-13 replaces the incurred loss impairment methodology in current US GAAP with a methodology that reflects expected credit losses. The standard is applicable to all financial assets such as financial instruments that are measured at amortised cost, available-for-sale debt securities and reinsurance recoverables. The objective of the expected credit loss model is that a reporting entity recognises its estimate of expected credit losses incorporating forward-looking information in a valuation allowance for financial assets in scope. The ASU is effective for annual and interim periods beginning after 15 December 2020. For most affected financial assets, the ASU must be adopted using a modified retrospective approach, with a cumulative effect adjustment recorded to opening retained earnings on the adoption date. The Group is currently assessing the impact of the new requirements.

In January 2017, the FASB issued ASU 2017-04, "Simplifying the Test for Goodwill Impairment", an update to topic 350, "Intangibles – Goodwill and Other". This ASU simplifies the subsequent measurement of goodwill and eliminates Step 2 from the goodwill impairment test. In computing the implied fair value of goodwill under Step 2, an entity has to perform procedures to determine the fair value at the impairment testing date of its assets and liabilities (including unrecognised assets and liabilities) following the procedure that would be required in determining the fair value of assets acquired and liabilities assumed in a business combination. Instead, under the amendments in this update, an entity should perform its regular goodwill impairment test by comparing the fair value of a reporting unit with its carrying amount. An entity should recognise an impairment charge for the amount by which the carrying amount exceeds the reporting unit's fair value; however, the loss recognised should not exceed the total amount of goodwill allocated to that reporting unit. The new requirements are effective for goodwill impairment tests in annual and interim periods beginning after 15 December 2020. Early application of the ASU is permitted. The Group is currently assessing the impact of the new requirements.

In August 2018, the FASB issued ASU 2018-12, "Targeted Improvements to the Accounting for Long-Duration Contracts", an update to topic 944, "Financial Services—Insurance". This ASU requires that the cash flows and net premium ratio will be updated for changes in insurance assumptions (eg mortality, morbidity, terminations) when measuring the liability for future policy benefits for nonparticipating traditional and limited-payment insurance and reinsurance contracts. The effect of updating cash flow assumptions will be measured on a retrospective catch-up basis and presented separately from the ongoing policyholder benefit expense in the statement of operations in the period the update is made. There will no longer be a provision for adverse deviation. In addition, the discount rate used to reflect the time value of money in the calculation of the liability for future policy benefits will be standardised. An upper-medium grade fixed income instrument yield will be required which differs from the current requirement to use a discount rate reflecting expected investment yields. Further, a locked in rate will be used in the periodic calculation of the net premium ratio and accretion of interest on the liability for income statement purposes. For balance sheet remeasurement purposes, the discount rate will be updated at each reporting date, with the effect of discount rate changes on the liability recorded immediately in other comprehensive income (OCI). The ASU requires deferred acquisition costs (DAC) relating to most long-duration contracts to be amortised on a constant basis over the expected term of the contract, and the resulting amortisation amount should not be a function of revenue or profit. The new standard also introduces a new category called market risk benefits, which are features that protect the contract holder from capital market risk and expose the insurer to that risk. These features have to be measured at fair value, with changes in own credit risk recognised in OCI, and presented separately in the primary financial statements. The ASU also requires significant additional disclosures, including disaggregated roll forwards of the liability for future policy benefits, policyholder account balances, market risk benefits, and DAC. The ASU is effective for annual and interim periods beginning after 15 December 2020. Early adoption of the amendments is permitted. The new guidance relating to measurement of the traditional and limited-payment contract liabilities and DAC amortisation has to be adopted under a modified retrospective transition approach, with an option to elect a full retrospective transition if certain criteria are met. Under the modified retrospective approach, for contracts in-force at the transition date, an entity would continue to use the existing locked-in investment yield interest rate assumptions to calculate the net premium ratio. However, for balance sheet measurement purposes, policyholder liabilities are discounted at the upper-medium grade fixed income instrument yield at the transition date, with the impact of the change recognised against accumulated OCI. The Group is currently assessing the impact of the new requirements.

2 Information on business segments

The Group provides reinsurance and insurance throughout the world through its business segments. The business segments are determined by the organisational structure and by the way in which management reviews the operating performance of the Group.

The Group presents four core operating business segments: Property & Casualty Reinsurance, Life & Health Reinsurance, Corporate Solutions and Life Capital. The presentation of each segment's balance sheet is closely aligned to the segment legal entity structure. The allocation of assets and liabilities for entities that span more than one segment is determined by considering local statutory requirements, legal and other constraints, the economic view of duration and currency requirements of the reinsurance business written and the capacity of the segments to absorb risks. Interest expense is based on the segment's capital funding position. The tax impact of a segment is derived from the legal entity tax obligations and the segmentation of the pre-tax result. While most of the tax items can be directly attributed to individual segments, the tax which impacts two or more segments is allocated to the segments on a reasonable basis. Property & Casualty Reinsurance and Life & Health Reinsurance share the same year-to-date effective tax rate as both business segments belong to the Reinsurance Business Unit.

Accounting policies applied by the business segments are in line with those described in the summary of significant accounting policies (please refer to Note 1).

The Group operating segments are outlined below.

Property & Casualty Reinsurance and Life & Health Reinsurance

Reinsurance consists of two segments, Property & Casualty and Life & Health. The Reinsurance Business Unit operates globally, both through brokers and directly with clients, and provides a large range of solutions for risk and capital management. Clients include stock and mutual insurance companies as well as public sector and governmental entities. In addition to traditional reinsurance solutions, Reinsurance offers insurance-linked securities and other insurance-related capital market products in both Property & Casualty and Life & Health.

Property & Casualty includes the business lines property, casualty (including motor) and specialty. Life & Health includes the life and health lines of business.

Corporate Solutions

Corporate Solutions offers innovative insurance capacity to mid-sized and large multinational corporations across the globe. Offerings range from standard risk transfer covers and multi-line programmes, to customised solutions tailored to the needs of clients. Corporate Solutions serves customers from over 50 offices worldwide.

Life Capital

Life Capital manages Swiss Re's primary life and health business. It encompasses the closed and open life and health insurance books, including the ReAssure business and the primary life and health insurance business comprising elipsLife and iptiQ. Through ReAssure, Swiss Re acquires closed blocks of inforce life and health insurance business, either through reinsurance or corporate acquisition, and typically assumes responsibility for administering the underlying policies. The administration of the business may be managed directly or, where appropriate, in partnership with a third party. In the open books business, elipsLife, the Group life and health insurance business, offers solutions to pension funds, corporates and affinity groups through an intermediated business to business to consumer ("B2B2C") model. The iptiQ business, primarily the individual life and health business, partners with distributors and enables individuals to address their protection needs on a white labelled basis.

Group items

Items not allocated to the business segments are included in the "Group items" column, which encompasses Swiss Re Ltd, the Group's parent company, the former Legacy business in run-off, Principal Investments and certain Treasury units. Swiss Re Ltd charges trademark licence fees to the business segments which are reported as other revenues. Certain administrative expenses of the corporate centre functions that are not recharged to the operating segments are reported as Group items.

Consolidation

Segment information is presented net of external and internal retrocession and other intra-group arrangements. The Group total is obtained after elimination of intra-group transactions in the "Consolidation" column. This includes significant intra-group reinsurance arrangements, recharge of trademark licence fees, and intersegmental funding.

a) Business segments – income statement
For the six months ended 30 June

2018 USD millions	Property & Casualty Reinsurance	Life & Health Reinsurance	Corporate Solutions	Life Capital	Group items	Consolidation	Total
Revenues							
Gross premiums written	9 570	7 372	2 043	1 841		–1 237	19 589
Net premiums written	9 289	6 423	1 713	909			18 334
Change in unearned premiums	–1 588	–107	205	–311			–1 801
Premiums earned	7 701	6 316	1 918	598			16 533
Fee income from policyholders		73		224			297
Net investment income – non-participating business	637	660	97	643	127	–141	2 023
Net realised investment gains/losses – non-participating business	–126	138	11	40	–291		–228
Net investment result – unit-linked and with-profit business		–9		394			385
Other revenues	9		2		172	–171	12
Total revenues	8 221	7 178	2 028	1 899	8	–312	19 022
Expenses							
Claims and claim adjustment expenses	–4 562		–1 289				–5 851
Life and health benefits		–5 048		–942			–5 990
Return credited to policyholders		–12		–508			–520
Acquisition costs	–2 017	–1 058	–298	–132			–3 505
Operating expenses	–572	–352	–364	–238	–270	171	–1 625
Total expenses before interest expenses	–7 151	–6 470	–1 951	–1 820	–270	171	–17 491
Income/loss before interest and income tax expense/benefit	1 070	708	77	79	–262	–141	1 531
Interest expenses	–148	–190	–12	–21	–49	141	–279
Income/loss before income tax expense/benefit	922	518	65	58	–311	0	1 252
Income tax expense/benefit	–170	–96	–9	–15	75		–215
Net income/loss before attribution of non-controlling interests	752	422	56	43	–236	0	1 037
Income/loss attributable to non-controlling interests			2	–9			–7
Net income/loss after attribution of non-controlling interests	752	422	58	34	–236	0	1 030
Interest on contingent capital instruments, net of tax		–24					–24
Net income/loss attributable to common shareholders	752	398	58	34	–236	0	1 006
Claims ratio in %	59.3		67.2				60.8
Expense ratio in %	33.6		34.5				33.8
Combined ratio in %	92.9		101.7				94.6
Management expense ratio in %		5.0					
Net operating margin in %	13.0	9.9	3.8	5.2			8.2

Business segments – income statement
For the six months ended 30 June

2019 USD millions	Property & Casualty Reinsurance	Life & Health Reinsurance	Corporate Solutions	Life Capital	Group items	Consolidation	Total
Revenues							
Gross premiums written	12 405	6 954	2 201	1 875		–763	22 672
Net premiums written	12 014	6 145	1 831	1 366			21 356
Change in unearned premiums	–3 295	47	232	–512			–3 528
Premiums earned	8 719	6 192	2 063	854			17 828
Fee income from policyholders		92		240			332
Net investment income – non-participating business	693	577	117	622	113	–215	1 907
Net realised investment gains/losses – non-participating business	435	190	78	23	91		817
Net investment result – unit-linked and with-profit business		48		3 428			3 476
Other revenues	7		2		200	–198	11
Total revenues	**9 854**	**7 099**	**2 260**	**5 167**	**404**	**–413**	**24 371**
Expenses							
Claims and claim adjustment expenses	–5 936		–2 031				–7 967
Life and health benefits		–4 986		–1 406			–6 392
Return credited to policyholders		–71		–3 166			–3 237
Acquisition costs	–2 237	–904	–313	–163			–3 617
Operating expenses	–587	–369	–395	–325	–254	198	–1 732
Total expenses before interest expenses	**–8 760**	**–6 330**	**–2 739**	**–5 060**	**–254**	**198**	**–22 945**
Income/loss before interest and income tax expense/benefit	**1 094**	**769**	**–479**	**107**	**150**	**–215**	**1 426**
Interest expenses	–174	–221	–20	–22	–56	215	–278
Income/loss before income tax expense/benefit	**920**	**548**	**–499**	**85**	**94**	**0**	**1 148**
Income tax expense/benefit	–149	–89	92	–67	27		–186
Net income/loss before attribution of non-controlling interests	**771**	**459**	**–407**	**18**	**121**	**0**	**962**
Income/loss attributable to non-controlling interests			4	–13			–9
Net income/loss after attribution of non-controlling interests	**771**	**459**	**–403**	**5**	**121**	**0**	**953**
Interest on contingent capital instruments, net of tax							0
Net income/loss attributable to common shareholders	**771**	**459**	**–403**	**5**	**121**	**0**	**953**
Claims ratio in %	68.1		98.5				73.8
Expense ratio in %	32.4		34.3				32.8
Combined ratio in %	100.5		132.8				106.6
Management expense ratio in %		5.4					
Net operating margin in %	11.1	10.9	–21.2	6.2			6.8

Business segments – balance sheet
As of 31 December

2018 USD millions	Property & Casualty Reinsurance	Life & Health Reinsurance	Corporate Solutions	Life Capital	Group items	Consolidation	Total
Assets							
Fixed income securities	35 968	29 158	8 157	22 637	32		95 952
Equity securities	1 776	670	180	69	341		3 036
Other investments	13 298	3 200	132	2 550	6 447	–12 276	13 351
Short-term investments	2 547	1 174	451	1 207	38		5 417
Investments for unit-linked and with-profit business		424		29 122			29 546
Cash and cash equivalents	1 651	1 705	796	1 605	228		5 985
Deferred acquisition costs	2 156	4 784	488	789			8 217
Acquired present value of future profits		804		1 014			1 818
Reinsurance recoverable	2 345	4 359	5 486	4 914		–10 046	7 058
Other reinsurance assets	9 715	9 304	2 461	6 859		–5 541	22 798
Goodwill	1 908	1 823	206	134			4 071
Other	8 798	4 169	2 108	1 823	1 752	–8 329	10 321
Total assets	80 162	61 574	20 465	72 723	8 838	–36 192	207 570
Liabilities							
Unpaid claims and claim adjustment expenses	45 659	12 192	11 929	2 601	1	–4 936	67 446
Liabilities for life and health policy benefits		17 888	501	26 314		–5 110	39 593
Policyholder account balances		1 356		30 582			31 938
Other reinsurance liabilities	10 331	4 162	3 816	3 365	3	–5 812	15 865
Short-term debt	2 735	5 075		238		–6 415	1 633
Long-term debt	2 402	7 749	798	1 515	552	–4 514	8 502
Other	9 551	6 878	1 483	2 342	3 017	–9 405	13 866
Total liabilities	70 678	55 300	18 527	66 957	3 573	–36 192	178 843
Shareholders' equity	9 483	6 274	1 795	5 113	5 265	0	27 930
Non-controlling interests	1		143	653			797
Total equity	9 484	6 274	1 938	5 766	5 265	0	28 727
Total liabilities and equity	80 162	61 574	20 465	72 723	8 838	–36 192	207 570

Business segments – balance sheet
As of 30 June

2019 USD millions	Property & Casualty Reinsurance	Life & Health Reinsurance	Corporate Solutions	Life Capital	Group items	Consolidation	Total
Assets							
Fixed income securities	40 267	30 246	7 977	24 072	34		102 596
Equity securities	1 682	638	199	64	414		2 997
Other investments	14 130	3 217	123	2 773	5 530	–11 438	14 335
Short-term investments	3 544	1 415	765	597	31		6 352
Investments for unit-linked and with-profit business		462		31 214			31 676
Cash and cash equivalents	1 517	1 830	772	2 325	96		6 540
Deferred acquisition costs	2 663	4 716	451	896			8 726
Acquired present value of future profits		607		996			1 603
Reinsurance recoverable	2 236	4 490	5 638	4 874		–10 136	7 102
Other reinsurance assets	12 932	8 000	2 748	6 641	3	–4 307	26 017
Goodwill	1 905	1 829	207	134			4 075
Other	10 187	8 234	2 726	2 444	1 985	–12 471	13 105
Total assets	**91 063**	**65 684**	**21 606**	**77 030**	**8 093**	**–38 352**	**225 124**
Liabilities							
Unpaid claims and claim adjustment expenses	46 500	12 455	12 564	2 719	1	–4 777	69 462
Liabilities for life and health policy benefits		19 700	604	26 164		–5 355	41 113
Policyholder account balances		1 358		32 363			33 721
Other reinsurance liabilities	14 030	3 162	3 826	3 087	3	–4 559	19 549
Short-term debt	1 203	1 985		626	60	–2 525	1 349
Long-term debt	3 394	11 416	798	1 610	495	–7 371	10 342
Other	15 982	7 907	1 486	3 023	3 163	–13 765	17 796
Total liabilities	**81 109**	**57 983**	**19 278**	**69 592**	**3 722**	**–38 352**	**193 332**
Shareholders' equity	**9 953**	**7 701**	**2 187**	**5 905**	**4 371**	**0**	**30 117**
Non-controlling interests	1		141	1 533			1 675
Total equity	**9 954**	**7 701**	**2 328**	**7 438**	**4 371**	**0**	**31 792**
Total liabilities and equity	**91 063**	**65 684**	**21 606**	**77 030**	**8 093**	**–38 352**	**225 124**

b) Property & Casualty Reinsurance business segment – by line of business
For the six months ended 30 June

