somewhat different

Hannover Re 2019

Solvency and Financial Condition Report

hannover re®

Contents

Executive Summary

Key figures

in TEUR	2019	2018
Solvency II Balance Sheet		
Assets	63,255,708	53,243,298
Technical Provisions	40,295,633	32,487,695
Other Liabilities	9,613,391	8,346,763
Excess of Assets over Liabilities	13,346,685	12,408,840
Eligible Own Funds		
Tier 1 Basic Own Funds (unrestricted)	11,943,140	10,935,567
Tier 1 Basic Own Funds (restricted)	546,522	538,136
Tier 2 Basic Own Funds	1,796,577	1,079,007
Tier 3 Own Funds	50,439	81,848
Eligible Own Funds (SCR)	14,336,678	12,634,559
Capital Requirements		
Solvency Capital Requirement	5,719,129	5,135,387
Minimum Capital Requirement	3,915,373	3,542,422
Coverage Ratio		
Ratio of Eligible Own Funds to SCR (Solvency Ratio)	251%	246%
Ratio of Eligible Own Funds to MCR	339%	344%

Hannover Re Group (hereinafter referred to as “Hannover Re” or “the Group”) fulfils the minimum and solvency capital requirements (hereinafter referred to as MCR and SCR) stipulated by the supervisory authority as at the reporting date 31 December 2019 and in the financial year 2019. The coverage ratio of the SCR ranges above the internal threshold of 200% during the entire financial year.

Please note that this report represents a voluntary publication of the Hannover Re Group.

Please note that rounding differences can occur in the presented tables. Values below TEUR 0.5 are displayed as “0”. Empty cells or cells with “-“ represent a value of EUR 0.00.

A. Business and Performance

With a gross premium volume of TEUR 22,597,640 (2018: TEUR 19,176,358), Hannover Re is the third-largest reinsurer in the world. Hannover Re transacts all lines of Property & Casualty and Life & Health reinsurance. Its global presence and activities across all lines of reinsurance business allows the company to achieve an efficient risk diversification.

We are thoroughly satisfied with the development of business in the 2019 financial year. The operating profit (EBIT) improved by 16.1% to TEUR 1,853,175 (TEUR 1,596,649). Group net income was higher than in the previous year at TEUR 1,284,1672 (TEUR 1,059,493). We thus achieved our guidance, which we had raised in the third quarter to more than TEUR 1,250,000. Earnings per share for the Hannover Re Group stood at EUR 10.65 (EUR 8.79).

In 2019, major losses in excess of our expected level were once again incurred in the Property & Casualty reinsurance business group. The market is still dominated by surplus capacities for the coverage of insurance risks. Nevertheless, after years of declining prices in the various rounds of treaty renewals during each financial year, it was possible for the first time to discern a more broad-based improvement in prices and conditions for reinsurance protection. Prices remain on a low level, however, and further adjustments are therefore needed.

Our Life & Health reinsurance group is similarly experiencing strong and ongoing competition. Our result benefited from steps taken in the previous year to improve the profitability of our in-force US mortality portfolio as well as from one-time income recognised from the restructuring of a participating interest in our investments.

Bearing in mind the challenging market environment, we are very satisfied with the development of our investments as at 31 December 2019. Despite the low level of interest rates, ordinary investment income excluding interest on funds withheld and contract deposits again surpassed the previous year at TEUR 1,380,816 (TEUR 1,321,712). Net realised gains on investments as at 31 December 2019 were significantly higher at TEUR 273,741 to (TEUR 127,659). This can be attributed mainly to the release of hidden reserves in connection with the restructuring of a participation shareholding and to the sale of real estate properties. Thus, income from assets under own management increased 17.3% to TEUR 1,550,628 (TEUR 1,322,042). The impairments taken in the year under review amounted to TEUR 80,646 (TEUR 52,740). The resulting annual return amounted to 3.5% (3.2%). We had forecast a level of 2.7%. Investment income including interest on funds withheld and contract deposits increased to TEUR 1,757,061 (TEUR 1,530,029), an crease of 14.8% relative to the previous year. Interest on funds withheld and contract deposits totalled TEUR 206,433 (TEUR 207,988).

With economic effect from 1 January 2019, Hannover RE sold 50.22% of the shares in the wholly-owned International Insurance Company of Hannover SE (“Inter Hannover”) to HDI Global SE, a subsidiary of Talanx AG. Inter Hannover was subsequently rebranded as HDI Global Specialty SE.

B. System of Governance

Hannover Re has an effective system of governance, which provides for sound and prudent management. Written guidelines are in place for all significant business events. The key functions pursuant to Section 26 and Sections 29-31 of the Insurance Supervision Act (VAG) have been set up, entrusted with the tasks described and equipped with appropriate resources.

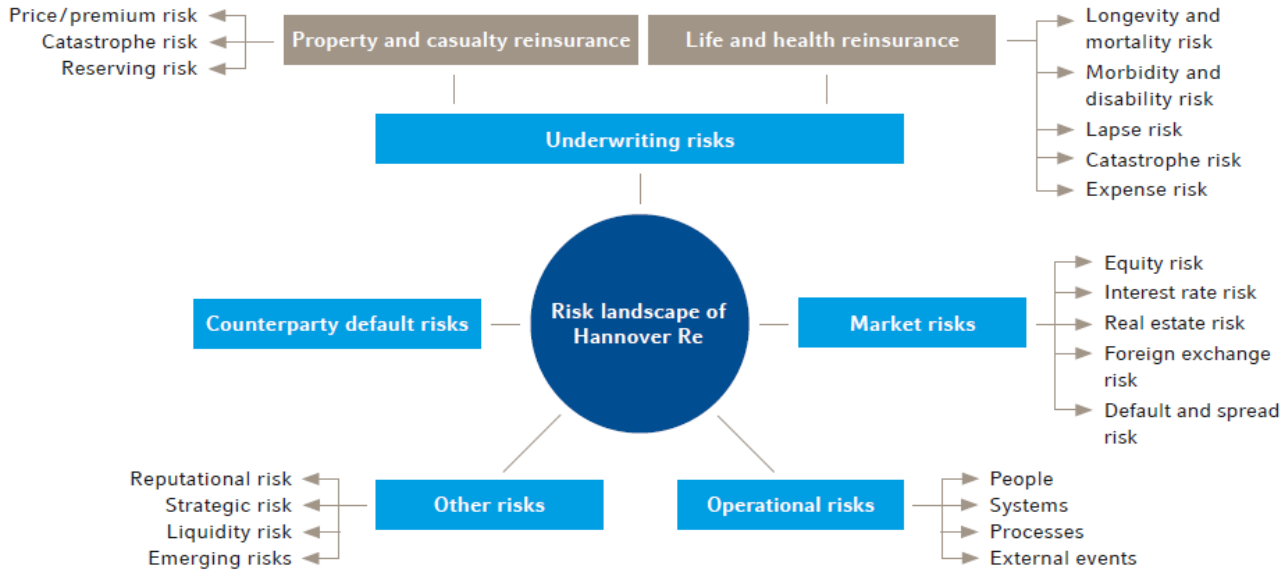
The Executive Board has established a committee, which supports the assessment of the system of governance. Based on the assessment conducted by the committee, the Executive Board has reached the conclusion that the system of governance of Hannover Re is appropriate considering the scope and complexity of its business activities and the inherent risks.

The individual elements of the system of governance of Hannover Re are explained in Section B.

C. Risk Profile

In the context of its business operations Hannover Re enters into a broad variety of risks. These risks are deliberately accepted, steered and monitored. They specifically concern underwriting risks pertaining to Property & Casualty and Life & Health as well as capital market risks, liquidity risks and counterparty default risks. Operational, strategic and reputational risks also arise in the course of business operations. In Section C, we describe the sources and management of those risks. We also explain how we handle potential future risks (emerging risks).

Risk landscape of Hannover Re



Hannover Re received approval from the regulatory authorities to calculate its solvency requirements using an internal capital model. Since year-end 2018, Hannover Re applies the volatility adjustment according to § 82 VAG. This is intended to mitigate the effect of value fluctuations on the bond market. For year-end 2019, Hannover Re has received approval from BaFin for a dynamic modelling of the volatility adjustment. By this, the effect of the volatility adjustment is captured in the calculation of the required capital more adequately.

The solvency capital requirements (SCR) as of 31 December 2019 are shown in the following table. The SCR as per 31 December 2019 includes the impact from the dynamic volatility adjustment. The dynamic volatility adjustment reduces market risk, however, this effect is overcompensated by business growth. The impact of the volatility adjustment is displayed separately in section D.2 as well as in the annex QRT S.22.01.22.

Solvency Capital Requirement (SCR)
in TEUR

Solvency Capital Requirement	2019	2018
Underwriting risk - Property & Casualty	4,432,205	3,819,254
Underwriting risk - Life & Health	2,735,619	2,212,474
Market risk	4,163,045	3,833,472
Counterparty default risk	423,260	312,553
Operational risk	532,642	575,329
Diversification	−4,369,544	−3,648,048
Total risk (pre-tax)	**7,917,227**	**7,105,035**
Deferred tax	2,198,097	1,969,648
Total risk (post-tax)	**5,719,129**	**5,135,387**

The required capital is calculated based on the approved internal model. At present, our most significant risks are the default and spread risks within the market risks, the reserving and catastrophe risks within the underwriting risks of property and casualty reinsurance and the risk of changes in mortality within the underwriting risks of life and health reinsurance. In general, annuity portfolios are adversely impacted by improvements in mortality while death benefit portfolios are adversely affected by deteriorations in mortality.

Overall, the required capital increased in the course of the year. This was driven mainly by the larger business volumes, which have led to an increase in market risks and underwriting risks. In addition, the weaker euro compared to our main currencies contributes to a rise in volumes denominated in foreign currencies and an increase in all risk categories, as does the lower level of interest rates.

The increase in market risk mainly reflects the larger volume of assets under own management, in particular also higher volumes in the private equity sector. Further factors are an increased duration and slightly riskier investment in fixed-income securities. An opposing effect results from the first time application of the dynamic volatility adjustment, which leads to a decrease in the spread risk.

The underwriting risks in property and casualty reinsurance increased primarily as a consequence of higher premium and reserve volumes as well as larger underwriting capacities for natural perils. The increased volumes are the result of interest rate and exchange rate effects along with business growth as well as the large loss expenditure and the associated higher reserves. Moreover, in the area of catastrophe risks the modelling approach used for cyber risks was refined, leading to an increase in required capital.

The underwriting risks in life and health reinsurance increased primarily as a consequence of the business growth in the area of longevity and morbidity risks as well as low interest rates. In addition, adjustments made in the calibration of mortality risks gave rise to an increase in capital requirements.

The increase in counterparty default risks can be attributed to a higher volume of receivables due from ceding companies and retrocessionaires as well as changes in credit ratings.

The decrease in operational risks can be attributed above all to an updated expert assessment regarding the impact of individual scenarios.

The risk monitoring and control mechanisms are presented in section C.

On the basis of regulatory requirements, this report has a strong focus on the developments in the financial year 2019. Since year-end 2019, we have experienced the emergence of the new COVID-19 virus that has been declared a pandemic by the world health organization. As part of Hannover Re's routine business continuity management and as a response to the emergence of the crisis, Hannover Re has taken significant measures to ensure business continuity. In addition, to protect Hannover Re's financial strength in times of financial market volatility, we have implemented strict asset-liability measures including the use of the volatility adjustments. Based on these measures, we are confident to operate at a capital level above our limit of 180% in 2020 and we are confident that we can ensure substantial operational continuity. It must be acknowledged, however, that current estimates are and will remain uncertain for some time as they depend on the further emergence of the crisis and the effectiveness and efficiency of countermeasures.

D. Valuation for Solvency Purposes

For the purposes of calculating the eligible own funds, Hannover Re values the assets and liabilities pursuant to the provisions of Sections 74 et seq. of the Insurance Supervision Act (VAG), i.e. in accordance with Solvency II. The valuation method is described in detail in Section D. In the first part, the valuation of assets and liabilities other than technical provisions is covered. The second part is broken down into two sub-sections, in which the valuation of the technical provisions for Property & Casualty reinsurance and Life & Health reinsurance are explained separately.

The valuation for Solvency purposes is set in principle at the fair value (market value). Insofar as IFRS values appropriately reflect the fair value of individual assets or liabilities, they are applied.

Technical provisions pursuant to Solvency II differentiate significantly from the definition of provisions pursuant to the International Financial Reporting Standards (IFRS), both in terms of structure and in relation to the calculation rules. A comparison of IFRS and Solvency II technical provisions is shown as well as a comparison of current technical provisions under Solvency II and those calculated last year.

According to the updated guidance published by BaFin in January 2019 on the treatment of deposits to cedants, cash flows in connection with deposits of the underlying business are usually no longer netted against the liability cash flows. This change is just of presentational nature (extension of the balance sheet) with no impact on the Solvency II Own Funds.

In addition, according to the updated guidance published by BaFin in January 2019 on the treatment of payables and receivables, the undue balances of accounts payables and receivables were allocated to the technical provisions. This change is just of presentational nature with no impact on the Solvency II Own Funds.

Section D explains the details of the valuation for solvency purposes.

E. Capital Management

Hannover Re's solvency ratio amounted to 251% as of reporting date 31 December 2019. Hannover Re endeavours at all times to maintain a solvency ratio of at least 180%, and thus exceeds the requirements of 100% stipulated by the supervisory authority. In addition, a threshold value of 200% has been defined. If the Solvency Ratio falls below this threshold Hannover Re will adopt capital measures aimed at either strengthening the company's equity or reducing the risk, or both.

The solvency ratio with and without application of the volatility adjustment is continuously monitored and also assessed as part of planning activities and in the event of large transactions. During the financial year 2019, the solvency ratio ranges at any point in time considerably above the threshold value of 200%. Further information on the calculation of the solvency ratio can be found in Section E.

Own funds in the Solvency II balance sheet consist of basic own funds, which comprise the excess of assets over liabilities, subordinated loans and net deferred tax assets. Ancillary own funds were not in use by Hannover Re as at 31 December 2019.

Hannover Re uses an approved full internal model for the purposes of calculating the Solvency Capital Requirement (SCR). The individual risk categories are aligned with the risk modules of the standard formula. The internal model is applied in a broad range of management and decision-making processes. The future development of Solvency and Minimum Capital Requirements are forecast at regular intervals as part of the planning process.

Section E explains the details of capital management.

A. Business and Performance

A.1 Business

A.1.1 Business model

With a gross premium volume of more than TEUR 22,597,640, the Hannover Re Group is the third-largest reinsurer in the world. Hannover Rück SE is a European Company, Societas Europaea (SE), based in Hannover, Germany. We transact reinsurance in our Property & Casualty and Life & Health business groups.

The strategy pursued in both property & casualty and life & health reinsurance supports our Group's paramount mission, namely: "Creating value through reinsurance". Our entire business operations are geared to our goal of being the best option for our business partners when they come to choose their reinsurance provider. It is for this reason that our clients and their concerns form the focus of our activities.

We generate competitive advantages to the benefit of our clients and shareholders by conducting our reinsurance business with lower administrative expenses than our peers. In this way we deliver above-average profitability while at the same time being able to offer our customers reinsurance protection on competitive terms.

We also strive for the broadest possible diversification and hence an efficient risk balance. This is achieved by accepting reinsurance risks with significant diversification in our Property & Casualty and Life & Health business groups across all lines of business as well as by maintaining a global presence. In conjunction with our capital management, this is the key to our comparatively low cost of capital.

Guided by a clearly defined risk appetite, the Executive Board steers the company using risk management techniques so as to be able to act on business opportunities while securing our financial strength on a lasting basis.

Our subsidiary E+S Rückversicherung AG (E+S Rück), as the dedicated reinsurer for the German market, offers a range of products and services tailored to the specific features of the German market. We maintain strategic partnership with selected mutual insurers that is underscored through their participation in E+S Rück.

In the Property & Casualty reinsurance business group we consider ourselves to be a reliable, flexible and innovative market player that ranks among the best in any given market. Cost leadership, effective cycle management and superlative risk management are the key elements of our competitive positioning.

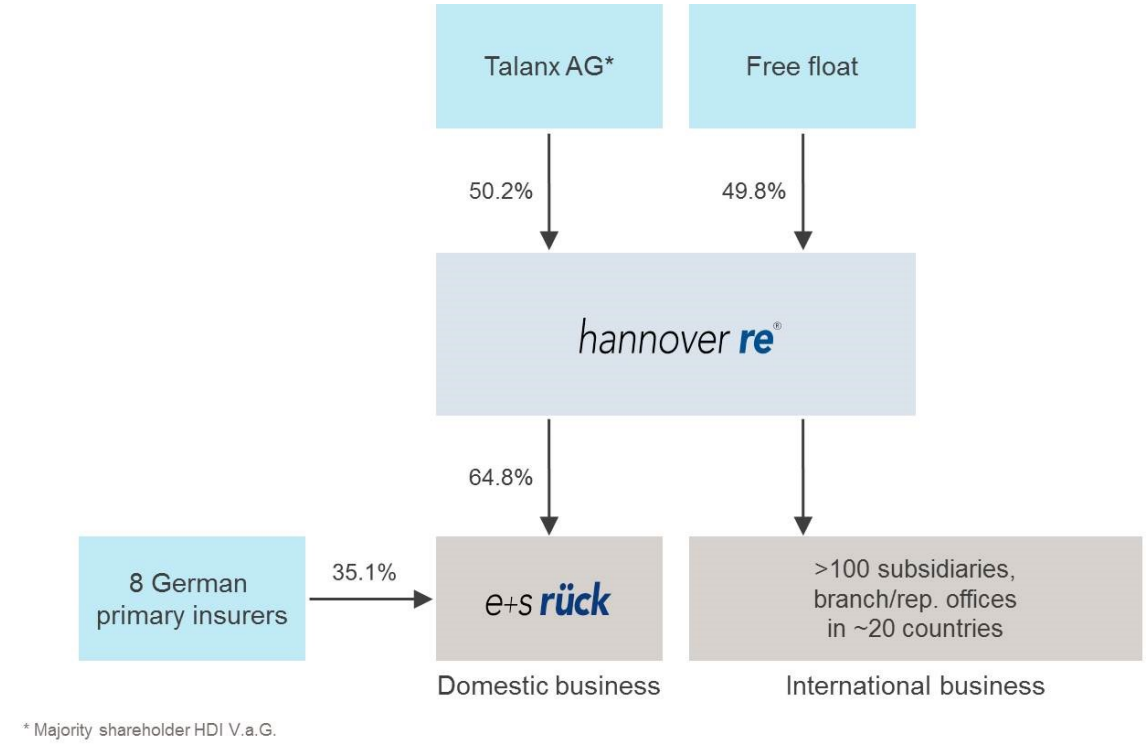
In the Life & Health reinsurance business group we are recognized – as customer surveys confirm – as one of the top players and a leading provider of structured solutions. We achieve this standing by opening up new markets for our company and by identifying trends in order to anticipate the future needs of our customers.