2018 USD millions	Property	Casualty	Specialty	Unallocated	Total
Revenues					
Gross premiums written	3 825	4 221	1 524		9 570
Net premiums written	3 594	4 194	1 501		9 289
Change in unearned premiums	–887	–340	–361		–1 588
Premiums earned	2 707	3 854	1 140		7 701
Net investment income				637	637
Net realised investment gains/losses				–126	–126
Other revenues				9	9
Total revenues	2 707	3 854	1 140	520	8 221
Expenses					
Claims and claim adjustment expenses	–1 405	–2 727	–430		–4 562
Acquisition costs	–574	–1 137	–306		–2 017
Operating expenses	–284	–200	–88		–572
Total expenses before interest expenses	–2 263	–4 064	–824	0	–7 151
Income/loss before interest and income tax expense	444	–210	316	520	1 070
Interest expenses				–148	–148
Income/loss before income tax expense	444	–210	316	372	922
Claims ratio in %	51.9	70.7	37.7		59.3
Expense ratio in %	31.7	34.7	34.6		33.6
Combined ratio in %	83.6	105.4	72.3		92.9

Property & Casualty Reinsurance business segment – by line of business
For the six months ended 30 June

2019 USD millions	Property	Casualty	Specialty	Unallocated	Total
Revenues					
Gross premiums written	4 677	5 968	1 760		12 405
Net premiums written	4 332	5 946	1 736		12 014
Change in unearned premiums	–1 322	–1 498	–475		–3 295
Premiums earned	3 010	4 448	1 261		8 719
Net investment income				693	693
Net realised investment gains/losses				435	435
Other revenues				7	7
Total revenues	**3 010**	**4 448**	**1 261**	**1 135**	**9 854**
Expenses					
Claims and claim adjustment expenses	–2 125	–3 173	–638		–5 936
Acquisition costs	–599	–1 313	–325		–2 237
Operating expenses	–301	–206	–80		–587
Total expenses before interest expenses	**–3 025**	**–4 692**	**–1 043**	**0**	**–8 760**
Income/loss before interest and income tax expense	**–15**	**–244**	**218**	**1 135**	**1 094**
Interest expenses				–174	–174
Income/loss before income tax expense	**–15**	**–244**	**218**	**961**	**920**
Claims ratio in %	70.6	71.3	50.6		68.1
Expense ratio in %	29.9	34.2	32.1		32.4
Combined ratio in %	100.5	105.5	82.7		100.5

c) Life & Health Reinsurance business segment – by line of business

For the six months ended 30 June

2018 USD millions	Life	Health	Unallocated	Total
Revenues				
Gross premiums written	5 179	2 193		7 372
Net premiums written	4 296	2 127		6 423
Change in unearned premiums	–1	–106		–107
Premiums earned	4 295	2 021		6 316
Fee income from policyholders	73			73
Net investment income – non-participating business	495	165		660
Net realised investment gains/losses – non-participating business	17	–3	124	138
Net investment result – unit-linked and with-profit business	–9			–9
Total revenues	4 871	2 183	124	7 178
Expenses				
Life and health benefits	–3 537	–1 511		–5 048
Return credited to policyholders	–12			–12
Acquisition costs	–725	–333		–1 058
Operating expenses	–219	–133		–352
Total expenses before interest expenses	–4 493	–1 977	0	–6 470
Income before interest and income tax expense	378	206	124	708
Interest expenses			–190	–190
Income/loss before income tax expense	378	206	–66	518
Management expense ratio in %	4.5	6.1		5.0
Net operating margin[1] in %	7.7	9.4		9.9

[1] Net operating margin is calculated as "Income before interest and income tax expense" divided by "Total revenues" excluding "Net investment result – unit-linked and with-profit business".

Life & Health Reinsurance business segment – by line of business

For the six months ended 30 June

2019 USD millions	Life	Health	Unallocated	Total
Revenues				
Gross premiums written	4 933	2 021		6 954
Net premiums written	4 182	1 963		6 145
Change in unearned premiums	3	44		47
Premiums earned	4 185	2 007		6 192
Fee income from policyholders	92			92
Net investment income – non-participating business	442	135		577
Net realised investment gains/losses – non-participating business	–13		203	190
Net investment result – unit-linked and with-profit business	48			48
Total revenues	**4 754**	**2 142**	**203**	**7 099**
Expenses				
Life and health benefits	–3 380	–1 606		–4 986
Return credited to policyholders	–71			–71
Acquisition costs	–634	–270		–904
Operating expenses	–238	–131		–369
Total expenses before interest expenses	**–4 323**	**–2 007**	**0**	**–6 330**
Income before interest and income tax expense	**431**	**135**	**203**	**769**
Interest expenses			–221	–221
Income before income tax expense	**431**	**135**	**–18**	**548**
Management expense ratio in %	5.0	6.1		5.4
Net operating margin[1] in %	9.2	6.3		10.9

[1] Net operating margin is calculated as "Income before interest and income tax expense" divided by "Total revenues" excluding "Net investment result – unit-linked and with-profit business".

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3 Insurance information

Premiums earned and fees assessed against policyholders

For the six months ended 30 June

2018 USD millions	Property & Casualty Reinsurance	Life & Health Reinsurance	Corporate Solutions	Life Capital	Total
Premiums earned, thereof:					
Direct		33	1 643	1 040	2 716
Reinsurance	7 774	6 640	449	60	14 923
Intra-group transactions (assumed and ceded)	58	296	–58	–296	0
Premiums earned before retrocession to external parties	7 832	6 969	2 034	804	17 639
Retrocession to external parties	–131	–653	–116	–206	–1 106
Net premiums earned	7 701	6 316	1 918	598	16 533
Fee income from policyholders, thereof:					
Direct				177	177
Reinsurance		73		47	120
Gross fee income before retrocession to external parties		73		224	297
Retrocession to external parties					0
Net fee income	0	73	0	224	297

2019 USD millions	Property & Casualty Reinsurance	Life & Health Reinsurance	Corporate Solutions	Life Capital	Total
Premiums earned, thereof:					
Direct		7	1 840	1 106	2 953
Reinsurance	8 751	6 648	440	51	15 890
Intra-group transactions (assumed and ceded)	88	102	–88	–102	0
Premiums earned before retrocession to external parties	8 839	6 757	2 192	1 055	18 843
Retrocession to external parties	–120	–565	–129	–201	–1 015
Net premiums earned	**8 719**	**6 192**	**2 063**	**854**	**17 828**
Fee income from policyholders, thereof:					
Direct				192	192
Reinsurance		92		48	140
Gross fee income before retrocession to external parties		92		240	332
Retrocession to external parties					0
Net fee income	**0**	**92**	**0**	**240**	**332**

Claims and claim adjustment expenses

For the six months ended 30 June

2018 USD millions	Property & Casualty Reinsurance	Life & Health Reinsurance	Corporate Solutions	Life Capital	Total
Claims paid, thereof:					
Gross claims paid to external parties	–5 732	–5 262	–1 593	–1 687	–14 274
Intra-group transactions (assumed and ceded)	–142	–186	142	186	0
Claims before receivables from retrocession to external parties	–5 874	–5 448	–1 451	–1 501	–14 274
Retrocession to external parties	619	639	154	265	1 677
Net claims paid	–5 255	–4 809	–1 297	–1 236	–12 597
Change in unpaid claims and claim adjustment expenses; life and health benefits, thereof:					
Gross – with external parties	1 005	–168	–125	241	953
Intra-group transactions (assumed and ceded)	175	–65	–175	65	0
Unpaid claims and claim adjustment expenses; life and health benefits before impact of retrocession to external parties	1 180	–233	–300	306	953
Retrocession to external parties	–487	–6	308	–12	–197
Net unpaid claims and claim adjustment expenses; life and health benefits	693	–239	8	294	756
Claims and claim adjustment expenses; life and health benefits	–4 562	–5 048	–1 289	–942	–11 841

Acquisition costs

For the six months ended 30 June

2018 USD millions	Property & Casualty Reinsurance	Life & Health Reinsurance	Corporate Solutions	Life Capital	Total
Acquisition costs, thereof:					
Gross acquisition costs with external parties	–2 042	–1 146	–326	–182	–3 696
Intra-group transactions (assumed and ceded)	–5	–24	5	24	0
Acquisition costs before impact of retrocession to external parties	–2 047	–1 170	–321	–158	–3 696
Retrocession to external parties	30	112	23	26	191
Net acquisition costs	–2 017	–1 058	–298	–132	–3 505

Claims and claim adjustment expenses

For the six months ended 30 June

2019 USD millions	Property & Casualty Reinsurance	Life & Health Reinsurance	Corporate Solutions	Life Capital	Total
Claims paid, thereof:					
Gross claims paid to external parties	–5 987	–5 045	–1 624	–1 757	–14 413
Intra-group transactions (assumed and ceded)	–152	–84	152	84	0
Claims before receivables from retrocession to external parties	–6 139	–5 129	–1 472	–1 673	–14 413
Retrocession to external parties	176	514	128	239	1 057
Net claims paid	**–5 963**	**–4 615**	**–1 344**	**–1 434**	**–13 356**
Change in unpaid claims and claim adjustment expenses; life and health benefits, thereof:					
Gross – with external parties	–76	–360	–649	60	–1 025
Intra-group transactions (assumed and ceded)	181	–7	–181	7	0
Unpaid claims and claim adjustment expenses; life and health benefits before impact of retrocession to external parties	105	–367	–830	67	–1 025
Retrocession to external parties	–78	–4	143	–39	22
Net unpaid claims and claim adjustment expenses; life and health benefits	**27**	**–371**	**–687**	**28**	**–1 003**
Claims and claim adjustment expenses; life and health benefits	**–5 936**	**–4 986**	**–2 031**	**–1 406**	**–14 359**

Acquisition costs

For the six months ended 30 June

2019 USD millions	Property & Casualty Reinsurance	Life & Health Reinsurance	Corporate Solutions	Life Capital	Total
Acquisition costs, thereof:					
Gross acquisition costs with external parties	–2 242	–980	–352	–186	–3 760
Intra-group transactions (assumed and ceded)	–11		11		0
Acquisition costs before impact of retrocession to external parties	–2 253	–980	–341	–186	–3 760
Retrocession to external parties	16	76	28	23	143
Net acquisition costs	**–2 237**	**–904**	**–313**	**–163**	**–3 617**

Reinsurance receivables

Reinsurance receivables as of 31 December 2018 and 30 June 2019 were as follows:

USD millions	2018	**2019**
Premium receivables invoiced	3 041	5 366
Receivables invoiced from ceded re/insurance business	445	408
Assets arising from the application of the deposit method of accounting and meeting the definition of financing receivables	124	177
Recognised allowance	–58	–68

Policyholder dividends

Policyholder dividends are recognised as an element of policyholder benefits. In the six months ended 30 June 2018 and 2019, the relative percentage of participating insurance of the life and health policy benefits was 10% and 9%, respectively. The amount of policyholder dividend expense for the six months ended 30 June 2018 and 2019 was USD 137 million and USD 67 million, respectively.

4 Premiums written

For the six months ended 30 June

2018 USD millions	Property & Casualty Reinsurance	Life & Health Reinsurance	Corporate Solutions	Life Capital	Consolidation	Total
Gross premiums written, thereof:						
Direct		33	1 599	1 477		3 109
Reinsurance	9 381	6 635	403	61		16 480
Intra-group transactions (assumed)	189	704	41	303	–1 237	0
Gross premiums written	9 570	7 372	2 043	1 841	–1 237	19 589
Intra-group transactions (ceded)	–41	–303	–189	–704	1 237	0
Gross premiums written before retrocession to external parties	9 529	7 069	1 854	1 137		19 589
Retrocession to external parties	–240	–646	–141	–228		–1 255
Net premiums written	9 289	6 423	1 713	909	0	18 334

2019 USD millions	Property & Casualty Reinsurance	Life & Health Reinsurance	Corporate Solutions	Life Capital	Consolidation	Total
Gross premiums written, thereof:						
Direct		7	1 770	1 577		3 354
Reinsurance	12 198	6 664	405	51		19 318
Intra-group transactions (assumed)	207	283	26	247	–763	0
Gross premiums written	12 405	6 954	2 201	1 875	–763	22 672
Intra-group transactions (ceded)	–26	–247	–207	–283	763	0
Gross premiums written before retrocession to external parties	12 379	6 707	1 994	1 592		22 672
Retrocession to external parties	–365	–562	–163	–226		–1 316
Net premiums written	**12 014**	**6 145**	**1 831**	**1 366**	**0**	**21 356**

5 Unpaid claims and claim adjustment expenses

A reconciliation of the opening and closing reserve balances for unpaid claims and claim adjustment expenses as of and for the year ended 31 December 2018 and as of 30 June 2019 is presented as follows:

USD millions	2018	**2019**
Balance as of 1 January	66 795	67 446
Reinsurance recoverable	–4 458	–3 606
Deferred expense on retroactive reinsurance	–240	–169
Net balance as of 1 January	62 097	**63 671**
Incurred related to:		
Current year	27 457	13 193
Prior year	42	1 086
Amortisation of deferred expense on retroactive reinsurance and impact of commutations	–41	1
Total incurred	27 458	**14 280**
Paid related to:		
Current year	–9 344	–2 557
Prior year	–15 501	–10 799
Total paid	–24 845	**–13 356**
Foreign exchange	–1 748	71
Effect of acquisitions, disposals, new retroactive reinsurance and other items	709	1 018
Net balance as of period end	63 671	**65 684**
Reinsurance recoverable	3 606	3 625
Deferred expense on retroactive reinsurance	169	153
Balance as of period end	67 446	**69 462**

Prior-year development

Non-life claims development in the first six months ended 30 June 2019 on prior years is mainly due to adverse development for Property coming from the 2018 natural catastrophe events in Asia. Casualty includes adverse development for the liability line of business in the US. For Specialty the favourable development is mainly due to lower expected claims coming from natural catastrophe events in the US for the marine line of business.

For life and health lines of business, claims development on prior year business was mainly driven by unfavourable development for the disability portfolio in Australia and the US. This was partly offset by positive experience in other regions and lines of business including Canada, Asia, and the UK. Claims development related to prior years for the disability portfolio also includes an element of interest accretion for unpaid claims reported at an estimated present value. Unfavourable claims development for the Australia group disability portfolio is offset by a reduction in profit share reserve.

A summary of prior-year net claims and claim adjustment expenses development by lines of business as of and for the year ended 31 December 2018 and as of 30 June 2019 is shown below[1]:

USD millions	2018	**2019**
Line of business:		
Property	–340	546
Casualty	428	383
Specialty	–295	–66
Life and health	249	223
Total	42	**1 086**

[1] Adverse development is shown as positive numbers, and represents a charge to the income statement. Favourable development is shown as negative, and represents a credit to the income statement

6 Deferred acquisition costs (DAC) and acquired present value of future profits (PVFP)

As of and for the year ended 31 December 2018 and as of 30 June 2019, the DAC were as follows:

2018 USD millions	Property & Casualty Reinsurance	Life & Health Reinsurance	Corporate Solutions	Life Capital	Total
Opening balance as of 1 January	2 146	4 234	454	37	6 871
Deferred	4 048	1 235	634	978	6 895
Amortisation	–4 012	–496	–595	–187	–5 290
Effect of foreign currency translation and other changes	–26	–189	–5	–39	–259
Closing balance	2 156	4 784	488	789	8 217

2019 USD millions	Property & Casualty Reinsurance	Life & Health Reinsurance	Corporate Solutions	Life Capital	Total
Opening balance as of 1 January	2 156	4 784	488	789	8 217
Deferred	2 740	190	269	154	3 353
Effect of acquisitions/disposals and retrocessions		–68		68	0
Amortisation	–2 237	–201	–306	–114	–2 858
Effect of foreign currency translation and other changes	4	11		–1	14
Closing balance	**2 663**	**4 716**	**451**	**896**	**8 726**

Retroceded DAC may arise on retrocession of reinsurance portfolios, including reinsurance undertaken as part of a securitisation. The associated potential retrocession recoveries are determined by the nature of the retrocession agreements and by the terms of the securitisation.