Through its global presence and activities Hannover Re is directly or via affiliates affected by various foreign fiscal and regulatory developments.

A.1.2 Headquarters, supervisors and auditors

Hannover Rück SE – as the parent company of the Hannover Re Group – is a European stock corporation, Societas Europaea (SE), with its headquarters located in Karl-Wiechert-Allee 50, 30625 Hannover, Germany, and has been entered in the Commercial Register of the District Court of Hannover under the number HR Hannover B 6778. A rounded 50.2% of Hannover Rück SE shares are held by Talanx AG, Hannover, which in turn is majority-owned – with an interest of 79.0% – by HDI Haftpflichtverband der Deutschen Industrie V.a.G. (HDI), Hannover.

Shareholder, subsidiaries and branches



Hannover Re as well as Talanx and HDI are subject to the

Federal Financial Supervisory Authority (BaFin)
Graurheindorfer Straße 108
53117 Bonn
Germany

Postfach 1253
53002 Bonn
Germany

Phone +49 228 / 4108-0
Fax +49 228 / 4108-1550

E-mail: poststelle@bafin.de
De-Mail: poststelle@bafin.de-mail.de

The Group auditor appointed for Hannover Re within the meaning of Section 318 of the German Commercial Code (HGB) is PricewaterhouseCoopers GmbH, Wirtschaftsprüfungsgesellschaft, Fuhrberger Straße 5, 30625 Hannover.

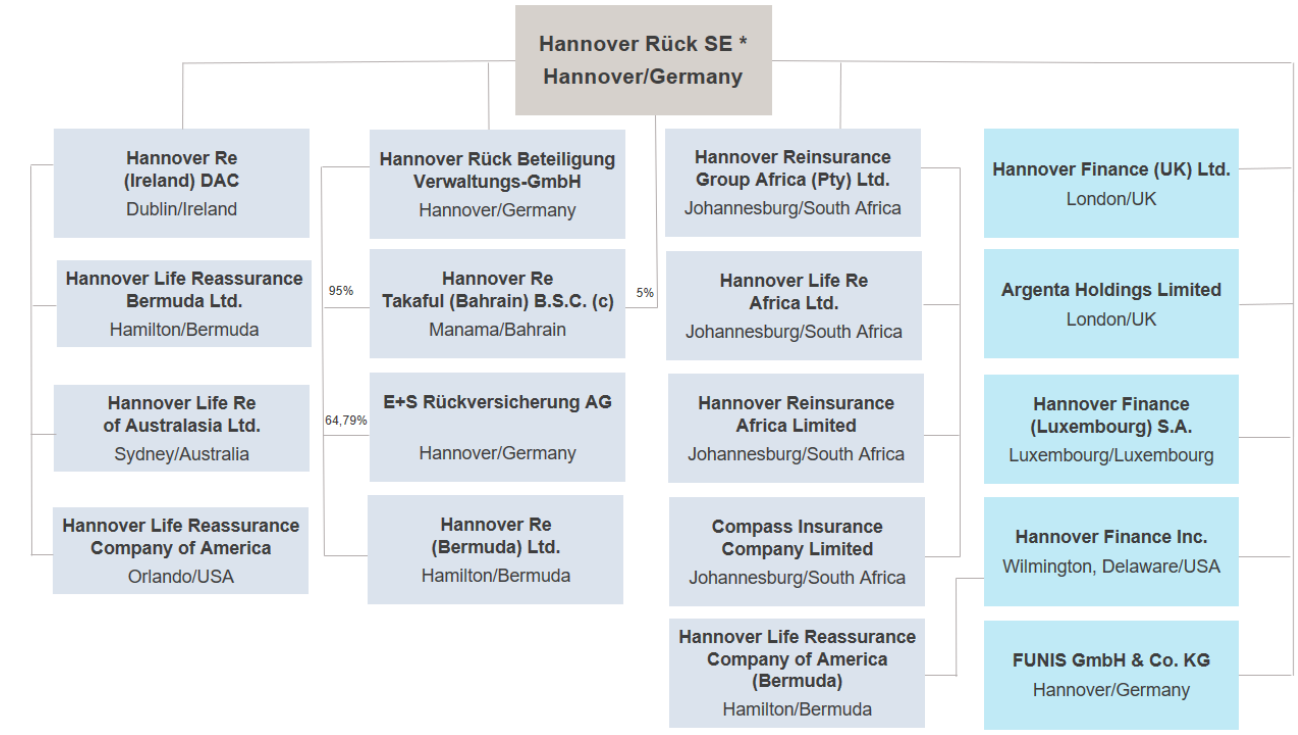
A.1.3 Group structure

The company's network consists of more than 100 subsidiaries, affiliates, branches and representative offices worldwide with 3,083 staff.

Hannover Re and HDI Global have concentrated their primary insurance activities in specialty lines in a new joint venture named HDI Global Specialty SE. The majority interest (50.2%) in Inter Hannover was acquired by HDI Global for this purpose. HDI Global Specialty SE commenced operational activities on 1 January 2019 and writes agency business and specialty insurance in a range of lines including errors & omissions liability insurance, directors' and officers' (D & O) liability insurance, legal expenses, sports and entertainment, aviation and offshore energy. Hannover Re will continue to reinsure a large portion of the business written by HDI Global Specialty SE.

Subsidiaries and branches of Hannover Rück SE are presented in the following charts.

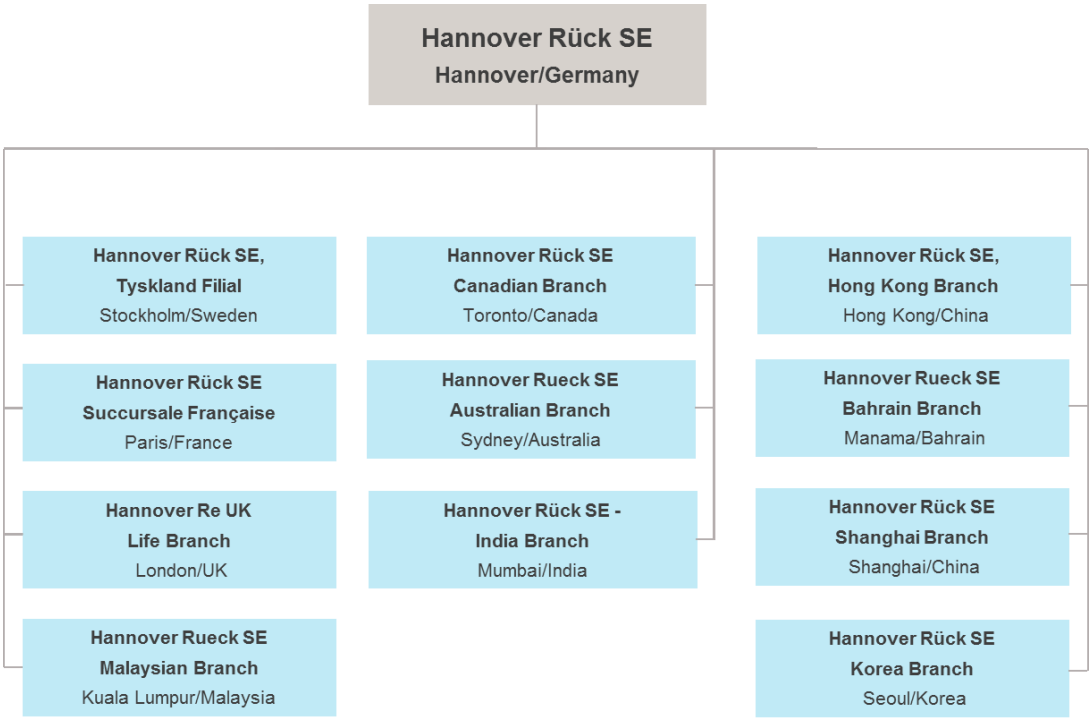
Subsidiaries of Hannover Rück SE



* Unless otherwise stated, the shareholding is 100%.

Reinsurance or Insurance companies
Non-insurance companies

Branches of Hannover Rück



A.2 Performance

Hannover Re, as the third-largest reinsurer in the world, has an extensive global network and considerable technical expertise. Taken together, they enable us to make advances in the area of traditional reinsurance covers and drive new business opportunities. In this context, we attach the highest priority to the profitability and quality of our business and we act accordingly. This is of special importance to our company because the markets for property and casualty reinsurance and for life and health reinsurance continue to be intensely competitive. The operating profit (EBIT) improved by 16.1% to EUR 1,853.2 million (EUR 1,596.6 million). Group net income was higher than in the previous year at EUR 1,284.2 million (EUR 1,059.5 million). We thus achieved our guidance, which we had raised in the third quarter to more than EUR 1.25 billion. Earnings per share for the Hannover Re Group stood at EUR 10.65 (EUR 8.79).

In 2019, major losses in excess of our expected level were once again incurred in the Property & Casualty reinsurance business group. The market is still dominated by surplus capacities for the coverage of insurance risks. Nevertheless, after years of declining prices in the various rounds of treaty renewals during each financial year, it was possible for the first time to discern a more broad-based improvement in prices and conditions for reinsurance protection.

Our Life & Health reinsurance group is similarly experiencing strong and ongoing competition. Our result benefited from steps taken in the previous year to improve the profitability of our in-force US mortality portfolio as well as from one-time income recognised from the restructuring of a participating interest in our investments.

Our investments delivered another very pleasing contribution to the Group result, supported by one-time income from the revaluation of a participating interest.

In addition, the following table shows the performance targets for the business years 2019 and the attained results.

Business group	Key data	Targets for 2019	2019
Group	Investment return[1]	≥ 2.8%	3.4%
	Return on equity[2]	≥ 9.3%	13.3%
	Growth on earnings per share	≥ 5%	21.2%
	Economic value creation[3]	≥ 6.3%	13.5%
	Solvency ratio[4]	≥ 200%	250.7%
Property & Casualty reinsurance	Gross premium growth	3-5%[5]	20.4%
	Combined ratio	≤ 97%[6]	98.2%
	EBIT margin[7]	≥ 10%	10.0%
	xRoCA[8]	≥ 2%	0.1%
Life & Health reinsurance	Gross premium growth	3-5%[9]	6.7%
	Value of New Business (VNB)[10]	≥ EUR 220 million	EUR 663 million
	EBIT growth	≥ 5%[11]	106.6%
	xRoCA[8]	≥ 2%	12.4%

[1] Excluding effects from ModCo derivatives
[2] After tax; target: 900 basis points above the five-year average return on ten-year German government bonds
[3] Growth in the economic equity including dividend paid
Target: 600 basis points above the five-year average return on ten-year German government bonds
[4] In accordance with our internal capital model and Solvency II requirements
[5] Average over the reinsurance cycle; at constant exchange rates
[6] Including large loss budget of EUR 875 million; target until 2018: 96%
[7] EBIT / net premium earned
[8] Value contribution relative to allocated economic capital
[9] Organic growth only; target: annual average growth over a three-year period; at constant exchange rates
[10] Based on Solvency II principles; pre-tax reporting
[11] Annual average growth over a three-year period

For further information regarding our performance please refer to our Annual Report. You can receive the Annual Report at Hannover Rück SE, Karl-Wiechert-Allee 50, 30625 Hannover, or via download from our homepage (https://www.hannover-re.com/1528650/annual-report-2019.pdf).

B. System of Governance

B.1 General Information on the System of Governance

The Hannover Re Group has an effective system of governance in place which provides for sound and prudent management. The main elements of the System of Governance are described in the following sections.

B.1.1 Governance structure

B.1.1.1 Our administrative, management or supervisory body

Our administrative, management or supervisory body consists of the Executive Board and the Supervisory Board.

Executive Board

The Executive Board consists of no less than two persons. Furthermore it is up to the Supervisory Board to determine the number of members of the Executive Board. The members of the Executive Board are appointed by the Supervisory Board for a term of five years.

The following overview shows the allocation of the areas of responsibility to the members of the Executive Board 31 December 2019.

Members of the Executive Board

Chairman	Chief Financial Officer	Property & Casualty Reinsurance			Life & Health Reinsurance	
Jean-Jacques Henchoz	Roland Vogel	Dr. Michael Pickel	Sven Althoff	Silke Sehm	Claude Chèvre	Dr. Klaus Miller
Compliance Controlling Innovation Management Human Resources Management Internal Auditing Risk Manage-ment & Actuarial Corporate Development Corporate Communi-cations	Finance and Accounting Information Technology Investment and Collateral Management Facility Management	Group Legal Services Run-Off Solutions Property & Casualty Reinsurance: Germany, Switzerland, Austria and Italy Latin America, Iberian Peninsula and Agricultural Risks North America	Property & Casualty Reinsurance: Asia, Australia and Middle East Aviation and Marine Credit, Surety and Political Risks United Kingdom, Ireland and London Market Facultative Reinsurance and Direct Business Coordination of Property & Casualty Business Group	Property & Casualty Reinsurance: Continental Europe and Africa Catastrophe XL (Cat XL) Structured Reinsurance and Insurance-Linked Securities	Life & Health Reinsurance: Africa, Asia, Australia / New Zealand, Latin America, Western and Southern Europe Longevity Solutions	Life & Health Reinsurance: North America, UK / Ireland, Northern, Eastern and Central Europe

The four (Solvency II) key functions are allocated to the Chairman of the Executive Board. For further information on key functions (Solvency II) please refer to chapters B.3-B.6.

Supervisory Board

The Supervisory Board shall consist of nine members appointed by the General Meeting. Of these nine members, three shall be appointed on recommendation by the employees. The General Meeting shall be bound by these recommendations for the appointment of the employees' representatives. Other than that, the General Meeting shall not be bound to proposed candidates. In the event that legal provisions concerning involvement of employees in a European Association (SE Beteiligungsgesetz – SEBG Employees Involvement Act) provide for a different appointment procedure for representatives of the employees to the Supervisory Board, the employees' representatives shall be appointed according to the agreed appointment procedure.

Every member of the Supervisory Board can resign from his membership by adhering to a notice period of one month even without an important reason by written notice to the Company, represented by the Management Board and the Chairman of the Supervisory Board (if notice is given by the Chairman himself, to his deputy). The Chairman of the Supervisory Board may choose to forgo adherence to this notice period.

Appointment for a successor of a member who has resigned prior to termination of his term shall be for the remaining period of the term of the resigned member.

As of 31 December the Supervisory Board consists of the following members:

Members of the Supervisory Board and membership in committees

Members of the Supervisory Board	Standing Committee	Finance and Audit Committee	Nomination Committee	Staff representative
Torsten Leue, Chairman	X	X	X	
Herbert K. Haas, Deputy Chairman	X	X	X	
Natalie Bani Ardalan (since 8 May 2019)				X
Frauke Heitmüller				X
Ilka Hundeshagen (since 8 May 2019)				X
Dr. Ursula Lipowski		X		
Dr. Michael Ollmann (since 8 May 2019)				
Dr. Andrea Pollak			X	
Dr. Erhard Schipporeit	X			

The Supervisory Board may form committees from among its members and authorise them to pass resolutions, as far as permitted by law.

The Supervisory Board considered during the 2019 financial year the position and development of the company and its major subsidiaries. It advised the Executive Board on the direction of the company and monitored the management of business on the basis of written and verbal reports

from the Executive Board. The Supervisory Board held four regular meetings in order to adopt the necessary resolutions after appropriate discussion. A further meeting was a constituent meeting of the Supervisory Board held following the General Meeting. In addition, the Supervisory Board adopted two resolutions in the reporting period by a written procedure. All Supervisory Board members took part in each of the Supervisory Board meetings held in 2019. Two representatives of the Federal Financial Supervisory Authority attended one meeting on a routine basis. In addition, the Supervisory Board was informed by the Executive Board in writing and orally on the basis of the quarterly statements about the course of business as well as the position of the company and the Group. The quarterly reports with the components of the financial statements and key figures for the Hannover Re Group constituted an important source of information for the Supervisory Board.

As in every year, the Supervisory Board was regularly updated on the work of the Supervisory Board committees and given a description of the major pending legal proceedings. In addition, the Chairman of the Supervisory Board was constantly kept informed by the Chairman of the Executive Board of major developments and impending decisions as well as of the risk situation within the company and the Group.

Of the committees formed by the Supervisory Board within the meaning of § 107 Para. 3 Stock Corporation Act (AktG), the Finance and Audit Committee met on four occasions, with one resolution adopted by a written procedure, and the Standing Committee met three times. The Chairman of the Supervisory Board updated the full Supervisory Board on the major deliberations of the committee meetings at its next meeting and provided an opportunity for further questions.