As of 31 December 2018 and 30 June 2019, the PVFP was as follows:

	Life & Health Reinsurance	Life Capital			Total
2018 USD millions		Positive PVFP	Negative PVFP	Total	
Opening balance as of 1 January	921	1 612	–544	1 068	1 989
Amortisation	–140	–170	40	–130	–270
Interest accrued on unamortised PVFP	45	107	–17	90	135
Effect of change in unrealised gains/losses		18		18	18
Effect of foreign currency translation	–22	–62	30	–32	–54
Closing balance	804	1 505	–491	1 014	1 818

	Life & Health Reinsurance	Life Capital			**Total**
2019 USD millions		Positive PVFP	Negative PVFP	Total	
Opening balance as of 1 January	**804**	1 505	–491	**1 014**	**1 818**
Effect of acquisitions/disposals and retrocessions[1]	**–161**				**–161**
Amortisation	**–57**	–80	25	**–55**	**–112**
Interest accrued on unamortised PVFP	**16**	52	–8	**44**	**60**
Effect of change in unrealised gains/losses		–7		**–7**	**–7**
Effect of foreign currency translation	**5**				**5**
Closing balance	**607**	**1 470**	**–474**	**996**	**1 603**

[1] Impact from termination of a reinsurance arrangement included.

Retroceded PVFP may arise on retrocession of reinsurance portfolios, including reinsurance undertaken as part of a securitisation. The associated potential retrocession recoveries are determined by the nature of the retrocession agreements and by the terms of the securitisation.

7 Investments

Investment income

Net investment income by source (excluding unit-linked and with-profit business) for the six months ended 30 June was as follows:

USD millions	2018	2019
Fixed income securities	1 454	1 462
Equity securities	36	33
Policy loans, mortgages and other loans	70	75
Investment real estate	109	112
Short-term investments	23	50
Other current investments	60	60
Share in earnings of equity-accounted investees	120	2
Cash and cash equivalents	17	32
Net result from deposit-accounted contracts	123	72
Deposits with ceding companies	223	224
Gross investment income	2 235	**2 122**
Investment expenses	–204	–210
Interest charged for funds held	–8	–5
Net investment income – non-participating business	2 023	**1 907**

Dividends received from investments accounted for using the equity method were USD 82 million and USD 64 million for the six months ended 30 June 2018 and 2019, respectively.

Share in earnings of equity-accounted investees included impairments of the carrying amount of equity-accounted investees of USD 18 million for the six months ended 30 June 2019.

Realised gains and losses

Realised gains and losses for fixed income securities, equity securities and other investments (excluding unit-linked and with-profit business) for the six months ended 30 June were as follows:

USD millions	2018	2019
Fixed income securities available-for-sale:		
Gross realised gains	256	541
Gross realised losses	–129	–78
Other-than-temporary impairments	–4	–3
Net realised investment gains/losses on equity securities	8	138
Change in net unrealised investment gains/losses on equity securities	–201	355
Net realised investment gains/losses on trading securities	–35	39
Change in net unrealised investment gains/losses on trading securities	–4	92
Net realised/unrealised gains/losses on other investments	–31	–181
Net realised/unrealised gains/losses on insurance-related activities	32	28
Foreign exchange gains/losses	–120	–114
Net realised investment gains/losses – non-participating business	–228	**817**

Net realised/unrealised gains/losses on insurance-related activities included impairments of USD 1 million and USD 2 million for the six months ended 30 June 2018 and 2019, respectively.

Investment result – unit-linked and with-profit business

For unit-linked contracts, the investment risk is borne by the policyholder. For with-profit contracts, the majority of the investment risk is also borne by the policyholder, although there are certain guarantees that limit the downside risk for the policyholder, and a certain proportion of the returns may be retained by the Group (typically 10%).

Net investment result on unit-linked and with-profit business credited to policyholders for the six months ended 30 June was as follows:

USD millions	2018 Unit-linked	2018 With-profit	2019 Unit-linked	2019 With-profit
Investment income – fixed income securities	34	63	29	52
Investment income – equity securities	401	31	412	34
Investment income – other	6	6	9	6
Total investment income – unit-linked and with-profit business	441	100	**450**	**92**
Realised gains/losses – fixed income securities	–31	–83	77	111
Realised gains/losses – equity securities	–68	16	2 516	220
Realised gains/losses – other	5	5	21	–11
Total realised gains/losses – unit-linked and with-profit business	–94	–62	**2 614**	**320**
Total net investment result – unit-linked and with-profit business	347	38	**3 064**	**412**

Impairment on fixed income securities related to credit losses

Other-than-temporary impairments for debt securities are bifurcated between credit and non-credit components, with the credit component recognised through earnings and the non-credit component recognised in other comprehensive income. The credit component of other-than-temporary impairments is defined as the difference between a security's amortised cost basis and the present value of expected cash flows. Methodologies for measuring the credit component of impairment are aligned to market observer forecasts of credit performance drivers. Management believes that these forecasts are representative of median market expectations.

For securitised products, cash flow projection analysis is conducted by integrating forward-looking evaluation of collateral performance drivers, including default rates, prepayment rates and loss severities, and deal-level features, such as credit enhancement and prioritisation among tranches for payments of principal and interest. Analytics are differentiated by asset class, product type and security-level differences in historical and expected performance. For corporate bonds and hybrid debt instruments, an expected loss approach based on default probabilities and loss severities expected in the current and forecasted economic environment is used for securities identified as credit-impaired to project probability-weighted cash flows. Expected cash flows resulting from these analyses are discounted, and the present value is compared to the amortised cost basis to determine the credit component of other-than-temporary impairments.

A reconciliation of other-than-temporary impairments related to credit losses recognised in earnings for the six months ended 30 June was as follows:

USD millions	2018	2019
Balance as of 1 January	91	80
Credit losses for which an other-than-temporary impairment was not previously recognised		2
Reductions for securities sold during the period	–9	–7
Increase of credit losses for which an other-than-temporary impairment has been recognised previously, when the Group does not intend to sell, or more likely than not will not be required to sell before recovery	2	
Impact of increase in cash flows expected to be collected	–2	–2
Impact of foreign exchange movements	–1	
Balance as of 30 June	81	**73**

Investments available-for-sale

Amortised cost or cost, estimated fair values and other-than-temporary impairments of fixed income securities classified as available-for-sale as of 31 December 2018 and 30 June 2019 were as follows:

2018 USD millions	Amortised cost or cost	Gross unrealised gains	Gross unrealised losses	Other-than-temporary impairments recognised in other comprehensive income	Estimated fair value
Debt securities issued by governments and government agencies:					
US Treasury and other US government corporations and agencies	12 144	218	–156		12 206
US Agency securitised products	6 416	18	–130		6 304
States of the United States and political subdivisions of the states	1 584	55	–19		1 620
United Kingdom	7 837	1 085	–74		8 848
Germany	2 723	229	–7		2 945
France	1 723	205	–6		1 922
Canada	2 721	192	–29		2 884
Australia	1 658	14	–3		1 669
Other	9 026	273	–135		9 164
Total	45 832	2 289	–559		47 562
Corporate debt securities	39 630	1 617	–542		40 705
Mortgage- and asset-backed securities	4 211	117	–56	–1	4 271
Fixed income securities available-for-sale	89 673	4 023	–1 157	–1	92 538

2019 USD millions	Amortised cost or cost	Gross unrealised gains	Gross unrealised losses	Other-than-temporary impairments recognised in other comprehensive income	Estimated fair value
Debt securities issued by governments and government agencies:					
US Treasury and other US government corporations and agencies	10 548	406	–29		10 925
US Agency securitised products	6 479	88	–33		6 534
States of the United States and political subdivisions of the states	1 780	155	–3		1 932
United Kingdom	8 377	1 471	–15		9 833
Germany	2 921	375	–3		3 293
France	2 157	365	–1		2 521
Canada	2 269	158	–3		2 424
Australia	1 703	33	–1		1 735
Other	11 045	667	–41		11 671
Total	47 279	3 718	–129		50 868
Corporate debt securities	39 926	3 362	–61		43 227
Mortgage- and asset-backed securities	4 396	208	–15	–2	4 587
Fixed income securities available-for-sale	**91 601**	**7 288**	**–205**	**–2**	**98 682**

The "Other-than-temporary impairments recognised in other comprehensive income" column includes only securities with a credit-related loss recognised in earnings. Subsequent recovery in fair value of securities previously impaired in other comprehensive income is also presented in the "Other-than-temporary impairments recognised in other comprehensive income" column.

Unrealised losses on securities available-for-sale

The following table shows the fair value and unrealised losses of the Group's fixed income securities, aggregated by investment category and length of time that individual securities were in a continuous unrealised loss position as of 31 December 2018 and 30 June 2019.

2018 USD millions	Less than 12 months Fair value	 Unrealised losses	12 months or more Fair value	 Unrealised losses	Total Fair value	 Unrealised losses
Debt securities issued by governments and government agencies:						
US Treasury and other US government corporations and agencies	1 157	33	6 170	123	7 327	156
US Agency securitised products	1 013	11	3 710	119	4 723	130
States of the United States and political subdivisions of the states	108	2	518	17	626	19
United Kingdom	1 372	47	442	27	1 814	74
Germany	109	4	156	3	265	7
France	381	5	15	1	396	6
Canada	549	8	855	21	1 404	29
Australia	509	2	21	1	530	3
Other	2 280	68	1 149	67	3 429	135
Total	7 478	180	13 036	379	20 514	559
Corporate debt securities	12 135	275	6 334	267	18 469	542
Mortgage- and asset-backed securities	1 111	15	1 718	42	2 829	57
Total	20 724	470	21 088	688	41 812	1 158

2019 USD millions	Less than 12 months Fair value	 Unrealised losses	12 months or more Fair value	 Unrealised losses	Total Fair value	 Unrealised losses
Debt securities issued by governments and government agencies:						
US Treasury and other US government corporations and agencies	573	15	2 510	14	3 083	29
US Agency securitised products	514	12	2 258	21	2 772	33
States of the United States and political subdivisions of the states			73	3	73	3
United Kingdom	790	–2	529	17	1 319	15
Germany	165	1	44	2	209	3
France	13	0	25	1	38	1
Canada	181	0	567	3	748	3
Australia	13	0	62	1	75	1
Other	806	12	684	29	1 490	41
Total	3 055	38	6 752	91	9 807	129
Corporate debt securities	968	10	2 243	51	3 211	61
Mortgage- and asset-backed securities	609	12	496	5	1 105	17
Total	**4 632**	**60**	**9 491**	**147**	**14 123**	**207**

Maturity of fixed income securities available-for-sale

The amortised cost or cost and estimated fair values of investments in fixed income securities available-for-sale by remaining maturity are shown below. Fixed maturity investments are assumed not to be called for redemption prior to the stated maturity date. As of 31 December 2018 and 30 June 2019, USD 18 601 million and USD 21 564 million, respectively, of fixed income securities available-for-sale were callable.

USD millions	2018 Amortised cost or cost	2018 Estimated fair value	2019 Amortised cost or cost	2019 Estimated fair value
Due in one year or less	10 449	10 379	9 924	9 924
Due after one year through five years	24 547	24 614	23 974	24 540
Due after five years through ten years	16 183	16 471	16 292	17 362
Due after ten years	34 749	37 262	37 540	42 783
Mortgage- and asset-backed securities with no fixed maturity	3 745	3 812	3 871	4 073
Total fixed income securities available-for-sale	89 673	92 538	**91 601**	**98 682**

Investments trading and at fair value through earnings

The carrying amounts of fixed income securities classified as trading and equity securities at fair value through earnings (excluding unit-linked and with-profit business) as of 31 December 2018 and 30 June 2019 were as follows:

USD millions	2018	2019
Debt securities issued by governments and government agencies	3 314	3 812
Corporate debt securities	37	39
Mortgage- and asset-backed securities	63	63
Fixed income securities trading – non-participating business	3 414	**3 914**
Equity securities at fair value through earnings – non-participating business	3 036	**2 997**

Investments held for unit-linked and with-profit business

The carrying amounts of investments held for unit-linked and with-profit business as of 31 December 2018 and 30 June 2019 were as follows:

USD millions	2018 Unit-linked	2018 With-profit	2019 Unit-linked	2019 With-profit
Fixed income securities trading	2 253	2 685	1 842	2 664
Equity securities at fair value through earnings	21 326	1 797	23 936	1 976
Investment real estate	537	230	511	218
Other	702	16	523	6
Total investments for unit-linked and with-profit business	24 818	4 728	**26 812**	**4 864**

Mortgage, policy and other loans, and investment real estate

As of 31 December 2018 and 30 June 2019, the carrying and respective fair values of investments in mortgage, policy and other loans, and investment real estate (excluding unit-linked and with-profit business) were as follows:

USD millions	2018 Carrying value	2018 Fair value	2019 Carrying value	2019 Fair value
Policy loans	84	84	83	83
Mortgage loans	2 890	2 882	2 823	2 862
Other loans	1 568	1 587	1 822	1 863
Investment real estate	2 411	4 307	2 504	4 466

Depreciation expense related to investment real estate was USD 27 million and USD 30 million for the six months ended 30 June 2018 and 2019, respectively. Accumulated depreciation on investment real estate totalled USD 609 million and USD 642 million as of 31 December 2018 and 30 June 2019, respectively.

Substantially all mortgage, policy and other loan receivables are secured by buildings, land or the underlying policies.

Investment real estate held by the Group includes residential and commercial investment real estate.

Other financial assets and liabilities by measurement category

As of 31 December 2018 and 30 June 2019, "Other invested assets" and "Accrued expenses and other liabilities" by measurement category were as follows:

2018 USD millions	Fair value	Investments measured at net asset value as practical expedient	Amortised cost or cost	Equity-accounted	Not in scope[1]	Total
Other invested assets						
Derivative financial instruments	564					564
Reverse repurchase agreements			1 051			1 051
Securities lending/borrowing	302		11			313
Equity-accounted investments	312			2 660		2 972
Other	52	812	634			1 498
Other invested assets	1 230	812	1 696	2 660	0	6 398
Accrued expenses and other liabilities						
Derivative financial instruments	582					582
Repurchase agreements			581			581
Securities lending	301		59			360
Securities sold short	1 538					1 538
Other			1 077		2 660	3 737
Accrued expenses and other liabilities	2 421	0	1 717	0	2 660	6 798

2019 USD millions	Fair value	Investments measured at net asset value as practical expedient	Amortised cost or cost	Equity-accounted	Not in scope[1]	Total
Other invested assets						
Derivative financial instruments	486					486
Reverse repurchase agreements			1 047			1 047
Securities lending/borrowing	456		237			693
Equity-accounted investments	319			2 691		3 010
Other	81	869	917			1 867
Other invested assets	**1 342**	**869**	**2 201**	**2 691**	**0**	**7 103**
Accrued expenses and other liabilities						
Derivative financial instruments	561					561
Repurchase agreements			1 002			1 002
Securities lending	459		19			478
Securities sold short	1 522					1 522
Other			3 169		2 733	5 902
Accrued expenses and other liabilities	**2 542**	**0**	**4 190**	**0**	**2 733**	**9 465**

[1] Amounts do not relate to financial assets or liabilities.