Changes occurred in the composition of the Supervisory Board, its committees and the Executive Board in the year under review. The term of office of the company's Supervisory Board expired pursuant to § 10 (3) of the Articles of Association of Hannover Rück SE at the end of the General Meeting on 8 May 2019. At the suggestion of the Nomination Committee and bearing in mind the targets for the composition of the Supervisory Board, the former Supervisory Board therefore proposed the following persons for election as representatives of the shareholders of the company with effect from the end of the Annual General Meeting on 8 May 2019 for the period until the end of the General Meeting that ratifies the actions taken for the 2023 financial year, although at most for a term of six years:

- Herbert K. Haas
- Torsten Leue
- Dr. Ursula Lipowsky
- Dr Michael Ollmann
- Dr. Andrea Pollak
- Dr. Erhard Schipporeit

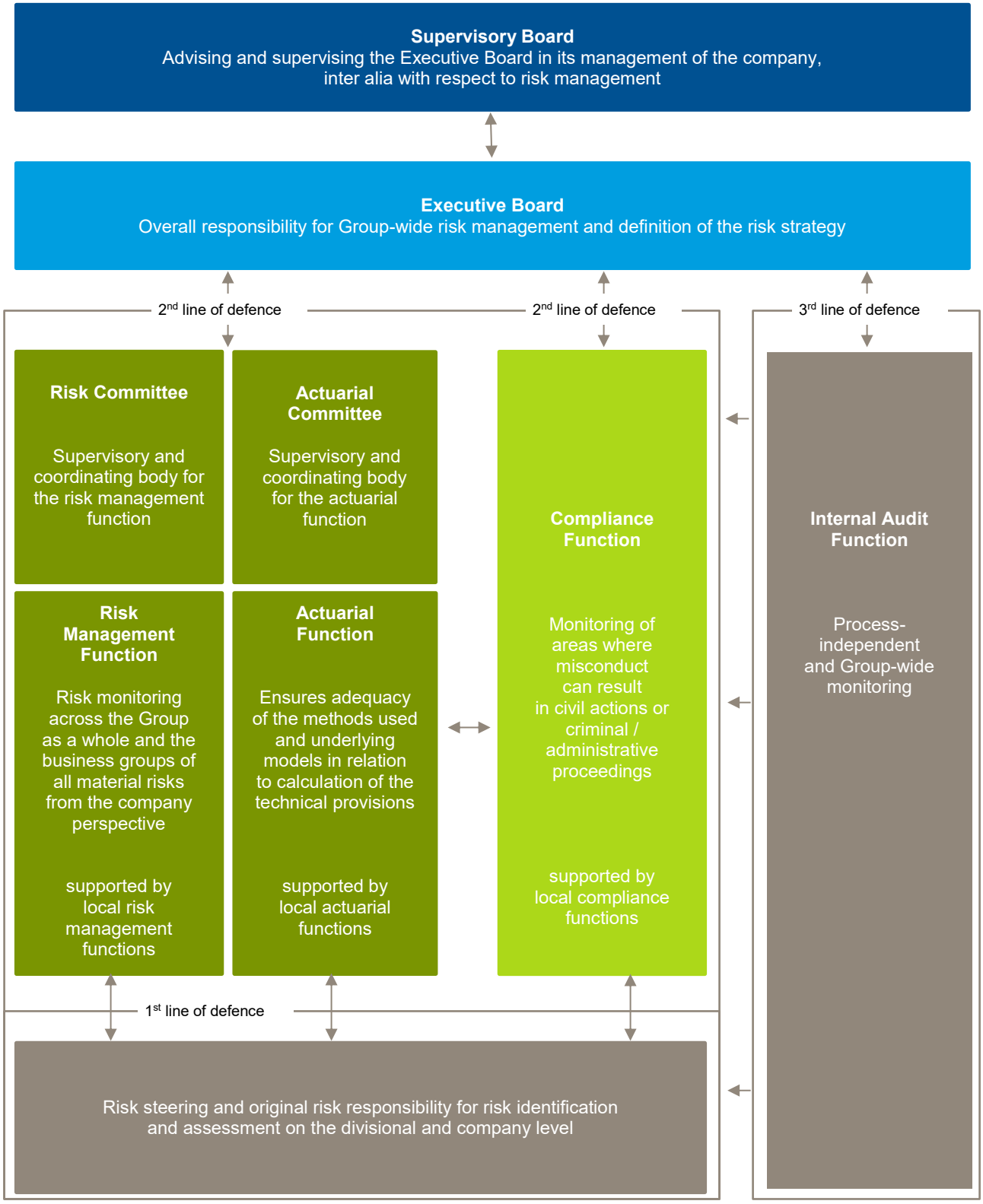
The resolution was adopted by the General Meeting as proposed. Dr. Immo Querner was therefore not re-elected to the Supervisory Board, from which he stepped down at the end of the General Meeting. Furthermore, in accordance with the provisions of the SE Participation Act (SEBG) the following employee representatives were elected to the Supervisory Board by the workforce with effect from the end of the Annual General Meeting on 8 May 2019:

- Natalie Bani Ardalan
- Frauke Heitmüller
- Ilka Hundeshagen

Mr. Otto Müller and Ms. Maike Sielaff thus routinely stepped down from the Supervisory Board at this time.

B.1.1.2 Key functions

The following graph gives an overview of the main tasks and the interaction of the key functions:



Hannover Re Group has set up group-wide risk management functions and bodies to safeguard an efficient risk management system. The organisation and interplay of the individual functions in risk management are crucial to our internal risk steering and control system. The central functions of risk management are closely interlinked in our system and the roles, tasks and reporting channels are clearly defined and documented in terms of the so-called “3 lines of defence”. The first line of defence consists of risk steering and the original risk responsibility on the divisional or company level. Risk management ensures the second line of defence, i.e. the risk monitoring. It is supported in this regard by the actuarial function and the compliance function. The third line of defence is the process-independent monitoring performed by the internal audit function.

All key functions are equipped with appropriate resources and skills. The reporting lines to one another and to the Board Member responsible for the division respectively to the Executive Board have been clearly defined.

B.1.2 Remuneration policy

B.1.2.1 Remuneration of the Executive Board

The amount and structure of the remuneration of the Executive Board are geared to the size and activities of the company, its economic and financial position, its success and future prospects as well as the customariness of the remuneration, making reference to the benchmark environment (horizontal) and the remuneration structure otherwise applicable at the company (vertical). The remuneration is also guided by the tasks of the specific member of the Executive Board, his or her individual performance and the performance of the full Executive Board.

With an eye to these objectives, the remuneration system has two components: fixed salary / non-cash compensation and variable remuneration. The variable remuneration is designed to take account of both positive and negative developments. Overall, the remuneration is to be measured in such a way that it reflects the company’s sustainable development and is fair and competitive by market standards. In the event of 100% goal attainment the remuneration model provides for a split into roughly 40% fixed remuneration and roughly 60% variable remuneration.

The profit- and performance-based remuneration (variable remuneration) is contingent on certain defined results and the attainment of certain set targets. The set targets vary according to the function of the Board member in question. The variable remuneration consists of a profit bonus and a performance bonus. The variable remuneration is defined at the Supervisory Board meeting that approves the consolidated financial statement for the financial year just ended.

The total remuneration received by the Executive Board of Hannover Re Group on the basis of its work for Hannover Rück SE and the companies belonging to the Group amounts to TEUR 10,866.

B.1.2.2 Remuneration of the Supervisory Board

The remuneration of the Supervisory Board is determined by the Annual General Meeting of Hannover Rück SE and regulated by the Statute of Hannover Rück SE.

The total remuneration received by the Supervisory Board of Hannover Rück SE amounts to TEUR 936.

B.1.2.3 Remuneration of staff and senior executives

The remuneration scheme for senior executives below the Executive Board (management levels 2 and 3) and for key function holders in Germany belonging as a matter of principle to the ranks of senior executives consists of a fixed annual salary and a system of variable remuneration. This is comprised of a short-term variable remuneration component, the annual cash bonus, and a long-term share-based remuneration component, the Share Award Plan.

Members of staff on the levels of Chief Manager, Senior Manager and Manager are also able to participate in a variable remuneration system through the Group Performance Bonus (GPB).

B.1.3 Related party transactions

Talanx AG holds an unchanged majority interest of 50.2% in Hannover Rück SE. For its part, HDI Haftpflichtverband der Deutschen Industrie Versicherungsverein auf Gegenseitigkeit (HDI), Hannover, holds a stake of 79.0% in Talanx AG and therefore indirectly holds 39.7% (rounded) of the voting rights in Hannover Rück SE.

The business relationship between Hannover Rück and its subsidiary E+S Rück is based on a cooperation agreement. A retrocession by Hannover Rück to E+S Rück exists in property and casualty reinsurance. The exclusive responsibilities of E+S Rück for German business and of Hannover Rück for international markets have been preserved.

Within the contractually agreed framework Ampega Asset Management GmbH (name change in January 2019, formerly: Talanx Asset Management GmbH) performs investment and asset management services for Hannover Rück SE and the vast majority of its subsidiaries. Assets in special funds are managed by Ampega Investment GmbH. Ampega Real Estate GmbH (name change in January 2019, formerly: Talanx Immobilien Management GmbH) performs services for Hannover Re under a number of management contracts.

With economic effect from 1 January 2019 Hannover Rück SE sold 50.22% of the shares in the wholly-owned International Insurance Company of Hannover SE to HDI Global SE, a subsidiary of Talanx AG, for a purchase price of EUR 107.2 million.

With economic effect from 1 July 2019 FUNIS GmbH & Co. KG, Hannover, a wholly owned subsidiary of Hannover Rück sold all its shares in Svedea AB, Stockholm, to HDI Global Specialty SE, Hannover, a subsidiary of HDI Global SE, for a purchase price of EUR 52.9 million.

In the context of a bond issue by Talanx AG the Group companies Hannover Rück SE and E+S Rückversicherung AG invested in a nominal amount of EUR 47.0 million in the issued bearer debt, which has a coupon of 3.125%.