Offsetting of derivatives, financial assets and financial liabilities

Offsetting of derivatives, financial assets and financial liabilities as of 31 December 2018 and 30 June 2019 was as follows:

2018 USD millions	Gross amounts of recognised financial assets	Collateral set-off in the balance sheet	Net amounts of financial assets presented in the balance sheet	Related financial instruments not set-off in the balance sheet	Net amount
Derivative financial instruments – assets	1 620	–1 052	568		568
Reverse repurchase agreements	4 285	–3 234	1 051	–1 051	0
Securities lending	110	–99	11	–11	0
Total	6 015	–4 385	1 630	–1 062	568

2018 USD millions	Gross amounts of recognised financial liabilities	Collateral set-off in the balance sheet	Net amounts of financial liabilities presented in the balance sheet	Related financial instruments not set-off in the balance sheet	Net amount
Derivative financial instruments – liabilities	–1 505	923	–582	21	–561
Repurchase agreements	–3 334	2 753	–581	581	0
Securities lending	–940	580	–360	339	–21
Total	–5 779	4 256	–1 523	941	–582

2019 USD millions	Gross amounts of recognised financial assets	Collateral set-off in the balance sheet	Net amounts of financial assets presented in the balance sheet	Related financial instruments not set-off in the balance sheet	Net amount
Derivative financial instruments – assets	1 710	–1 216	494	–1	**493**
Reverse repurchase agreements	4 645	–3 598	1 047	–1 047	**0**
Securities lending	309	–72	237	–237	**0**
Total	**6 664**	**–4 886**	**1 778**	**–1 285**	**493**

2019 USD millions	Gross amounts of recognised financial liabilities	Collateral set-off in the balance sheet	Net amounts of financial liabilities presented in the balance sheet	Related financial instruments not set-off in the balance sheet	Net amount
Derivative financial instruments – liabilities	–1 668	1 107	–561	21	**–540**
Repurchase agreements	–4 100	3 098	–1 002	1 002	**0**
Securities lending	–1 050	572	–478	426	**–52**
Total	**–6 818**	**4 777**	**–2 041**	**1 449**	**–592**

Collateral pledged or received between two counterparties with a master netting arrangement in place, but not subject to balance sheet netting, is disclosed at fair value. The fair values represent the gross carrying value amounts at the reporting date for each financial instrument received or pledged by the Group. Management believes that master netting agreements provide for legally enforceable set-off in the event of default, which substantially reduces credit exposure. Upon occurrence of an event of default, the non-defaulting party may set off the obligation against collateral received regardless if it has been offset on the balance sheet prior to the defaulting event. The net amounts of the financial assets and liabilities presented on the balance sheet were recognised in "Other invested assets", "Investments for unit-linked and with-profit business" and "Accrued expenses and other liabilities".

Assets pledged

As of 31 December 2018 and 30 June 2019, investments with a carrying value of USD 5 776 million and USD 5 478 million, respectively, were on deposit with regulatory agencies in accordance with local requirements, of which USD 277 million and USD 342 million, respectively, were cash and cash equivalents. As of 31 December 2018 and 30 June 2019, investments with a carrying value of USD 12 959 million and USD 14 384 million, respectively, were placed on deposit or pledged to secure certain reinsurance liabilities, including pledged investments in subsidiaries, of which USD 404 million and USD 371 million, respectively, were cash and cash equivalents. Cash and cash equivalents pledged include some instances where cash is legally restricted from usage or withdrawal.

As of 31 December 2018 and 30 June 2019, securities of USD 15 850 million and USD 16 348 million, respectively, were transferred to third parties under securities lending transactions and repurchase agreements on a fully collateralised basis. Corresponding liabilities of USD 941 million and USD 1 480 million, respectively, were recognised in accrued expenses and other liabilities for the obligation to return collateral that the Group has the right to sell or repledge.

As of 31 December 2018 and 30 June 2019, a real estate portfolio with a carrying value of USD 191 million and USD 190 million, respectively, served as collateral for a credit facility, allowing the Group to withdraw funds up to CHF 500 million.

Collateral accepted which the Group has the right to sell or repledge

As of 31 December 2018 and 30 June 2019, the fair value of the equity securities, government and corporate debt securities received as collateral was USD 4 239 million and USD 4 805 million, respectively. Of this, the amount that was sold or repledged as of 31 December 2018 and 30 June 2019 was USD 1 721 million and USD 1 784 million, respectively. The sources of the collateral are securities borrowing, reverse repurchase agreements and derivative transactions.

Recognised gross liability for the obligation to return collateral that the Group has the right to sell or repledge

As of 31 December 2018 and 30 June 2019, the gross amounts of liabilities related to repurchase agreements and securities lending by the class of securities transferred to third parties and by the remaining maturity are shown below. The liabilities are recognised for the obligation to return collateral that the Group has the right to sell or repledge.

2018 USD millions	Remaining contractual maturity of the agreements Overnight and continuous	Up to 30 days	30–90 days	Greater than 90 days	Total
Repurchase agreements					
Debt securities issued by governments and government agencies	149	2 894	100	141	3 284
Corporate debt securities	9	41			50
Total repurchase agreements	158	2 935	100	141	3 334
Securities lending					
Debt securities issued by governments and government agencies	110	146	242	431	929
Corporate debt securities	7	4			11
Total securities lending	117	150	242	431	940
Gross amount of recognised liabilities for repurchase agreements and securities lending					4 274

2019 USD millions	Remaining contractual maturity of the agreements Overnight and continuous	Up to 30 days	30–90 days	Greater than 90 days	Total
Repurchase agreements					
Debt securities issued by governments and government agencies	354	3 452	240		4 046
Corporate debt securities	4	50			54
Total repurchase agreements	**358**	**3 502**	**240**	**0**	**4 100**
Securities lending					
Debt securities issued by governments and government agencies	108		483	448	1 039
Corporate debt securities	11				11
Total securities lending	**119**	**0**	**483**	**448**	**1 050**
Gross amount of recognised liabilities for repurchase agreements and securities lending					**5 150**

The programme is structured in a conservative manner within a clearly defined risk framework. Yield enhancement is conducted on a non-cash basis, thereby taking no re-investment risk.

8 Fair value disclosures

Fair value, as defined by the Fair Value Measurements and Disclosures Topic, is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

The Fair Value Measurements and Disclosures Topic requires all assets and liabilities that are measured at fair value to be categorised within the fair value hierarchy. This three-level hierarchy is based on the observability of the inputs used in the fair value measurement. The levels of the fair value hierarchy are defined as follows:

Level 1 inputs are quoted prices in active markets for identical assets or liabilities that the Group has the ability to access. Level 1 inputs are the most persuasive evidence of fair value and are to be used whenever possible.

Level 2 inputs are market-based inputs that are directly or indirectly observable, but not considered level 1 quoted prices. Level 2 inputs consist of (i) quoted prices for similar assets or liabilities in active markets; (ii) quoted prices for identical assets or liabilities in non-active markets (eg markets which have few transactions and where prices are not current or price quotations vary substantially); (iii) inputs other than quoted prices that are observable (eg interest rates, yield curves, volatilities, prepayment speeds, credit risks and default rates); and (iv) inputs derived from, or corroborated by, observable market data.

Level 3 inputs are unobservable inputs. These inputs reflect the Group's own assumptions about market pricing using the best internal and external information available.

The types of instruments valued, based on unadjusted quoted market prices in active markets, include most US government and sovereign obligations, active listed equities and most money market securities. Such instruments are generally classified within level 1 of the fair value hierarchy.

The types of instruments that trade in markets that are not considered to be active, but are valued based on quoted market prices, broker or dealer quotations or alternative pricing sources with reasonable levels of price transparency, include most government agency securities, investment-grade corporate bonds, certain mortgage- and asset-backed products, less liquid listed equities and state, municipal and provincial obligations. Such instruments are generally classified within level 2 of the fair value hierarchy.

Exchange-traded derivative instruments typically fall within level 1 or level 2 of the fair value hierarchy, depending on whether they are considered to be actively traded or not.

Certain financial instruments are classified within level 3 of the fair value hierarchy because they trade infrequently and therefore have little or no price transparency. Such instruments include private equity, less liquid corporate debt securities and certain asset-backed securities (ABS). Certain over-the-counter (OTC) derivatives trade in less liquid markets with limited pricing information, and the determination of fair value for these derivatives is inherently more difficult. Such instruments are classified within level 3 of the fair value hierarchy. Pursuant to the election of the fair value option, the Group classifies certain liabilities for life and health policy benefits in level 3 of the fair value hierarchy. When appropriate, valuations are adjusted for various factors such as liquidity, bid/offer spreads and credit considerations. Such adjustments are generally based on available market evidence. In the absence of such evidence, management's best estimate is used.

The fair values of assets are adjusted to incorporate the counterparty risk of non-performance. Similarly, the fair values of liabilities reflect the risk of non-performance of the Group, captured by the Group's credit spread. These valuation adjustments from assets and liabilities measured at fair value using significant unobservable inputs are recognised in net realised gains and losses. For the six months ended 30 June 2019, these adjustments were not material. Whenever the underlying assets or liabilities are reported in a specific business segment, the valuation adjustment is allocated accordingly. Valuation adjustments not attributable to any business segment are reported in Group items.

In certain situations, the Group uses inputs to measure the fair value of asset or liability positions that fall into different levels of the fair value hierarchy. In these situations, the Group will determine the appropriate level based on the lowest level input that is significant to the determination of the fair value.

Valuation techniques

US government securities typically have quoted market prices in active markets and are categorised as level 1 instruments in the fair value hierarchy. Non-US government holdings are generally classified as level 2 instruments and are valued on the basis of the quotes provided by pricing services, which are subject to the Group's pricing validation reviews and pricing vendor challenge process. Valuations provided by pricing vendors are generally based on the actual trade information as substantially all of the Group's non-US government holdings are traded in a transparent and liquid market.

Corporate debt securities mainly include US and European investment-grade positions, which are priced on the basis of quotes provided by third-party pricing vendors and first utilise valuation inputs from actively traded securities, such as bid prices, bid spreads to Treasury securities, Treasury curves and same or comparable issuer curves and spreads. Issuer spreads are determined from actual quotes and traded prices and incorporate considerations of credit/default, sector composition, and liquidity and call features. Where market data is not available, valuations are developed based on the modelling techniques that utilise observable inputs and option-adjusted spreads and incorporate considerations of the security's seniority and maturity and the issuer's corporate structure.

Values of mortgage- and asset-backed securities are obtained both from third-party pricing vendors and through quoted prices, some of which may be based on the prices of comparable securities with similar structural and collateral features. Values of certain ABS for which there are no significant observable inputs are developed using benchmarks to similar transactions or indices. For both residential mortgage-backed securities (RMBS) and commercial mortgage-backed securities (CMBS), cash flows are derived based on the transaction-specific information, which incorporates priority in the capital structure, and are generally adjusted to reflect benchmark yields, market prepayment data, collateral performance (default rates and loss severity) for specific vintage and geography, credit enhancements and ratings. For certain RMBS and CMBS with low levels of market liquidity, judgements may be required to determine comparable securities based on the loan type and deal-specific performance. CMBS terms may also incorporate lock-out periods that restrict borrowers from prepaying the loans or provide disincentives to prepay and therefore reduce prepayment risk of these securities, compared to RMBS. The factors specifically considered in the valuation of CMBS include borrower-specific statistics in a specific region, such as debt service coverage and loan-to-value ratios, as well as the type of commercial property. Mortgage- and asset-backed securities also includes debt securitised by credit card, student loan and auto loan receivables. Pricing inputs for these securities also focus on capturing, where relevant, collateral quality and performance, payment patterns and delinquencies.

The Group uses third-party pricing vendor data to value agency securitised products, which mainly include collateralised mortgage obligations (CMO) and mortgage-backed government agency securities. The valuations generally utilise observable inputs consistent with those noted above for RMBS and CMBS.

Equity securities held by the Group for proprietary investment purposes are mainly classified in level 1. Securities classified in level 1 are traded on public stock exchanges for which quoted prices are readily available.

The category "Other invested assets" includes the Group's private equity and hedge fund investments which are made directly or via ownership of funds. Valuation of direct private equity investments requires significant management judgement due to the absence of quoted market prices and the lack of liquidity. Initial valuation is based on the acquisition cost and is further refined based on the available market information for the public companies that are considered comparable to the Group's holdings in the private companies being valued and the private company-specific performance indicators, both historic and projected. Subsequent valuations also reflect business or asset appraisals, as well as market transaction data for private and public benchmark companies and the actual companies being valued, such as financing rounds and mergers and acquisitions activity. The Group's holdings in private equity and hedge funds are generally valued utilising net asset values (NAV), subject to adjustments, as deemed necessary, for restrictions on redemption (lock-up periods and amount limitations on redemptions). These investments are included under investments measured at net asset value as a practical expedient.

The Group holds both exchange-traded and OTC interest rate, foreign exchange, credit and equity derivative contracts for hedging and trading purposes. The fair values of exchange-traded derivatives measured using observable exchange prices are classified in level 1. Long-dated contracts may require adjustments to the exchange-traded prices which would trigger reclassification to level 2 in the fair value hierarchy. OTC derivatives are generally valued by the Group based on the internal models, which are consistent with industry standards and practices, and use both observable (dealer, broker or market consensus prices, spot and forward rates, interest rate and credit curves and volatility indices) and unobservable inputs (adjustments for liquidity, inputs derived from the observable data based on the Group's judgements and assumptions).

The Group's OTC interest rate derivatives primarily include interest rate swaps, futures, options, caps and floors and are valued based on the cash flow discounting models which generally utilise as inputs observable market yield curves and volatility assumptions.

The Group's OTC foreign exchange derivatives primarily include forward, spot and option contracts and are generally valued based on the cash flow discounting models, utilising as main inputs observable foreign exchange forward curves.

The Group's investments in equity derivatives primarily include OTC equity option contracts on single or baskets of market indices and equity options on individual or baskets of equity securities, which are valued using internally developed models (such as the Black-Scholes type option pricing model and various simulation models) calibrated with the inputs, which include underlying spot prices, dividend curves, volatility surfaces, yield curves and correlations between underlying assets.

The Group's OTC credit derivatives can include index and single-name credit default swaps. Plain vanilla credit derivatives, such as index and single-name credit default swaps, are valued by the Group based on the models consistent with the industry valuation standards for these credit contracts and primarily utilise observable inputs published by market data sources, such as credit spreads and recovery rates. These valuation techniques warrant classification of plain vanilla OTC derivatives as level 2 financial instruments in the fair value hierarchy.

Governance around level 3 fair valuation

The Asset Valuation Committee, endorsed by the Group Executive Committee, has a primary responsibility for governing and overseeing all of the Group's asset and derivative valuation policies and operating parameters (including level 3 measurements). The Asset Valuation Committee delegates the responsibility for implementation and oversight of consistent application of the Group's pricing and valuation policies to the Pricing and Valuation Committee.

The Pricing and Valuation Committee, which is a joint Risk Management & Finance management control committee, is responsible for the implementation and consistent application of the pricing and valuation policies. Key functions of the Pricing and Valuation Committee include: oversight over the entire valuation process, approval of internal valuation methodologies, approval of external pricing vendors, monitoring of the independent price verification (IPV) process and resolution of significant or complex valuation issues.

A formal IPV process is undertaken monthly by members of the Valuation Risk Management team within a Financial Risk Management function. The process includes monitoring and in-depth analyses of approved pricing methodologies and valuations of the Group's financial instruments aimed at identifying and resolving pricing discrepancies.

The Risk Management function is responsible for independent validation and ongoing review of the Group's valuation models. The Product Control group within Finance is tasked with reporting fair values through the vendor- and model-based valuations, the results of which are also subject to the IPV process.

Assets and liabilities measured at fair value on a recurring basis

As of 31 December 2018 and 30 June 2019, the fair values of assets and liabilities measured on a recurring basis by level of input were as follows:

2018 USD millions	Quoted prices in active markets for identical assets and liabilities (level 1)	Significant other observable inputs (level 2)	Significant unobservable inputs (level 3)	Impact of netting[1]	Investments measured at net asset value as practical expedient	Total
Assets						
Fixed income securities held for proprietary investment purposes	11 668	82 906	1 378			95 952
Debt securities issued by US government and government agencies	11 668	2 186				13 854
US Agency securitised products		6 551				6 551
Debt securities issued by non-US governments and government agencies		30 468	3			30 471
Corporate debt securities		39 372	1 370			40 742
Mortgage- and asset-backed securities		4 329	5			4 334
Fixed income securities backing unit-linked and with-profit business		4 938				4 938
Equity securities held for proprietary investment purposes	3 023	13				3 036
Equity securities backing unit-linked and with-profit business	23 111	12				23 123
Short-term investments held for proprietary investment purposes	1 220	4 197				5 417
Short-term investments backing unit-linked and with-profit business		11				11
Derivative financial instruments	11	1 205	404	–1 052		568
Interest rate contracts	6	424	6			436
Foreign exchange contracts		399				399
Equity contracts	1	377	339			717
Credit contracts						0
Other contracts	2		59			61
Contracts backing unit-linked and with-profit business	2	5				7
Investment real estate			166			166
Other invested assets	286	16	364		812	1 478
Funds held by ceding companies		206				206
Total assets at fair value	39 319	93 504	2 312	–1 052	812	134 895
Liabilities						
Derivative financial instruments	–14	–974	–517	923		–582
Interest rate contracts	–3	–318	–3			–324
Foreign exchange contracts		–169				–169
Equity contracts	–8	–484	–43			–535
Credit contracts		–1				–1
Other contracts			–471			–471
Contracts backing unit-linked and with-profit business	–3	–2				–5
Liabilities for life and health policy benefits			–119			–119
Accrued expenses and other liabilities	–302	–1 538				–1 840
Total liabilities at fair value	–316	–2 512	–636	923	0	–2 541

[1] The netting of derivative receivables and derivative payables is permitted when a legally enforceable master netting agreement exists between two counterparties. A master netting agreement provides for the net settlement of all contracts, as well as cash collateral, through a single payment, in a single currency, in the event of default or on the termination of any one contract.

2019 USD millions	Quoted prices in active markets for identical assets and liabilities (level 1)	Significant other observable inputs (level 2)	Significant unobservable inputs (level 3)	Impact of netting[1]	Investments measured at net asset value as practical expedient	Total
Assets						
Fixed income securities held for proprietary investment purposes	11 197	90 008	1 391			102 596
Debt securities issued by US government and government agencies	11 197	2 510				13 707
US Agency securitised products		7 051				7 051
Debt securities issued by non-US governments and government agencies		33 919	3			33 922
Corporate debt securities		41 884	1 382			43 266
Mortgage- and asset-backed securities		4 644	6			4 650
Fixed income securities backing unit-linked and with-profit business		4 506				4 506
Equity securities held for proprietary investment purposes	2 992	5				2 997
Equity securities backing unit-linked and with-profit business	25 899	13				25 912
Short-term investments held for proprietary investment purposes	1 873	4 479				6 352
Derivative financial instruments	25	1 370	315	–1 216		494
Interest rate contracts	13	544				557
Foreign exchange contracts		370				370
Equity contracts	7	450	254			711
Credit contracts						0
Other contracts	3		61			64
Contracts backing unit-linked and with-profit business	2	6				8
Investment real estate			149			149
Other invested assets	346	110	399		869	1 724
Funds held by ceding companies		193				193
Total assets at fair value	**42 332**	**100 684**	**2 254**	**–1 216**	**869**	**144 923**
Liabilities						
Derivative financial instruments	–19	–1 207	–442	1 107		–561
Interest rate contracts	–11	–412	–3			–426
Foreign exchange contracts		–241				–241
Equity contracts	–6	–541	–29			–576
Credit contracts						0
Other contracts	–2	–1	–410			–413
Contracts backing unit-linked and with-profit business		–12				–12
Liabilities for life and health policy benefits			–101			–101
Accrued expenses and other liabilities	–399	–1 581				–1 980
Total liabilities at fair value	**–418**	**–2 788**	**–543**	**1 107**	**0**	**–2 642**

[1] The netting of derivative receivables and derivative payables is permitted when a legally enforceable master netting agreement exists between two counterparties. A master netting agreement provides for the net settlement of all contracts, as well as cash collateral, through a single payment, in a single currency, in the event of default or on the termination of any one contract.

Assets and liabilities measured at fair value on a recurring basis using significant unobservable inputs (level 3)

As of 31 December 2018 and 30 June 2019, the reconciliations of the fair values of assets and liabilities measured on a recurring basis using significant unobservable inputs were as follows:

2018 USD millions	Fixed income securities	Equity securities	Derivative assets	Investment real estate	Other invested assets	Total assets	Derivative liabilities	Liabilities for life and health policy benefits	Total liabilities
Assets and liabilities									
Balance as of 1 January	1 353	4	386	198	509	2 450	–479	–126	–605
Realised/unrealised gains/losses:									
Included in net income			67	13	–19	61	44	7	51
Included in other comprehensive income	–39					–39			0
Purchases	201		11			212			0
Issuances						0	–159		–159
Sales	–7		–8	–33	–129	–177	23		23
Settlements	–44		–52			–96	48		48
Transfers into level 3[1]					19	19	–3		–3
Transfers out of level 3[1]	–18	–4			–3	–25			0
Impact of foreign exchange movements	–68			–12	–13	–93	9		9
Closing balance as of 31 December	1 378	0	404	166	364	2 312	–517	–119	–636

[1] Transfers are recognised at the date of the event or change in circumstances that caused the transfer.

2019 USD millions	Fixed income securities	Equity securities	Derivative assets	Investment real estate	Other invested assets	**Total assets**	Derivative liabilities	Liabilities for life and health policy benefits	**Total liabilities**
Assets and liabilities									
Balance as of 1 January	1 378	0	404	166	364	**2 312**	–517	–119	**–636**
Realised/unrealised gains/losses:									
Included in net income	3		–85	–2	13	**–71**	79	18	**97**
Included in other comprehensive income	55					**55**			**0**
Purchases	83		11		20	**114**			**0**
Issuances						**0**	–41		**–41**
Sales			–6	–15		**–21**	20		**20**
Settlements	–64		–11			**–75**	17		**17**
Transfers into level 3[1]			1		2	**3**			**0**
Transfers out of level 3[1]	–63					**–63**			**0**
Impact of foreign exchange movements	–1		1			**0**			**0**
Closing balance as of 30 June	**1 391**	**0**	**315**	**149**	**399**	**2 254**	**–442**	**–101**	**–543**

[1] Transfers are recognised at the date of the event or change in circumstances that caused the transfer.

Gains and losses on assets and liabilities measured at fair value on a recurring basis using significant unobservable inputs (level 3)

The gains and losses relating to the assets and liabilities measured at fair value using significant unobservable inputs (level 3) for the six months ended 30 June were as follows:

USD millions	2018	**2019**
Gains/losses included in net income for the period	91	26
Whereof change in unrealised gains/losses relating to assets and liabilities still held at the reporting date	60	–31

Assets and liabilities measured at fair value on a non-recurring basis

In accordance with the provisions of the subsequent measurement of Investments – Equity Method and Joint Ventures of FASB Codification Subtopic 323-10, other invested assets with a carrying amount of USD 23 million were written down to their fair value of USD 5 million, resulting in a loss of USD 18 million, which was included in earnings for the period in "Net investment income – non-participating business". This non-recurring fair value measurement was based on level 3 unobservable inputs using various methodologies.

Quantitative information about level 3 fair value measurements

Unobservable inputs for major level 3 assets and liabilities as of 31 December 2018 and 30 June 2019 were as follows:

USD millions	2018 Fair value	2019 Fair value	Valuation technique	Unobservable input	Range (weighted average)
Assets					
Corporate debt securities	1 370	**1 382**			
Infrastructure loans	920	938	Discounted cash flow model	Valuation spread	91–293 bps (185 bps)
Private placement corporate debt	341	377	Corporate spread matrix	Credit spread	54–363 bps (213 bps)
Private placement credit tenant leases	42	43	Discounted cash flow model	Illiquidity premium	125 – 150 bps (146 bps)
Derivative equity contracts	339	**254**			
OTC equity option referencing correlated equity indices	339	254	Proprietary option model	Correlation	–40–50% (5%)[1]
Investment real estate	166	**149**	Discounted cash flow model	Discount rate	5% per annum
Liabilities					
Derivative equity contracts	–43	**–29**			
OTC equity option referencing correlated equity indices	–43	–29	Proprietary option model	Correlation	–40–50% (5%)[1]
Other derivative contracts and liabilities for life and health policy benefits	–590	**–511**			
Variable annuity and fair valued GMDB contracts	–327	–325	Discounted cash flow model	Risk margin	4% (n/a)
				Volatility	4–42%
				Lapse	0.5–33%
				Mortality adjustment	–10–0%
				Withdrawal rate	0–90%
Swap liability referencing real estate investments	–127	–114	Discounted cash flow model	Discount rate	5% per annum
Weather contracts	–77	–33	Proprietary option model	Risk margin	5–11% (9%)
				Correlation	–36–55% (52%)
				Volatility (power/gas)	20–54% (50%)
				Volatility (temperature)	48–148 (94) HDD/CAT[2]
				Index value (temperature)	301–2807 (1068) HDD/CAT[2]

[1] Represents average input value for the reporting period.
[2] Heating Degree Days (HDD); Cumulative Average Temperature (CAT).

Sensitivity of recurring level 3 measurements to changes in unobservable inputs
The significant unobservable input used in the fair value measurement of the Group's infrastructure loans is valuation spread. A significant increase (decrease) in this input in isolation would result in a significantly lower (higher) fair value measurement. The significant unobservable input used in the fair value measurement of the Group's private placement corporate debt securities is credit spread. A significant increase (decrease) in this input in isolation would result in a significantly lower (higher) fair value measurement. The significant unobservable input used in the fair value measurement of the Group's private placement credit tenant leases is illiquidity premium. A significant increase (decrease) in this input in isolation would result in a significantly lower (higher) fair value measurement.

The significant unobservable input used in the fair value measurement of the Group's OTC equity option referencing correlated equity indices is correlation. Where the Group is long correlation risk, a significant increase (decrease) in this input in isolation would result in a significantly higher (lower) fair value measurement. Where the Group is short correlation risk, a significant increase (decrease) in this input in isolation would result in a significantly lower (higher) fair value measurement.

The significant unobservable input used in the fair value measurement of the Group's investment real estate and swap liability referencing real estate investment is the rate used to discount future cash flows from property sales. A significant increase (decrease) in this input in isolation would result in a significantly lower (higher) fair value measurement.

The significant unobservable inputs used in the fair value measurement of the Group's variable annuity and fair valued guaranteed minimum death benefit (GMDB) contracts are: risk margin, volatility, lapse, mortality adjustment rate and withdrawal rate. A significant increase (decrease) in isolation in each of the following inputs: risk margin, volatility and withdrawal rate would result in a significantly higher (lower) fair value of the Group's obligation. A significant increase (decrease) in isolation in a lapse rate for in-the-money contracts would result in a significantly lower (higher) fair value of the Group's obligation, whereas for out-of-the-money contracts, an isolated increase (decrease) in a lapse assumption would increase (decrease) fair value of the Group's obligation. Changes in the mortality adjustment rate impact the fair value of the Group's obligation differently for living-benefit products, compared to death-benefit products. For the former, a significant increase (decrease) in the mortality adjustment rate (ie increase (decrease) in mortality, respectively) in isolation would result in a decrease (increase) in fair value of the Group's liability. For the latter, a significant increase (decrease) in the mortality adjustment rate in isolation would result in an increase (decrease) in fair value of the Group's liability.

The significant unobservable inputs used in the fair value measurement of the Group's weather contracts are risk margin, correlation, volatility and index value. Where the Group has a long position, a significant increase (decrease) in the risk margin input in isolation would result in a significantly higher (lower) fair value measurement. Where the Group has a long volatility or correlation position, a significant increase (decrease) in the correlation and volatility inputs would result in a significantly higher (lower) fair value measurement. Where the Group has a long index position, an increase (decrease) in the index value input in isolation would result in a significantly higher (lower) fair value measurement. Where the Group has a short position, a significant increase (decrease) in the risk margin input in isolation would result in a significantly lower (higher) fair value measurement. Where the Group has a short volatility or correlation position, a significant increase (decrease) in the correlation and volatility inputs would result in a significantly lower (higher) fair value measurement. Where the Group has a short index position, an increase (decrease) in the index value input in isolation would result in a significantly lower (higher) fair value measurement.

Other invested assets measured at net asset value

Other invested assets measured at net asset value as of 31 December 2018 and 30 June 2019 were as follows:

USD millions	2018 Fair value	2019 Fair value	Unfunded commitments	Redemption frequency (if currently eligible)	Redemption notice period
Private equity funds	504	542	445	non-redeemable	n/a
Hedge funds	196	204		redeemable[1]	45–95 days[2]
Private equity direct	69	104		non-redeemable	n/a
Real estate funds	43	19	15	non-redeemable	n/a
Total	812	**869**	**460**		

[1] The redemption frequency varies by position.
[2] Cash distribution can be delayed for an extended period depending on the sale of the underlyings.

The hedge fund investments employ a variety of strategies, including relative value and event-driven strategies, across various asset classes.

The private equity direct portfolio consists of equity and equity-like investments directly in other companies. These investments have no contractual term and are generally held based on financial or strategic intent.

Private equity and real estate funds generally have limitations imposed on the amount of redemptions from the fund during the redemption period due to illiquidity of the underlying investments. Fees may apply for redemptions or transferring of interest to other parties. Distributions are expected to be received from these funds as the underlying assets are liquidated over the life of the fund, which is generally from 10 to 12 years.

The redemption frequency of hedge funds varies depending on the manager as well as the nature of the underlying product. Additionally, certain funds may impose lock-up periods and redemption gates as defined in the terms of the individual investment agreement.

Fair value option

The fair value option under the Financial Instruments Topic permits the choice to measure specified financial assets and liabilities at fair value on an instrument-by-instrument basis. The Group elected the fair value option for positions in the following line items:

Other invested assets

The Group elected the fair value option for certain investments classified as equity method investees within other invested assets in the balance sheet. The Group applied the fair value option, as the investments are managed on a fair value basis. The changes in fair value of these elected investments are recorded in earnings.

Funds held by ceding companies

For operational efficiencies, the Group elected the fair value option for funds held by the cedent under three of its reinsurance agreements. The assets are carried at fair value and changes in fair value are reported as a component of earnings.

Liabilities for life and health policy benefits

The Group elected the fair value option for existing GMDB reserves related to certain variable annuity contracts which are classified as universal-life-type contracts. The Group has applied the fair value option, as the equity risk associated with those contracts is managed on a fair value basis and it is economically hedged with derivative options in the market. The liability is carried at fair value and changes in fair value attributable to instrument-specific credit risk are reported in other comprehensive income and all other changes in fair value are reported as a component of earnings.

Other derivative liabilities

For operational efficiencies, the Group elected the fair value option on a hybrid financial instrument, where the host contract is a debt instrument and the embedded derivative is pegged to the performance of the fund's real estate portfolio. The liability is carried at fair value and changes in fair value are reported as a component of earnings. In the balance sheet and the following fair value disclosures, this item is included under "Accrued expenses and other liabilities".

Assets and liabilities measured at fair value pursuant to election of the fair value option

Pursuant to the election of the fair value option for the items described, the balances as of 31 December 2018 and 30 June 2019 were as follows:

USD millions	2018	2019
Assets		
Other invested assets	6 398	7 103
of which at fair value pursuant to the fair value option	312	327
Funds held by ceding companies	9 009	9 298
of which at fair value pursuant to the fair value option	206	193
Liabilities		
Liabilities for life and health policy benefits	–39 593	–41 113
of which at fair value pursuant to the fair value option	–119	–101
Accrued expenses and other liabilities	–6 798	–9 465
of which at fair value pursuant to the fair value option	–127	–114

Changes in fair values for items measured at fair value pursuant to election of the fair value option

Gains/losses included in earnings for items measured at fair value pursuant to election of the fair value option, including foreign exchange impact, for the six months ended 30 June were as follows:

USD millions	2018	2019
Other invested assets	12	13
Funds held by ceding companies	–1	6
Liabilities for life and health policy benefits	2	18
Accrued expenses and other liabilities	–5	13
Total	8	**50**

Fair value changes from other invested assets and funds held by ceding companies are reported in "Net investment income – non-participating business". Fair value changes from the GMDB reserves are shown in "Life and health benefits". Fair value changes from accrued expenses and other liabilities are reported in "Net realised investment gains/losses – non-participating business".