The members of the governing bodies did not receive any advances or loans in the year under review. Nor were there any other material reportable circumstances or contractual relationships as defined by IAS 24 between companies of the Hannover Re Group and the members of the governing bodies or their related parties in the year under review.

B.2 Fit and Proper Requirements

B.2.1 Requirements

With a decision dated 17 November 2014, the Executive Board of Hannover Re followed the specifications stipulated by the framework directive of the HDI V.a.G. pertaining to the fulfilment of the Fit & Proper requirements, on the proviso of their continued implementation in the affected group companies and business units, and with the further condition that the framework directive is only applicable to the extent that it is relevant for Hannover Re as a reinsurance company. On 16 October 2015, the framework directive of Hannover Re pertaining to the fulfilment of the Fit & Proper requirements in the Hannover Re Group was decreed by the Executive Board.

B.2.2 Description of requirements

The professional qualification (fitness) of individuals with key functions refers to a professional qualification suitable for the respective position as well as skills and experience, which are necessary for a robust and cautious management approach, and for the fulfilment of the position. The appropriateness is assessed according to the principle of proportionality, and takes into account the company-individual risks along with the type and scope of business operations. Specialist fitness requirements stemming from established supervisory practices are to be complied with by those individuals who actually head up the company, and the members of the Supervisory Board. Collective “fitness” requirements have been established for mutual controlling and monitoring. The requirements placed on the professional qualification of those holding key functions are closely linked with the special features of the respective governance tasks.

Individuals with key functions must, as part of personal reliability (propriety), act responsibly and with integrity, and carry out activities both dutifully and with the necessary level of care. Conflicts of interest must be avoided and the individual must not have demonstrated a lack of responsibility in the form of criminal actions prior to their nomination / appointment. There is no requirement for personal reliability to be positively established. It will be assumed, whenever there are no observable facts indicating the contrary. Unreliability is only to be assumed if personal circumstances according to general life experience give reason to believe that this could undermine the thorough and proper exercising of the function.

For Hannover Re, the circle of individuals entrusted with key tasks consists of persons who

- actually head up the company (Executive Board members) including the authorised representatives of an EU / EEA branch,
- hold other key functions (members of the Supervisory Board, owners of one of the key functions including compliance, internal audit, risk management, actuarial function).

With regard to their various roles, these individuals are required to provide evidence of their professional qualifications in different areas as follows:

- Educational background
- Practical knowledge
- Management experience
- Language skills
- Required specialist knowledge in relation to the relevant key function
- Collective requirements

The required specific knowledge for owners of one of the key functions including compliance, internal audit, risk management, and actuarial mathematics is included in the referred role description.

In the event that key functions are outsourced, general requirements for this are defined within a group policy. The onus remains on the side of the outsourcing company to ensure that the individuals deployed by the service provider who are responsible for the key function have suitable professional qualifications and are personally reliable. In accordance with supervisory regulations, the outsourcing company has to appoint an outsourcing officer for this purpose, who, where appropriate, is subject to registration with the regulatory body accordingly as the person responsible for the relevant key function within the company. The overseeing outsourcing official is hereby responsible for the proper fulfilment of the duties associated with the outsourcing of the key function.

No key functions were outsourced in 2019.

B.2.3 Evaluation process

The requirements and reporting processes with respect to the supervisory authority correspond to the current standard processes based on the BaFin information sheets on professional competence and reliability.

Pursuant to the framework directive on the fulfilment of the Fit & Proper requirements, at the preliminary stage of recruiting new members of staff who will actually head up the company or hold other key roles, a detailed curriculum vitae will be submitted and a requirements profile set, which detail and describe the necessary qualifications. The framework directive pertaining to the fulfilment of Fit & Proper requirements contains a checklist in the attachment, which is to be used in the assessment of the Fit & Proper requirements of these individuals. The requirements profile contains evidence of the following minimum requirements:

Description of the position with key functions:

- Performance catalogue (job description)
- Authority to make decisions
- Level of staff responsibility

Professional qualification (general):

- Level of education (commercial or vocational training)
- University degree or professional standard (such as, for example, for auditors or actuaries)
- Knowledge and understanding of business strategy
- Knowledge of the system of governance
- Foreign language skills, minimum of English language and other foreign languages where possible

Professional qualification (depending on the particular position):

- Industry experience
- Knowledge and understanding of the business model

- Ability to interpret accounting and actuarial data
- Knowledge and understanding of the regulatory frameworks affecting the company
- Expertise in personnel management, staff selection, succession planning

The professional and personal requirements for members of the Supervisory Board are comprised in a guideline document since 2017.

The procedure for assessing the transfer of tasks stipulates that, at the preliminary stage of recruiting new members of staff, a detailed curriculum vitae must be submitted and a requirements profile must be set, which contains the verification of predefined minimum requirements. The continual safeguarding of compliance with the relevant requirements is undertaken every five years in the form of an assessment of the requirements profile, undertaken by the responsible organisational unit.

As part of the event-driven assessment, any significant changes in the underlying parameters trigger an assessment of the compliance with the catalogue of requirements. This involves a differentiation of the characteristics deemed necessary in the person and in the position.

The assessment and control procedures are summarised in an overview, which contains the assessment cycle of the requirements profile and the responsibility for the assessment and duty to inform held by those individuals who actually head up the company, and those individuals who have other key functions.

B.3 Risk Management System including the Own Risk and Solvency Assessment

B.3.1 Strategy implementation

Our current strategy encompasses ten guiding principles that safeguard the realisation of our vision of creating value through reinsurance across the various divisions. The following principles of the corporate strategy constitute the key strategic points of departure for our Group-wide risk management:

- We manage risks actively.
- We maintain an adequate level of capitalisation.
- We are committed to sustainability, integrity and compliance.

The risk strategy, the risk register and the central system of limits and thresholds – as integral components of our Risk and Capital Management Guideline – are reviewed at least once a year. In this way we ensure that our risk management system is kept up-to-date.

We manage our total enterprise risk such that we can expect to generate positive IFRS Group net income with a probability of 90% p.a. and the likelihood of the complete loss of our economic capital and shareholders' equity under IFRS does not exceed 0.03% p.a. Our solvency ratio is subject to a limit of 180% and a threshold of 200%. Countermeasures would be triggered if the solvency ratio was to fall below this threshold. These indicators are monitored using our internal capital model and the Executive Board is informed quarterly about adherence to these key parameters as part of regular reporting. The necessary equity resources are determined according to the requirements of our economic capital model, regulatory parameters, the expectations of

rating agencies with respect to our target rating and the expectations of our clients. Above and beyond that, we maintain a capital cushion in order to be able to act on new business opportunities at any time.

B.3.2 Risk capital

In the interests of our shareholders, clients and employees we strive to ensure that our risks remain commensurate with our capital resources. Our quantitative risk management provides a uniform framework for the evaluation and steering of all risks affecting the company as well as of our capital position. In this context, the internal capital model is our central tool. The internal capital model of the Hannover Re Group is a stochastic enterprise model. It covers all subsidiaries and business groups of the Hannover Re Group. The central variable in risk and enterprise management is the economic capital, which is calculated according to market-consistent measurement principles and also constitutes the basis for calculating the own funds under Solvency II.

Hannover Re calculates the required risk capital as the Value at Risk (VaR) of the economic change in value over a period of one year with a confidence level of 99.97%. This reflects the goal of not exceeding a one-year ruin probability of 0.03%. The internal target capitalisation of the Hannover Re Group is therefore significantly higher than the confidence level of 99.5% required under Solvency II. In respect of the capitalisation under Solvency II, Hannover Re has determined a minimum solvency ratio with a limit of 180% and a threshold of 200%.

The capitalisation prescribed by regulatory requirements diverges from the capitalisation shown in accordance with the Hannover Re's internal capital model. This is due to the fact that non-controlling interests are not fully recognised according to Solvency II parameters.

Hannover Re received the approval already in 2017 by BaFin to calculate the regulatory capital requirements with a full internal model, including operational risks.

We hold additional capital to meet the requirements of the rating agencies for our target rating and to be able to act flexibly on business opportunities. We strive for a rating from the rating agencies most relevant to our industry that facilitates and secures our access to all reinsurance business worldwide. Hannover Re is analysed by the rating agencies Standard & Poor's and A.M. Best as part of an interactive rating process. The current financial strength is assessed as "AA-" (Very Strong, stable outlook) by Standard & Poor's and "A+" (Superior, stable outlook) by A.M. Best. Therein S&P as well as A.M. Best evaluate Hannover Re's risk management as an important aspect in the financial strength assessment.

B.3.3 Internal model governance

The governance of the internal model is defined in a number of documents and policies. In particular, governance rules include roles, responsibilities and standards for changes to the internal model and model validation as well as standards for internal and external data and expert settings used in the internal model. The rules have been set-up in compliance with the requirements of Solvency II.

The risk management function provides quarterly reports on internal model results and changes to the Executive Board and the Risk Committee. The reporting supports the tracking of changes to the risk profile and the solvency ratio over time. Apart from this reporting, internal model results are

embedded in the essential internal steering processes such as capital cost allocation and new product evaluation.