Assets and liabilities not measured at fair value but for which the fair value is disclosed

Assets and liabilities not measured at fair value but for which the fair value is disclosed as of 31 December 2018 and 30 June 2019 were as follows:

2018 USD millions	Significant other observable inputs (level 2)	Significant unobservable inputs (level 3)	Total
Assets			
Policy loans		84	84
Mortgage loans		2 882	2 882
Other loans		1 587	1 587
Investment real estate		4 141	4 141
Total assets	0	8 694	8 694
Liabilities			
Debt	–7 576	–4 109	–11 685
Total liabilities	–7 576	–4 109	–11 685

2019 USD millions	Significant other observable inputs (level 2)	Significant unobservable inputs (level 3)	Total
Assets			
Policy loans		83	83
Mortgage loans		2 862	2 862
Other loans		1 863	1 863
Investment real estate		4 317	4 317
Total assets	**0**	**9 125**	**9 125**
Liabilities			
Debt	–9 649	–4 219	–13 868
Total liabilities	**–9 649**	**–4 219**	**–13 868**

Policy loans, other loans and certain mortgage loans are classified as level 3 measurements, as they do not have an active exit market. Some of these positions need to be assessed in conjunction with the corresponding insurance business, whilst the fair value of some other positions does not differ materially from the carrying amount. Considering these circumstances for these positions, the Group presents the carrying amount as an approximation for the fair value. For certain commercial mortgage loans and infrastructure loans, which are included in mortgage loans and other loans respectively, the fair value can be estimated using discounted cash flow models which are based on discount curves and spread inputs that require management's judgement.

Investments in real estate are fair valued primarily by external appraisers based on proprietary discounted cash flow models that incorporate applicable risk premium adjustments to discount yields and projected market rental income streams based on market-specific data. These fair value measurements are classified in level 3 in the fair value hierarchy.

Debt positions, which are fair valued based on executable broker quotes or the discounted cash flow method using observable inputs, are classified as level 2 measurements. Fair value of the majority of the Group's level 3 debt positions is judged to approximate carrying value due to the highly tailored nature of the obligation and short-notice termination provisions.

9 Derivative financial instruments

The Group uses a variety of derivative financial instruments including swaps, options, forwards, credit derivatives and exchange-traded financial futures in its trading and hedging strategies, in line with the Group's overall risk management strategy. The objectives include managing exposure to price, foreign currency and/or interest rate risk on planned or anticipated investment purchases, existing assets or liabilities, as well as locking in attractive investment conditions for future available funds.

The fair values represent the gross carrying value amounts at the reporting date for each class of derivative contract held or issued by the Group. The gross fair values are not an indication of credit risk, as many OTC transactions are contracted and documented under ISDA master agreements or their equivalent. Management believes that such agreements provide for legally enforceable set-off in the event of default, which substantially reduces credit exposure.

Fair values and notional amounts of derivative financial instruments

As of 31 December 2018 and 30 June 2019, the fair values and notional amounts of the derivatives outstanding were as follows:

2018 USD millions	Notional amount assets/liabilities	Fair value assets	Fair value liabilities	Carrying value assets/liabilities
Derivatives not designated as hedging instruments				
Interest rate contracts	52 719	441	–326	115
Foreign exchange contracts	19 415	186	–148	38
Equity contracts	12 493	719	–538	181
Credit contracts	379		–1	–1
Other contracts	11 385	61	–471	–410
Total	96 391	1 407	–1 484	–77
Derivatives designated as hedging instruments				
Foreign exchange contracts	12 679	213	–21	192
Total	12 679	213	–21	192
Total derivative financial instruments	109 070	1 620	–1 505	115
Amount offset				
Where a right of set-off exists		–623	623	
Due to cash collateral		–429	300	
Total net amount of derivative financial instruments		568	–582	–14

2019 USD millions	Notional amount assets/liabilities	Fair value assets	Fair value liabilities	Carrying value assets/liabilities
Derivatives not designated as hedging instruments				
Interest rate contracts	39 263	563	–439	124
Foreign exchange contracts	23 697	244	–102	142
Equity contracts	15 249	713	–576	137
Credit contracts	178			
Other contracts	11 837	64	–412	–348
Total	**90 224**	**1 584**	**–1 529**	**55**
Derivatives designated as hedging instruments				
Foreign exchange contracts	14 267	126	–139	–13
Total	**14 267**	**126**	**–139**	**–13**
Total derivative financial instruments	**104 491**	**1 710**	**–1 668**	**42**
Amount offset				
Where a right of set-off exists		–683	683	
Due to cash collateral		–533	424	
Total net amount of derivative financial instruments		**494**	**–561**	**–67**

The notional amounts of derivative financial instruments give an indication of the Group's volume of derivative activity. The fair value assets are included in "Other invested assets" and "Investments for unit-linked and with-profit business", and the fair value liabilities are included in "Accrued expenses and other liabilities". The fair value amounts that were not offset were nil as of 31 December 2018 and 30 June 2019.

Non-hedging activities

The Group primarily uses derivative financial instruments for risk management and trading strategies. Gains and losses of derivative financial instruments not designated as hedging instruments are recorded in "Net realised investment gains/losses — non-participating business" and "Net investment result — unit-linked and with-profit business" in the income statement.

For the six months ended 30 June, the gains and losses of derivative financial instruments not designated as hedging instruments were as follows:

USD millions	2018	2019
Derivatives not designated as hedging instruments		
Interest rate contracts	–154	–110
Foreign exchange contracts	72	66
Equity contracts	7	–56
Credit contracts	8	–1
Other contracts	77	60
Total gains/losses recognised in income	10	**–41**

Hedging activities

The Group designates certain derivative financial instruments as hedging instruments. The designation of derivative financial instruments is primarily used for overall portfolio and risk management strategies. As of 30 June 2018 and 2019, the following hedging relationships were outstanding:

Fair value hedges

The Group enters into foreign exchange swaps to reduce the exposure to foreign exchange volatility for certain fixed income securities. These derivative instruments are designated as hedging instruments in qualifying fair value hedges. Gains and losses on derivative financial instruments designated as fair value hedging instruments are recorded in "Net realised investment gains/losses — non-participating business" in the income statement. For the six months ended 30 June, the gains and losses attributable to the hedged risks were as follows:

USD millions	2018 Gains/losses on derivatives	2018 Gains/losses on hedged items	2019 Gains/losses on derivatives	2019 Gains/losses on hedged items
Fair value hedging relationships				
Foreign exchange contracts	211	–211	–14	14
Total gains/losses recognised in income	211	–211	**–14**	**14**

Cash flow hedges

The Group entered into cross-currency swaps to reduce the exposure to foreign exchange volatility for a long-term debt instrument issued in the second quarter of 2016 and a portfolio of foreign currency denominated corporate bonds. These derivative instruments are designated as cash flow hedging instruments.

For the six months ended 30 June 2019, the Group recorded a loss of USD 1 million on derivatives in accumulated other comprehensive income. For the six months ended 30 June 2019, the Group reclassified a loss of USD 3 million from accumulated other comprehensive income into income.

As of 30 June 2019, the maximum length of time over which the Group hedged its exposure to the variability in future cash flows for forecasted transactions, excluding those forecasted transactions related to the payment of variable interest on existing financial instruments, was seven years.

The Group believes that the net gains and losses associated with cash flow hedges expected to be reclassified from accumulated other comprehensive income within the next twelve months cannot be reasonably estimated as they relate to foreign exchange volatility.

Hedges of the net investment in foreign operations

The Group designates derivative and non-derivative monetary financial instruments as hedging the foreign currency exposure of its net investment in certain foreign operations.

For the year ended 31 December 2018 and the six months ended 30 June 2019, the Group recorded accumulated net unrealised foreign currency remeasurement gains of USD 2 102 million and USD 2 041 million, respectively, in shareholders' equity. These offset translation gains and losses on the hedged net investment.

Maximum potential loss

In consideration of the rights of set-off and the qualifying master netting arrangements with various counterparties, the maximum potential loss as of 31 December 2018 and 30 June 2019 was approximately USD 997 million and USD 1 027 million, respectively. The maximum potential loss is based on the positive market replacement cost assuming non-performance of all counterparties, excluding cash collateral.

Credit risk-related contingent features

Certain derivative instruments held by the Group contain provisions that require its debt to maintain an investment-grade credit rating. If the Group's credit rating were downgraded or no longer rated, the counterparties could request immediate payment, guarantee or an ongoing full overnight collateralisation on derivative instruments in net liability positions.

The total fair value of derivative financial instruments containing credit risk-related contingent features amounted to USD 108 million and USD 73 million as of 31 December 2018 and 30 June 2019, respectively. For derivative financial instruments containing credit risk-related contingent features, the Group posted collateral of nil as of 31 December 2018 and 30 June 2019. In the event of a reduction of the Group's credit rating to below investment grade, a fair value of USD 73 million additional collateral would have had to be posted as of 30 June 2019. The total equals the amount needed to settle the instruments immediately as of 30 June 2019.

10 Debt and contingent capital instruments

The Group enters into long- and short-term debt arrangements to obtain funds for general corporate use and specific transaction financing. The Group defines short-term debt as debt having a maturity at the balance sheet date of not greater than one year and long-term debt as having a maturity of greater than one year. For subordinated debt positions, maturity is defined as the first optional redemption date (notwithstanding that optional redemption could be subject to regulatory consent). Interest expense is classified accordingly.

The Group's debt as of 31 December 2018 and 30 June 2019 was as follows:

USD millions	2018	**2019**
Senior financial debt	235	596
Subordinated financial debt	637	
Contingent capital instruments classified as financial debt	761	753
Short-term debt	1 633	**1 349**
Senior financial debt	3 428	2 826
Senior operational debt	388	394
Subordinated financial debt	1 892	4 360
Subordinated operational debt	2 112	2 081
Contingent capital instruments classified as financial debt	682	681
Long-term debt	8 502	**10 342**
Total carrying value	10 135	**11 691**
Total fair value	11 685	**13 868**

As of 31 December 2018 and 30 June 2019, operational debt, ie debt related to operational leverage, amounted to USD 2.5 billion (thereof USD 2.1 billion limited- or non-recourse) and USD 2.5 billion (thereof USD 2.1 billion limited- or non-recourse), respectively. Operational leverage is subject to asset/liability matching and is excluded from rating agency financial leverage calculations.

Interest expense on long-term debt and contingent capital instruments

Interest expense on long-term debt for the periods ended 30 June was as follows:

USD millions	2018	**2019**
Senior financial debt	50	44
Senior operational debt	5	6
Subordinated financial debt[1]	63	64
Subordinated operational debt	60	56
Contingent capital instruments classified as financial debt[1]	20	12
Total	198	**182**

[1] Certain items previously described within the disclosure table as subordinated financial debt are now included as contingent capital instruments classified as financial debt. Comparative information for 2018 has been amended accordingly.

In addition to the above, interest expense on contingent capital instruments classified as equity was USD 24 million and nil for the six months ended 30 June 2018 and 2019, respectively.

Long-term debt issued in 2019

In March 2019, Swiss Re Finance (Luxembourg) S.A., a subsidiary of Swiss Reinsurance Company Ltd, issued 31-year guaranteed subordinated fixed rate reset step-up callable notes, which are callable after 11 years. The instruments have an aggregate face value of EUR 750 million, with a fixed coupon of 2.534% until the first optional redemption date (30 April 2030). The notes are guaranteed on a subordinated basis by Swiss Reinsurance Company Ltd.

In April 2019, Swiss Re Finance (Luxembourg) S.A., a subsidiary of Swiss Reinsurance Company Ltd, issued 30-year guaranteed subordinated fixed rate reset step-up callable notes, which are callable after 10 years. The instruments have an aggregate face value of USD 1 billion, with a fixed coupon of 5% until the first optional redemption date (2 April 2029). The notes are guaranteed on a subordinated basis by Swiss Reinsurance Company Ltd.

In June 2019, ReAssure Group plc issued Tier 2 subordinated notes due 2029. The notes have an aggregate face value of GBP 500 million, with a fixed coupon of 5.867% per annum.

11 Earnings per share

Earnings per share for the six months ended 30 June were as follows:

USD millions (except share data)	2018	2019
Basic earnings per share		
Net income	1 037	962
Non-controlling interests	–7	–9
Interest on contingent capital instruments[1]	–24	
Net income attributable to common shareholders	1 006	**953**
Weighted average common shares outstanding	310 385 586	298 604 931
Net income per share in USD	3.24	**3.19**
Net income per share in CHF[2]	3.13	**3.20**
Effect of dilutive securities		
Change in income available to common shares due to convertible debt and contingent capital instruments[1]	24	7
Change in average number of shares due to convertible debt and contingent capital instruments	24 565 392	11 638 463
Change in average number of shares due to employee options	458 165	870 680
Diluted earnings per share		
Net income assuming debt conversion and exercise of options	1 030	**960**
Weighted average common shares outstanding	335 409 143	311 114 074
Net income per share in USD	3.07	**3.09**
Net income per share in CHF[2]	2.96	**3.09**

[1] Please refer to Note 10, "Debt and contingent capital instruments".
[2] The translation from USD to CHF is shown for informational purposes only and has been calculated using the Group's average exchange rates.

Dividends are declared in Swiss francs. During the twelve months ended 31 December 2018 and the six months ended 30 June 2019, the parent company of the Group (Swiss Re Ltd) paid dividends per share of CHF 5.00 and CHF 5.60, respectively.

At the 154th Annual General Meeting held on 20 April 2018, Swiss Re Ltd's shareholders authorised the Group Board of Directors to repurchase up to a maximum CHF 1 billion purchase value of the Group's own shares by way of a public share buy- back programme for cancellation purposes prior to the 2019 Annual General Meeting.

At the 155th Annual General Meeting held on 17 April 2019, the shareholders authorised a public share buy-back programme consisting of two tranches of each up to CHF 1 billion purchase value of the Group's own shares for cancellation purposes prior to the 2020 Annual General Meeting, the first tranche being conditional on obtaining all necessary legal and regulatory approvals and Board of Directors approval and the second tranche being conditional on (in addition to obtaining all necessary legal and regulatory approvals and Board of Directors approval) the 2019 development of the Group's excess capital position and subject to Swiss Re's capital management priorities.

The public share buy-back programme approved by the 2018 Annual General Meeting was completed as of 15 February 2019. The total number of shares repurchased amounted to 11.2 million, of which 10 million and 1.2 million shares were repurchased as of 31 December 2018 and between 1 January and 15 February 2019, respectively.

On 17 April 2019, the 155th Annual General Meeting resolved the cancellation of the total number of repurchased shares by way of share capital reduction. The share capital reduction was registered in the Commercial Register of the Canton of Zurich on 11 July 2019 and publication in the Swiss Commercial Gazette occurred on 16 July 2019.

The first tranche of the public share buy-back programme to purchase own shares for cancellation prior to the 156th Annual General Meeting commenced on 6 May 2019. The total number of shares repurchased as at 30 June 2019 amounted to 3.1 million.

12 Benefit plans

Net periodic benefit cost

Pension and post-retirement cost for the six months ended 30 June 2018 and 2019 were USD 61 million and USD 26 million, respectively. Pension and post-retirement cost is presented in "Operating expenses".

Employer's contribution for 2019

For the six months ended 30 June 2019, the Group contributed USD 62 million to its defined benefit pension plans and USD 8 million to other post-retirement plans, compared to USD 60 million and USD 9 million, respectively, in the same period of 2018.

The expected 2019 contributions to the defined benefit pension plans and to the post-retirement benefit plans, revised as of 30 June 2019 for the latest information, amount to USD 121 million and USD 16 million, respectively.

13 Variable interest entities

The Group enters into arrangements with variable interest entities (VIEs) in the normal course of business. The involvement ranges from being a passive investor to designing, structuring and managing the VIEs. The variable interests held by the Group arise primarily as a result of the Group's involvement in certain insurance-linked securitisations, life and health funding transactions, swaps in trusts, debt financing, investment, senior commercial mortgage and infrastructure loans as well as other entities, which meet the definition of a VIE.

When analysing whether the entity is a VIE, the Group mainly assesses if (1) the equity is sufficient to finance the entity's activities without additional subordinated financial support, (2) the equity holders have the right to make significant decisions affecting the entity's operations and (3) the holders of the voting rights substantively participate in the gains and losses of the entity.

When one of these criteria is not met, the entity is considered a VIE and is assessed for consolidation under the VIE section of the Consolidation topic.

The party that has a controlling financial interest is called a primary beneficiary and consolidates the VIE. The party is deemed to have a controlling financial interest if it has both:

- the power to direct the activities of the VIE that most significantly impact the entity's economic performance; and
- the obligation to absorb the entity's losses that could potentially be significant to the VIE or the right to receive benefits from the entity that could potentially be significant to the VIE.

For all its variable interests in VIEs, the Group assesses whether it has a controlling financial interest in these entities and, thus, is the primary beneficiary. The Group identifies the activities that most significantly impact the entity's performance and determines whether the Group has the power to direct those activities. In conducting the analysis, the Group considers the purpose, the design and the risks that the entity was designed to create and pass through to its variable interest holders. Additionally, the Group assesses if it has the obligation to absorb losses or if it has the right to receive benefits of the VIE that could potentially be significant to the entity. If both criteria are met, the Group has a controlling financial interest in the VIE and consolidates the entity.

The Group monitors changes to the facts and circumstances of the existing involvement with legal entities to determine whether they require reconsideration of the entity's designation as a VIE or voting interest entity. For VIEs, the Group regularly reassesses the primary beneficiary determination.

Insurance-linked securitisations
The insurance-linked securitisations transfer pre-existing insurance risk to investors through the issuance of insurance-linked securities. In insurance-linked securitisations, the securitisation vehicle assumes the insurance risk from a sponsor through insurance or derivative contracts. The securitisation vehicle generally retains the issuance proceeds as collateral, which consists of investment-grade securities. The Group does not have potentially significant variable interest in these vehicles and therefore is not a primary beneficiary.

Typically, the variable interests held by the Group arise through ownership of insurance-linked securities, in which case the Group's maximum loss equals the principal amount of the securities held by the Group.

Life and health funding vehicles
The Group participates in certain structured transactions that retrocede longevity and mortality risks to captive reinsurers with an aim to provide regulatory capital credit to a transaction sponsor through the creation of funding notes by a separate funding vehicle which is generally considered a VIE. The Group's participation in these transactions is generally limited to providing contingent funding support via a financial contract with a funding vehicle, which represents a potentially significant variable interest in the funding vehicle. The Group does not have the power to direct activities of the funding vehicles and therefore is not a primary beneficiary of the funding vehicles in these transactions. The Group's maximum exposure in these transactions equals either the total contract notional or outstanding balance of the funding notes issued by the vehicle, depending on the specific contractual arrangements.

Swaps in trusts

The Group provides interest rate and foreign exchange risk hedges to certain asset securitisation trusts which qualify as VIEs. As the Group's involvement is limited to interest rate and foreign exchange derivatives, it does not have the power to direct any activities of the trusts and therefore does not qualify as the primary beneficiary of any of these trusts. These activities are in run-off.

Debt financing vehicles

The Group consolidates a debt-financing vehicle created to collateralise reinsurance coverage provided by the Group. The Group manages the asset portfolio in the vehicle and absorbs the variability of the investment return of the vehicle's portfolio, thereby satisfying both criteria for a controlling financial interest: power over activities most significant to the vehicle's economic performance and significant economic interest.

Investment vehicles

The Group consolidates a real estate investment entity, which holds real estate backing annuities business. The Group is its primary beneficiary, because it has both power over the entity's investment decisions and a significant variable interest in the entity.

The Group's variable interests in investment partnerships arise through ownership of the limited partner interests. Many investment partnerships are VIEs because the limited partners as a group lack kick-out or participating rights. The Group does not hold the general partner interest in the limited partnerships and therefore does not direct investment activities of the entity. Therefore, the Group lacks power over the relevant activities of the vehicles and, consequently, does not qualify as the primary beneficiary. The Group is exposed to losses when the values of the investments held by the investment vehicles decrease. The Group's maximum exposure to loss equals the Group's share of the investment.

The Group is a passive investor in structured securitisation vehicles issuing residential and commercial mortgage-backed securities (RMBS and CMBS, respectively) and other asset-backed securities (ABS). The Group's investments in RMBS, CMBS and other ABS are passive in nature and do not obligate the Group to provide any financial or other support to the issuer entities. By design, RMBS, CMBS and ABS securitisation entities are not adequately capitalised and therefore considered VIEs. The Group is not the primary beneficiary, because it does not have power to direct most significant activities. These investments are accounted for as available-for-sale as described in the investment note and not included in the tables below.

The Group consolidates an investment vehicle, because the Group holds the entire interest in the entity and makes investment decisions related to the entity. The investment vehicle is a VIE because it is structured as an umbrella company comprised of multiple sub-funds. The majority of the investments held in this vehicle are accounted for as available-for-sale and are disclosed in the investment note and not included in the tables below.

Investment vehicles for unit-linked business

Additionally, the Group invests on behalf of the policyholders as a passive investor in a variety of investment funds across various jurisdictions. By design, many of these funds meet a VIE definition. While the Group may have a potentially significant variable interest in some of these entities due to its share of the fund's total net assets, it never has power over the fund's investment decisions, or unilateral kick-out rights relative to the decision maker.

The Group is not exposed to losses in the aforementioned investment vehicles, as the investment risk is borne by the policyholder.

Senior commercial mortgage and infrastructure loans

The Group also invests in structured commercial mortgage and infrastructure loans, which are held for investment.

The commercial mortgage loans are made to non-recourse special purpose entities collateralised with commercial real estate. The entities are adequately capitalised and generally structured as voting interest entities. Occasionally, the borrower entities can be structured as limited partnerships where the limited partners do not have kick-out or participating rights, which results in the VIE designation.

The infrastructure loans are made to non-recourse special purpose entities collateralised with infrastructure project assets. Some borrower entities may have insufficient equity investment at risk, which results in the VIE designation.

The Group does not have power over the activities most significant to the aforementioned borrower entities designated as VIEs and therefore does not consolidate them.

The Group's maximum exposure to loss from its investments equals the loan outstanding amount.

Other

The Group consolidates a vehicle providing reinsurance to its members, because it serves as a decision maker over the entity's investment and underwriting activities, provides retrocession for the majority of the vehicle's insurance risk and receives performance-based fees. Additionally, the Group is obligated to provide the vehicle with loans in the event of a deficit. The vehicle is a VIE, primarily because its total equity investment at risk is insufficient and the members lack decision-making rights.

The Group did not provide financial or other support to any VIEs during 2019 that it was not previously contractually required to provide.

Consolidated VIEs

The following table shows the total assets and liabilities in the Group's balance sheet related to VIEs of which the Group is the primary beneficiary as of 31 December 2018 and 30 June 2019:

USD millions	2018	**2019**
Fixed income securities available-for-sale	3 444	3 536
Investment real estate	166	149
Short-term investments	79	65
Cash and cash equivalents	20	42
Accrued investment income	30	29
Premiums and other receivables	26	35
Funds held by ceding companies		1
Deferred acquisition costs	3	2
Deferred tax assets	212	273
Other assets	16	27
Total assets	3 996	**4 159**
Unpaid claims and claim adjustment expenses	66	59
Unearned premiums	8	9
Funds held under reinsurance treaties		5
Reinsurance balances payable	15	21
Deferred and other non-current tax liabilities	180	229
Accrued expenses and other liabilities	144	143
Long-term debt	2 112	2 081
Total liabilities	2 525	**2 547**

The assets of the consolidated VIEs may only be used to settle obligations of these VIEs and to settle any investors' ownership liquidation requests. There is no recourse to the Group for the consolidated VIEs' liabilities. The assets of the consolidated VIEs are not available to the Group's creditors.

Non-consolidated VIEs

The following table shows the total assets and liabilities on the Group's balance sheet related to VIEs in which the Group held a variable interest but was not the primary beneficiary as of 31 December 2018 and 30 June 2019:

USD millions	2018	2019
Fixed income securities available-for-sale	935	969
Equity securities at fair value through earnings	272	123
Policy loans, mortgages and other loans	1 313	1 416
Other invested assets	1 953	1 989
Investments for unit-linked and with-profit business	5 999	7 049
Total assets	10 472	**11 546**
Accrued expenses and other liabilities	58	56
Total liabilities	58	**56**

The following table shows the Group's assets, liabilities and maximum exposure to loss related to VIEs in which the Group held a variable interest but was not the primary beneficiary as of 31 December 2018 and 30 June 2019:

			2018			2019
USD millions	Total assets	Total liabilities	Maximum exposure to loss[1]	Total assets	Total liabilities	Maximum exposure to loss[1]
Insurance-linked securitisations	447		462	503		522
Life and health funding vehicles	25		2 174	27	1	2 195
Swaps in trusts	76	58	–[2]	73	55	–[2]
Investment vehicles	2 130		2 130	2 015		2 015
Investment vehicles for unit-linked business	5 999			7 049		
Senior commercial mortgage and infrastructure loans	1 795		1 795	1 879		1 879
Total	10 472	58	–[2]	**11 546**	**56**	**–[2]**

[1] Maximum exposure to loss is the loss the Group would absorb from a variable interest in a VIE in the event that all of the assets of the VIE are deemed worthless.
[2] The maximum exposure to loss for swaps in trusts cannot be meaningfully quantified due to their derivative character.

The assets and liabilities for the swaps in trusts represent the positive and negative fair values of the derivatives the Group has entered into with the trusts.

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Cautionary note
on forward-looking statements

Certain statements and illustrations contained herein are forward-looking. These statements (including as to plans, objectives, targets, and trends) and illustrations provide current expectations of future events based on certain assumptions and include any statement that does not directly relate to a historical fact or current fact.

Forward-looking statements typically are identified by words or phrases such as "anticipate", "assume", "believe", "continue", "estimate", "expect", "foresee", "intend", "may increase", "may fluctuate" and similar expressions, or by future or conditional verbs such as "will", "should", "would" and "could". These forward-looking statements involve known and unknown risks, uncertainties and other factors, which may cause the Group's actual results of operations, financial condition, solvency ratios, capital or liquidity positions or prospects to be materially different from any future results of operations, financial condition, solvency ratios, capital or liquidity positions or prospects expressed or implied by such statements or cause Swiss Re to not achieve its published targets. Such factors include, among others:

- the frequency, severity and development of insured claim events, particularly natural catastrophes, man-made disasters, pandemics, acts of terrorism and acts of war;
- mortality, morbidity and longevity experience;
- the cyclicality of the insurance and reinsurance sectors;
- instability affecting the global financial system;
- deterioration in global economic conditions;
- the effect of market conditions, including the global equity and credit markets, and the level and volatility of equity prices, interest rates, credit spreads, currency values and other market indices, on the Group's investment assets;
- changes in the Group's investment result as a result of changes in the Group's investment policy or the changed composition of the Group's investment assets, and the impact of the timing of any such changes relative to changes in market conditions;
- the Group's ability to maintain sufficient liquidity and access to capital markets, including sufficient liquidity to cover potential recapture of reinsurance agreements, early calls of debt or debt-like arrangements and collateral calls due to actual or perceived deterioration of the Group's financial strength or otherwise;
- any inability to realise amounts on sales of securities on the Group's balance sheet equivalent to their values recorded for accounting purposes;
- changes in legislation and regulation, and the interpretations thereof by regulators and courts, affecting us or the Group's ceding companies, including as a result of shifts away from multilateral approaches to regulation of global operations;
- the outcome of tax audits, the ability to realise tax loss carryforwards, the ability to realise deferred tax assets (including by reason of the mix of earnings in a jurisdiction or deemed change of control), which could negatively impact future earnings, and the overall impact of changes in tax regimes on business models;
- failure of the Group's hedging arrangements to be effective;
- the lowering or loss of one of the financial strength or other ratings of one or more Swiss Re companies, and developments adversely affecting the Group's ability to achieve improved ratings;

- uncertainties in estimating reserves;
- policy renewal and lapse rates;
- uncertainties in estimating future claims for purposes of financial reporting, particularly with respect to large natural catastrophes and certain large man-made losses, as significant uncertainties may be involved in estimating losses from such events and preliminary estimates may be subject to change as new information becomes available;
- extraordinary events affecting the Group's clients and other counterparties, such as bankruptcies, liquidations and other credit-related events;
- legal actions or regulatory investigations or actions, including those in respect of industry requirements or business conduct rules of general applicability;
- changes in accounting standards;
- significant investments, acquisitions or dispositions, and any delays, unexpected costs, lower-than expected benefits, or other issues experienced in connection with any such transactions;
- changing levels of competition, including from new entrants into the market; and
- operational factors, including the efficacy of risk management and other internal procedures in managing the foregoing risks and the ability to manage cybersecurity risks.

These factors are not exhaustive. The Group operates in a continually changing environment and new risks emerge continually. Readers are cautioned not to place undue reliance on forward-looking statements. Swiss Re undertakes no obligation to publicly revise or update any forward-looking statements, whether as a result of new information, future events or otherwise.

This communication is not intended to be a recommendation to buy, sell or hold securities and does not constitute an offer for the sale of, or the solicitation of an offer to buy, securities in any jurisdiction, including the United States. Any such offer will only be made by means of a prospectus or offering memorandum, and in compliance with applicable securities laws.

Note on risk factors

General impact of adverse market conditions

The operations of Swiss Re Ltd ("Swiss Re") and its subsidiaries (collectively, the "Group") as well as its investment returns are subject to market volatility and macroeconomic factors, which are outside of the Group's control and are often inter-related.

Financial, credit and foreign exchange markets are experiencing continued periods of volatility reflecting a range of political, economic and other uncertainties, some of the more significant of which are inter-related. These include the planned withdrawal of the United Kingdom from the European Union and significant uncertainty regarding the basis of that withdrawal and the future relationship between the United Kingdom and the European Union; the possible emergence of trade barriers and other protectionist policies across a range of economies, including a sustained trade war between the United States and China; geopolitical tensions more broadly; a prolonged slowdown in one or more of the principal global economies, particularly in China, and possible recession; continued challenges faced by the Eurozone; the tightening of monetary policy; sustained challenges to multilateral institutions and frameworks; the domestic political situation in the United States, various member states of the European Union and potentially other countries; and heightened scrutiny of technology companies.

Further adverse developments or the continuation of adverse trends that, in turn, have a negative impact on financial markets and economic conditions could limit the Group's ability to access the capital markets and bank funding markets, could adversely affect the ability of counterparties to meet their obligations to the Group and could adversely affect the confidence of the ultimate buyers of insurance and reinsurance.

Any of the foregoing factors, developments and trends could have an adverse effect on the Group's investment results, which in the current low interest rate environment and soft insurance cycle could have a material adverse effect on the Group's overall results, make it difficult to determine the value of certain assets in the Group's portfolio, make it more difficult to acquire suitable investments to meet its risk and return criteria and otherwise have a material adverse effect on its business and operations.

Regulatory changes

Swiss Re and its subsidiaries operate in a highly regulated environment. The regulatory regimes to which members of the Group are subject have changed significantly in recent years and are expected to continue to evolve. During this period, there has been a noticeable trend to extend the scope of reforms and oversight, which initially targeted banks, beyond such institutions to cover insurance and reinsurance operations.

While some regulation is national in scope, the global nature of the Group's business means that its operations are subject in effect to a patchwork of global, national and regional standards. Swiss Re and its subsidiaries are subject to group supervision and Swiss Re's subsidiaries are also subject to applicable regulation in each of the jurisdictions in which they conduct business, particularly Switzerland, the United States, the United Kingdom, Luxembourg and Germany. The Group is subject to the Swiss Solvency Test and, through its legal entities organised in the EEA, Solvency II.

While certain regulatory processes are designed in part to foster convergence and achieve recognition of group supervisory schemes, the Group continues to face risks of extra-territorial application of regulations, particularly as to group supervision and group solvency requirements. In addition, regulators in jurisdictions beyond those where the Group has core operations increasingly are playing a far greater oversight role, requiring more localised resources and, despite a predominantly local focus, also raise issues of a cross-border nature. Furthermore, evolving regulatory schemes and requirements may be inconsistent or may conflict with each other, thereby subjecting the Group, particularly in light of the increasing focus on legal entities in isolation, to higher compliance and legal costs, as well as the possibility of higher operational, capital and liquidity costs. The effect of these trends could be exacerbated to the extent that the current political environment results in a return to more bilateral, and less harmonised, cross-border regulatory efforts.