The annual validation ensures that the internal model meets all defined quality standards of the policies. The Solvency II directive requires that the validation is performed as an independent process. Therefore, Hannover Rück has set-up a validation process which assigns validation to departments different from the departments responsible for model operation, calibration and maintenance. The validation report includes numerous stress tests and sensitivity analyses.

There have not been any significant changes in the model governance during the reporting period. However, a change to the model change policy has been filed to the regulator for approval. These changes will take effect in 2020, in particular, the thresholds for major model changes that affect small risk categories, which require regulatory approval, will be lowered. Furthermore, a rule for potential error corrections will be included.

B.3.4 Organisation of risk management and the tasks of the risk management function

An overview of the risk managements organisational structure is provided in Section B.1 above.

The risk management function consists of three primary components: the Risk Committee, the Chief Risk Officer and the risk monitoring function.

Risk Committee

The tasks of the Risk Committee – the body charged with the monitoring and coordination of risk management – are derived from the rules of procedure regarding the Risk Committee. The scope of decision-making for the Risk Committee lies within the boundaries of risk appetite set by the Executive Board. Changes, and any instances of increase in risk appetite, require the approval of the Executive Board. Further tasks include quality assurance of the ORSA process and monitoring of the implementation of risk-related measures. The Risk Committee also receives the model change reports according to the model change policy.

Chief Risk Officer

The Chief Risk Officer is also the head of the risk monitoring function and member of the Risk Committee. The Chief Risk Officer coordinates the ORSA process and ensures the framework conditions of an effective risk management system.

Risk monitoring function

The risk monitoring function coordinates and bears responsibility for comprehensive monitoring (systematic identification, evaluation, monitoring and reporting) of all significant asset- and liability-related risks and the regular execution of the ORSA process. Furthermore, the risk monitoring function develops methods, standards and processes for the assessment and monitoring of risk.

The risk monitoring function fulfils its tasks objectively and independently for Hannover Re. There have been no material changes in the risk management system during the reporting period.

B.3.5 Key elements of our risk management system

Our risk strategy and our Risk and Capital Management Guideline including the system of limits and thresholds for material risks of the Hannover Re Group describe the central elements of our risk management system. This is subject to a constant cycle of planning, action, control and improvement. Systematic risk identification, analysis, measurement, steering and monitoring as well as risk reporting are especially crucial to the effectiveness of the system as a whole.

This guideline describes, among other things, the major tasks, rights and responsibilities, the framework conditions and the risk control process. The rules, which are derived from the corporate strategy and the risk strategy, additionally take account of the regulatory requirements for risk management as well as international standards and developments relating to appropriate enterprise management. Group-wide risk communication and an open risk culture are important to our risk management. Regular global meetings attended by the actuarial units and risk management functions serve as a major anchor point for strategic considerations in relation to risk communication. Beyond that, the requirements by the risk management are stated in guidelines and policies, which are communicated Group-wide.

Risk-bearing capacity concept

The establishment of the risk-bearing capacity involves determining the total available risk coverage potential and calculating how much of this is to be used for covering all material risks. This is done in conformity with the parameters of the risk strategy and the risk appetite defined by the Executive Board. The quantitatively measurable individual risks and the risk position as a whole are evaluated using our risk model. A central system of limits and thresholds is in place to monitor material risks. This system incorporates – along with other risk-related key figures – in particular the indicators derived and calculated from the risk-bearing capacity. Adherence to the overall risk appetite is verified on an ongoing basis.

Risk identification

A key source of information for monitoring risks is the risk identification carried out on a periodic basis. All identified risks are documented in a central register containing all material risks. Risk identification takes the form of, among other things, structured assessments, interviews or scenario analyses. External insights such as recognised industry know-how from relevant bodies or working groups are incorporated into the process. Risk identification is important for ensuring that our risk management consistently remains up-to-date.

Risk analysis and assessment

In principle, every risk that is identified and considered material is assessed quantitatively. Only risk types for which quantitative risk measurement is currently impossible or difficult are assessed qualitatively (e.g. strategic, reputational or emerging risks). Qualitative assessment can take the form of, for example, expert evaluations. Quantitative assessment of material risks and the overall risk position is performed using the Hannover Re risk model. The model makes allowance for risk concentration and risk diversification.

Risk steering

The steering of all material risks is the task of the operational business units on the divisional and company level. In this context, the identified and analysed risks are either consciously accepted, avoided or minimised. The risk / reward ratio is factored into the division’s decision. Risk steering is assisted by the parameters of the central and local underwriting guidelines and by defined limits and thresholds.

Risk monitoring

The monitoring of all identified material risks is a core task of Group Risk Management. This includes, inter alia, monitoring execution of the risk strategy as well as adherence to the defined limits and thresholds and to risk-related methods and processes. A further major task of risk monitoring is the ascertainment of whether risk steering measures were carried out and whether the planned effect of the measures is sufficient.

Risk communication and risk culture

Risk management is firmly integrated into our operational processes. It is assisted by transparent risk communication and the open handling of risks as part of our risk culture. Risk communication takes the form, for example, of internal and external risk reports, information on current risk complexes in the intranet and training opportunities for staff. The regular sharing of information between risk-steering and risk-monitoring units is also fundamental to the proper functioning of risk management.

Risk reporting

Our risk reporting provides systematic and timely information about all material risks and their potential implications. The central risk reporting system consists primarily of regular risk reports, e.g. on the overall risk situation, adherence to the parameters defined in the risk strategy or on the capacity utilization of natural catastrophe scenarios. Complementary to the regular risk reporting, immediate internal reporting on material risks that emerge at short notice takes place as necessary.

Process-integrated / -independent monitoring and quality assurance

Irrespective of internally assigned competencies, the Executive Board is responsible for the orderly organisation of the company's business. This also encompasses monitoring of the internal risk steering and control system. Furthermore, the Executive Board is the owner of the economic capital model and is responsible for the approval of major model changes. Process-independent monitoring and quality assurance of risk management is carried out by the internal audit function and external instances (regulators, independent auditors and rating agencies). Most notably, the independent auditors review the trigger mechanism and the internal monitoring system. The entire system is rounded off with process-integrated procedures and rules, such as those of the internal control system.

B.3.6 Risk landscape

In the context of its business operations the Hannover Re Group enters into a broad variety of risks. These risks are deliberately accepted, steered and monitored in order to be able to act on the associated opportunities. The parameters and decisions of the Executive Board with respect to the risk appetite of the Hannover Re Group, which are based on the calculations of risk-bearing capacity, are fundamental to the acceptance of risks. Through our business operations on all continents and the diversification between our Property & Casualty and Life & Health reinsurance business groups we are able to effectively allocate our capital in light of opportunity and risk considerations and generate a higher-than-average return on equity. Along with our principal business operations as a reinsurer of property & casualty and life & health business, we also transact primary insurance in selected niche markets as a complement to our core reinsurance business. With this approach we are well positioned for further profitable growth. In this context crucial importance attaches to our risk management in order to ensure that, among other things,

risks to the reinsurance portfolio remain calculable and also exceptional major losses do not have an unduly adverse impact on the result.

The risk landscape of Hannover Re encompasses:

- underwriting risks in property & casualty and life & health reinsurance which originate from our business activities and manifest themselves inter alia in fluctuations in loss estimates as well as in unexpected catastrophes and changes in biometric factors such as mortality,
- market risks which arise in connection with our investments and also as a consequence of the valuation of sometimes long-term payment obligations associated with the technical account,
- counterparty default risks resulting from our diverse business relationships and payment obligations inter alia with clients, retrocessionaires and banks,
- operational risks which may derive, for example, from deficient processes or systems as well as
- reputational, liquidity, strategic and emerging risks.

At present, our most significant single risks are the credit and spread risks within the market risks, the reserving and catastrophe risks within the underwriting risks of property and casualty reinsurance and the risk of changes in mortality within the underwriting risks of life and health reinsurance. With regard to mortality risks, as a general principle annuity portfolios are impacted by improvements in mortality while death benefit portfolios are adversely affected by deteriorations in mortality. The specific risk characteristics and the principal monitoring and steering mechanisms are described in the following sections.

B.3.7 Own Risk and Solvency Assessment (ORSA)

The ORSA report, which is generated annually in the first half of the year after the completion of the financial year in question, primarily consists of an analysis of current and future risks, which could threaten the continued existence of Hannover Re. Here, the internal model is used – especially for the calculation of solvency requirements in comparison to the allocated risk capital – and its results are displayed. Capital resources are presented, stress tests are executed and a risk and profit forecast is generated – including scenario analysis. The interplay between risk and capital management is highlighted here. Finally, it explains the inclusion of the Executive Board into the ORSA process and its use as one of the controlling instruments at the company's disposal.

The ORSA report is coordinated by the risk management division and is subject to both assessment and approval by the Executive Board. In addition, the report is submitted to the Supervisory Board and the BaFin.

The ORSA cycle mirrors our circuit of planning, action, monitoring und finally enhancement and comprises the elements listed in section B.3.5.

Risk reporting

We produce regular reports, which show the company's risk position. To be mentioned are for example the internal and external risk reports, internal model result reports including solvency calculation, actuarial report and the report on the mid-term outlook.