While in recent years there has been an evolving focus on classifying certain insurance companies as systemically important, it is unclear whether and, if so, in what form reforms will be enacted. The Group could be designated as a global systemically important financial institution ("SIFI") under the framework for SIFIs developed by the Financial Stability Board, or as a systemically important insurer by the Financial Stability Oversight Council ("FSOC") in the United States. The International Association of Insurance Supervisors, an international body that represents insurance regulators and supervisors, has published and since refined its methodology for identifying global systemically important insurers ("G-SIIs"). Were the Group to be designated as a G-SII, it could be subject to one or both of the resulting regimes, including capital standards (the basic capital requirement for G-SIIs), which would have various implications for the Group, including additional compliance costs, reporting obligations and capital costs (in the form of capital charges or high loss absorption capacity), as well as heightened regulatory scrutiny in various jurisdictions. In addition, the Group ultimately will be subject to oversight of its Swiss regulator in respect of recovery and resolution planning.

The Group cannot predict which legislative and/or regulatory initiatives will be enacted or promulgated, what the scope and content of these initiatives ultimately will be, when they will be effective and what the implications will be for the industry, in general, and for the Group, in particular. The Group may be subject to changes in views of its regulators in respect of the models that the Group uses for capital and solvency purposes, and could be adversely affected if, for example, it is required to use standard models rather than internal models. Generally, legal and regulatory changes could have a material impact on the Group's business. Uncertainty regarding the future relationship between the United Kingdom and the European Union could also impact the legislative and/or regulatory regimes to which the Group is subject, both in the United Kingdom and in the European Union.

In addition, regulatory changes could occur in areas of broader application, such as competition policy and tax laws. Changes in tax laws, for example, could increase the taxes the Group pays, the attractiveness of products offered by the Group, the Group's investment activities and the value of deferred tax assets. Any number of these changes could apply to the Group and its operations. Changes to the US tax regime enacted in early 2018 prompted us to modify our operating model for our US business. These changes, or inconsistencies between the various regimes that apply to the Group, could increase the costs of doing business (including due to increased capital requirements), reduce access to liquidity, limit the scope of current or future business or affect the competitive balance, or could make reinsurance less attractive to primary insurers.

Market risk
Volatility and disruption in the global financial markets could expose the Group to significant financial and capital markets risk, including changes in interest rates, credit spreads, equity prices and foreign currency exchange rates, which may adversely impact the Group's financial condition, results of operations, liquidity and capital position. The Group's exposure to interest rate risk is primarily related to the market price and cash flow variability associated with changes in interest rates. In general, a low interest rate environment, such as the one experienced in recent years, poses significant challenges to the insurance and reinsurance industries, with earnings capacity under stress unless lower investment returns from fixed income assets can be offset by lower combined ratios or higher returns from other asset classes. Exposure to credit spreads primarily relates to market price and cash flow variability associated with changes in credit spreads. When credit spreads widen, the net unrealised loss position of the Group's investment portfolio can increase, as could other-than-temporary impairments.

The Group is exposed to changes in the level and volatility of equity prices, as they affect the value of equity securities themselves as well as the value of securities or instruments that derive their value from a particular equity security, a basket of equity securities or a stock index. The Group is also subject to equity price risk to the extent that the values of life-related benefits under certain products and life contracts, most notably variable annuity business, are tied to financial market values; to the extent market values fall, the financial exposure on guarantees related to these contracts would increase to the extent this exposure is not hedged. While the Group has an extensive hedging programme covering its existing variable annuity business that it believes is sufficient, certain risks cannot be hedged, including actuarial, basis and correlation risks. Exposure to foreign exchange risk arises from exposures to changes in spot prices and forward prices as well as to volatile movements in exchange rates.

These risks can have a significant effect on investment returns and market values of securities positions, which in turn may affect both the Group's results of operations and financial condition. The Group continues to focus on asset-liability management for its investment portfolio, but pursuing even this strategy has its risks – including possible mismatch – that in turn can lead to reinvestment risk. The Group seeks to manage the risks inherent in its investment portfolio by repositioning the portfolio from time to time, as needed, and to reduce risk and fluctuations through the use of hedges and other risk management tools.

Credit risk

If the credit markets were again to deteriorate and further asset classes were to be impacted, the Group could experience losses. Changes in the market value of the underlying securities and other factors impacting their price could give rise to market value losses. If the credit markets were to deteriorate again, the Group could also face write-downs in other areas of its portfolio, including other structured instruments, and the Group and its counterparties could face difficulties in valuing credit-related instruments. Differences in opinion with respect to valuations of credit-related instruments could result in legal disputes among the Group and its counterparties as to their respective obligations, the outcomes of which are difficult to predict and could be material.

The Group is also subject to credit and other risks in its credit business, including reliance on banks that underwrite and monitor facilities in which the Group participates and potential default by borrowers under those facilities.

Liquidity risks

The Group's business requires, and its clients expect, that it has sufficient capital and sufficient liquidity to meet its re/insurance obligations, and that this would continue to be the case following the occurrence of any foreseeable event or series of events, including extreme catastrophes, that would trigger insurance or reinsurance coverage obligations. The Group's uses of funds include obligations arising in its insurance and reinsurance businesses (including claims and other payments as well as insurance provision repayments due to portfolio transfers, securitisations and commutations), which may include large and unpredictable claims (including catastrophe claims), funding of capital requirements and operating costs, payment of principal and interest on outstanding indebtedness and funding of acquisitions. The Group also has unfunded capital commitments in its private equity and hedge fund investments, which could result in funding obligations at a time when it is subject to liquidity constraints. In addition, the Group has potential collateral requirements in connection with a number of reinsurance arrangements, the amounts of which may be material and the meeting of which could require the Group to liquidate cash equivalents or other securities.

The Group manages liquidity and funding risks by focusing on the liquidity stress that is likely to result from extreme capital markets scenarios or from extreme loss events or combinations of the two. Generally, the ability to meet liquidity needs could be adversely impacted by factors that the Group cannot control, such as market dislocations or interruptions, adverse economic conditions, severe disruption in the financial and worldwide credit markets and the related increased constraints on the availability of credit; changes in interest rates, foreign exchange rates and credit spreads; or by perceptions among market participants of the extent of the Group's liquidity needs.

Unexpected liquidity needs (including to meet collateral calls) could require the Group to incur indebtedness or liquidate investments or other assets. The Group may not be able to secure new sources of liquidity or funding, should projected or actual liquidity fall below levels it requires. The ability to meet liquidity needs through asset sales may be constrained by market conditions and the related stress on valuations, and through third-party funding may be limited by constraints on the general availability of credit and willingness of lenders to lend. In addition, the Group's ability to meet liquidity needs may also be constrained by regulatory requirements that require regulated entities to maintain or increase regulatory capital, or that restrict intra-group transactions, the timing of dividend payments from subsidiaries or the fact that certain assets may be encumbered or otherwise non-tradable. Failure to meet covenants in lending arrangements could give rise to collateral-posting or defaults, and further constrain access to liquidity. Finally, any adverse ratings action could trigger a need for further liquidity (for example, by triggering termination provisions or collateral delivery requirements in contracts to which the Group is a party) at a time when the Group's ability to obtain liquidity from external sources is limited by such ratings action.

Counterparty risks
The Group is exposed to the risk of defaults, or concerns about defaults, by its counterparties. Securities trading counterparties, counterparties under swaps and other derivative contracts, and financial intermediaries may default on their obligations due to bankruptcy, insolvency, lack of liquidity, adverse economic conditions, operational failure, fraud or other reasons, which could have a material adverse effect on the Group.

The Group could also be adversely affected by the insolvency of, or other credit constraints affecting, counterparties in its insurance and reinsurance operations. Moreover, the Group could be adversely affected by liquidity issues at ceding companies or at third parties to whom the Group has retroceded risk, and such risk could be exacerbated to the extent any such exposures are concentrated.

Risks relating to credit rating downgrades
Ratings are an important factor in establishing the competitive position of reinsurance companies. Third-party rating agencies assess and rate the financial strength of reinsurers and insurers. These ratings are intended to measure a company's ability to repay its obligations and are based upon criteria established by the rating agencies.

Ratings may be revised downward or revoked at the sole discretion of the rating agencies. The Group's ratings reflect the current opinion of the relevant rating agencies. One or more of its ratings could be downgraded or withdrawn in the future, and market conditions could increase the risk of downgrade. Rating agencies may increase the frequency and scope of ratings reviews, revise their criteria or take other actions that may negatively impact the Group's ratings and/or the ratings of its legal entities. In addition, changes to the process or methodology of issuing ratings, or the occurrence of events or developments affecting the Group, could make it more difficult for the Group to achieve improved ratings which it would otherwise have expected.

As claims paying and financial strength ratings are key factors in establishing the competitive position of reinsurers, a decline in ratings alone could make reinsurance provided by the Group less attractive to clients relative to reinsurance from competitors with similar or stronger ratings. A decline in ratings could also cause the loss of clients who are required by policy or regulation to purchase reinsurance only from reinsurers with certain ratings. Certain larger reinsurance contracts contain terms that would allow the ceding companies to cancel the contract if the Group's ratings or those of its subsidiaries are downgraded beyond a certain threshold. Moreover, a decline in ratings could impact the availability and terms of unsecured financing (potentially impacting the Group's ability to rollover existing facilities or obtain new facilities) and obligate the Group to provide collateral or other guarantees in the course of its business or trigger early termination of funding arrangements, potentially resulting in a need for additional liquidity. As a ratings decline could also have a material adverse impact on the Group's costs of borrowing or ability to access the capital markets, the adverse implications of a downgrade could be more severe. These same factors could also impact the Group's insurance business.

Legal and regulatory risks

In the ordinary course of business, the Group is involved in lawsuits, arbitrations and other formal and informal dispute resolution procedures, the outcomes of which determine rights and obligations under the Group's insurance, reinsurance and other contractual agreements. From time to time, the Group may institute, or be named as a defendant in, legal proceedings, and the Group may be a claimant or respondent in arbitration proceedings. These proceedings could involve coverage or other disputes with ceding companies, disputes with parties to which the Group transfers risk under reinsurance arrangements, disputes with other counterparties or other matters. The Group cannot predict the outcome of any of the foregoing, which could be material for the Group.

The Group is also involved, from time to time, in investigations and regulatory proceedings, which could result in adverse judgments, settlements, fines and other outcomes. The number of these investigations and proceedings involving the financial services industry has increased in recent years, and the potential scope of these investigations and proceedings has also increased, not only in respect of matters covered by the Group's direct regulators, but also in respect of compliance with broader business conduct rules, including those in respect of market abuse, bribery, money laundering, trade sanctions and data protection and privacy. The Group also is subject to audits and challenges from time to time by tax authorities, which could result in increases in tax costs, changes to internal structures and interest and penalties. Tax authorities may also actively pursue additional taxes based on retroactive changes to tax laws. The Group could be subject to risks arising from alleged, or actual, violations of any of the foregoing, and could also be subject to risks arising from potential employee misconduct, including non-compliance with internal policies and procedures and malfeasance, such as undertaking or facilitating cyber attacks on internal systems. Substantial legal liability could materially adversely affect the Group's business, financial condition or results of operations or could cause significant reputational harm, which could seriously affect its business.

Insurance, operational and other risks
As part of the Group's ordinary course operations, the Group is subject to a variety of risks, including risks that reserves may not adequately cover future claims and benefits; risks that catastrophic events (including natural disasters, such as hurricanes, windstorms, floods, earthquakes, and man-made disasters, such as acts of terrorism and other disasters such as industrial accidents, explosions, and fires and pandemics) are inherently unpredictable in terms of both their frequency and severity and have exposed, and may expose, the Group to unexpected large losses (and related uncertainties in estimating future claims in respect of such events); changes in the insurance industry that affect ceding companies, particularly those that further increase their sensitivity to counterparty risk; competitive conditions (including as a result of consolidation and the availability of significant levels of alternative capacity); cyclicality of the industry; risks related to emerging claims and coverage issues; macro developments giving rise to emerging risks, such as climate change and technological developments (including greater exposure to cyber risks (where accumulation risk is yet to be fully understood), which could have a range of consequences from operational disruption, to loss of proprietary or customer data, to greater regulatory burdens and potential liability); risks arising from the Group's dependence on policies, procedures and expertise of ceding companies; risks related to investments in emerging markets; and risks related to the failure of, or attacks directed at, the Group's operational systems and infrastructure, including its information technology networks and systems. Any of the foregoing, as well as the occurrence of future risks that the Group's risk management procedures fail to identify or anticipate, could have a material adverse effect on the Group, and could also give rise to reputational risk.

Use of models; accounting matters
The Group is subject to risks relating to the preparation of estimates and assumptions that management uses, including as part of its risk models as well as those that affect the reported amounts of assets, liabilities, revenues and expenses in the Group's financial statements, including assumed and ceded business. For example, the Group estimates premiums pending receipt of actual data from ceding companies, which actual data could deviate from the estimates. In addition, particularly with respect to large natural catastrophes, it may be difficult to estimate losses, and preliminary estimates may be subject to a high degree of uncertainty and change as new information becomes available. Deterioration in market conditions could have an adverse impact on assumptions used for financial reporting purposes, which could affect possible impairment of present value of future profits, fair value of assets and liabilities, deferred acquisition costs or goodwill. Moreover, regulators could require the use of standard models instead of permitting the use of internal models. To the extent that management's estimates or assumptions prove to be incorrect, it could have a material impact on underwriting results (in the case of risk models) or on reported financial condition or results of operations, and such impact could be material.

The Group's results may be impacted by changes in accounting standards, or changes in the interpretation of accounting standards. Changes in accounting standards could impact future reported results or require restatement of past reported results. The Group's results may also be impacted if regulatory authorities take issue with any conclusions the Group may reach in respect of accounting matters.

The Group uses non-GAAP financial measures in its external financial reporting, including in this report. These measures are not prepared in accordance with US GAAP or any other comprehensive set of accounting rules or principles and should not be viewed as substitutes for measures prepared in accordance with US GAAP. Moreover, these may be different from, or otherwise inconsistent with, non-GAAP financial measures used by other companies. These measures have inherent limitations, are not required to be uniformly applied and are not audited.

The Group includes in its annual report a section in respect of its results, including financial statements, prepared in accordance with the Group's proprietary economic value management ("EVM") principles ("EVM report"). Financial information included in the EVM report contains non-GAAP financial measures. The EVM principles differ significantly from US GAAP and, accordingly, the Group's results prepared in accordance with US GAAP will differ from its EVM results, and those differences could be material. The Group's annual EVM results can be more volatile than the US GAAP results because, among other things, assets and liabilities are measured on a market consistent basis, profit recognition on new contracts is recognised at inception rather than over the life time of the contract, and life and health actuarial assumptions are on a best estimate basis as opposed to generally being locked-in. The Group's EVM financial statements should not be viewed as a substitute for the Group's US GAAP financial statements.

Risks related to the Swiss Re corporate structure
Swiss Re is a holding company, a legal entity separate and distinct from its subsidiaries, including Swiss Reinsurance Company Ltd. As a holding company with no operations of its own, Swiss Re is dependent upon dividends and other payments from Swiss Reinsurance Company Ltd and its other principal operating subsidiaries. The Group expects that, over time, its structure will continue to evolve. In the future it may, for example, elect again (having accepted an equity investment within its Life Capital Business Unit from a third party) to partner with minority investors in or within one or more of the Group's Business Units or sub-groups within its Business Units, which could alter historical approaches taken in respect of capital, liquidity, funding and/or dividends, as well as other governance matters, including strategy for such Business Unit or sub-group, or may elect otherwise to dispose of interests in Group businesses or portions thereof, or to grow through acquisitions. To the extent it undertakes acquisitions, it is subject to the risks inherent in acquiring and integrating new operations.

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