All these reports are the basis for the solvency and risk assessments described in the ORSA report. Therein all employees contributing to the above procedures are involved as data and information suppliers and consulted for quality assurance.

The Executive Board observes the ORSA results for a full accomplishment of defined business targets, changes in the business process take place, if needed. This establishes a surveillance circuit for business enhancements and risk mitigation.

Furthermore, thereby the overall administrative, management or supervisory body (AMSB) can report to BaFin in detail using the ORSA report.

In the event of a necessary ad hoc ORSA, potentially because of a material change in risk profile, Hannover Re has defined specific procedural plans and responsibilities.

B.4 Internal Control System

B.4.1 Elements of the Internal Control System

We organise our business activities in such a way that they are always in conformity with all legal requirements. The internal control system (ICS) is an important subsystem that serves, among other things, to secure and protect existing assets, prevent and reveal errors and irregularities and comply with laws and regulations. The core elements of Hannover Re's ICS are documented in a guideline that establishes a common understanding of the differentiated execution of the necessary controls. In the final analysis, it is designed to systematically steer and monitor the implementation of our corporate strategy.

The guideline defines concepts, stipulates responsibilities and provides a guide for the description of controls. In addition, it forms the basis for the accomplishment of internal objectives and the fulfilment of external requirements imposed on Hannover Re. The ICS consists of systematically structured organisational and technical measures and controls within the enterprise. These include, among other things, the principle of dual control, separation of functions, documentation of the controls within processes and technical plausibility checks and access privileges in the IT systems.

The proper functioning of the ICS necessitates the involvement of management, executive staff and employees on all levels. The financial reporting of the parent company and the Group must satisfy international and national financial reporting standards as well as regulatory requirements. This is safeguarded in the area of accounting and financial reporting by processes with integrated controls which ensure the completeness and accuracy of the annual and consolidated financial statements. A structure made up of differentiated criteria, control points and materiality thresholds assures our ability to identify and minimise the risk of material errors in the annual and consolidated financial statements at an early stage.

B.4.2 Compliance function

Compliance Management System

Hannover Re defines Compliance as the observance of the applicable statutory and regulatory provisions and intra-company guidelines.

Hannover Re implemented a Compliance Management System (CMS) to ensure overall Compliance. It is based on accepted international standards and consists of six elements: Compliance Culture, Compliance Function, Compliance Risk, Compliance Programme, Compliance Communication, Compliance Monitoring and Improvement.

Compliance Culture

Compliance Culture provides the basis for the adequacy and effectiveness of the CMS. The importance of Compliance is not only reflected in the Code of Conduct (CoC), it is an explicit part in the group strategy which in turn further emphasises the importance of Compliance from the management perspective (“Tone from the Top”).

Compliance Function

Hannover Re has opted for a decentralised approach towards the implementation of the Compliance function, i.e. the tasks of the Compliance function will not only be fulfilled by one department, but by various departments. The Compliance function is therefore located in several departments.

The head of the Hannover Re’s department Group Legal Services (GLS) is the holder of the key Compliance Function at the same time.

The Executive Board of Hannover Re has established the Compliance division within GLS for the fulfilment of some of the tasks of the Compliance function. The Chief Compliance Officer is authorised to appoint further members of staff from GLS for the purpose of fulfilling compliance function tasks as necessary.

In the process of planning and organising of the CMS the particularly sensitive Compliance topics were identified through the employment of a risk-based approach and past experiences gained primarily by the Compliance and Internal Audit department (Group Auditing, GA). The scope is assessed annually. The Chief Compliance Officer will propose an appropriate adjustment to the Executive Board if a change in assessment occurs.

The key areas of Compliance as mentioned above are monitored by the Compliance function at Hannover Re. Therefore, different departments work together in order to fulfil this function. E.g. employment law remains the responsibility of the Human Resources department, tax law falls under the jurisdiction of the Tax department of Hannover Re.

The handling of particularly Compliance-relevant topics by the departments, who collectively form the Compliance function, comprises at the least the following activities:

- Identification and evaluation of risks, which are associated with the non-compliance of statutory requirements (risk control)
- Evaluation of the possible consequences for the company's activity as a result of changes in legal operating conditions (risk relating to changes in the law/early warning)
- Consultation with regard to compliance with the legal provisions which apply to company activity
- Assessment of the appropriateness of implemented measures in relation to compliance with statutory requirements (monitoring function)

Compliance Risk

The term Compliance Risk is commonly referred to as the risk of legal or regulatory sanctions due to non-compliance with laws, regulations and regulatory requirements or due to a serious financial loss or a loss of reputation.

The Compliance Risk assessment was revised in 2019. Next to the implementation of a Compliance Risk Matrix a systematic evaluation and assessment of Compliance Risks was initiated. The risk assessment is thereby the result of the combination of probability of occurrence and impact (consequence).

Compliance Programme

Every year, the Chief Compliance Officer generates a Compliance plan for the following year. This plan determines where the key areas of Compliance activity should be in the subsequent year. The report takes into account all relevant areas of activity of the company and the Compliance Risk.

Hannover Re has specified its compliance policy in writing in a manual bearing the title “Group Compliance Handbook”. This manual is regularly assessed for its topicality and, if necessary, updated – at least once a year – and on an event-driven basis by the members of staff within the Compliance function when new developments occur. In 2019 the Group Compliance Handbook was fundamentally revised and reflects the updated CMS structure of Hannover Re.

The appointed Chief Compliance Officer for Hannover Re bears particular responsibility for the following tasks: The Chief Compliance Officer monitors changes made to legal provisions and standards made by legislators, as well as case law. He assesses the new developments for their relevance and communicates pertinent innovations and changes to the respective departments and the Executive Board. The Compliance function also holds regular training sessions for members of staff, in particular with regard to legislative reforms, announcements by the insurance supervisory authority or other changes.

The Chief Compliance Officer advises members of the Executive Board and members of staff of Hannover Re upon request regarding Compliance topics.

Compliance Communication

Compliance Communication comprises several aspects including reporting, training and a speak-up culture.

The Chief Compliance Officer maintains constant contact and exchange with the further members of the Compliance Function both in Germany and abroad.

As the holder of the Compliance Function, the Chief Compliance Officer reports directly to the members of the Executive Board responsible for GLS and the Compliance Function within Hannover Re. Reports are provided on relevant Compliance incidents and are completed in written, verbal or electronic form, although verbal reports are, as a rule, subsequently backed up in writing. Depending on the seriousness of the incident, the reporting can be performed within a regular annual report or on an ad hoc basis.

For the generation of the Hannover Re annual Compliance Report to be presented to the Supervisory Board in its Finance & Audit Committee meeting the Chief Compliance Officer and the Compliance staff assess the monitoring plan of the Home Office as well as the Compliance report of the Local Offices. The report contains information on all Compliance-relevant topics.

Compliance Monitoring and Improvement

By way of continuous monitoring, the Chief Compliance Officer and the members of staff of the Compliance function contribute to ensuring compliance by the executive bodies (Executive Board and Supervisory Board) and the members of staff of Hannover Re with legal and regulatory operating conditions.

In 2019 a new methodology for the assessment of adequacy and effectiveness of mitigating measures for the Compliance Risk was introduced. The results of the assessment of adequacy and effectiveness did not show any indications that single measures for prevention of non-Compliance would have failed.

B.5 Internal Audit Function

Implementation of the Internal Audit Function

The company's internal audit function is executed by the department of Group Auditing (GA). GA renders independent, objective auditing services including evaluations and recommendations, which play a key role in safeguarding the external and internal compliance of processes, the internal control system and other areas of the company, as well as identifying potential areas for improvement. In addition to its auditing role, GA operates as an internal advisor generating valuable input as part of network collaboration with other units and functions within the company.

The Executive Board ensures that GA is not subject to instruction regarding audit planning, audit execution, reporting and the assessment of audit results. For the purposes of safeguarding independence, the Head of GA, who is simultaneously the key function holder for the company's internal audit function pursuant to Sections 30 and 47 No. 1 of the Insurance Supervision Act (VAG), reports directly to the Executive Board in all matters. Members of the internal audit staff are exclusively employed in GA and only execute tasks which are in line with the GA internal audit policy ("Internal Audit Charter"). This policy was released by the Executive Board and specifies the authorities of the internal audit function.

The GA team unites people of different educational backgrounds as well as different university and vocational degrees in order to cover the wide range of audit tasks. The employees hold a comprehensive professional experience, gained internally (especially from underwriting) as well as externally (in particular from external auditing and consulting). If a specific need for additional resources or skills arises, GA can involve internal peers or external capacities.

Tasks

GA supports the Executive Board in the attainment of company targets by assessing all business areas, processes and systems within the company in a targeted, independent and objective way, through the use of a systematic, risk-oriented approach as part of audit planning and execution, while also contributing to the company's further development. Auditing results are reported directly to the Executive Board. The assessment of individual findings and the overall assessment of the audit results is undertaken exclusively by GA. The underlying classification scheme defined by GA ensures an objectification of the estimations made.

Reporting lines

The internal audit function reports its auditing results and recommendations to the Executive Board continuously in the form of written audit reports, and / or immediately in the event of serious

deficiencies, as well as once a year in the form of the GA annual report. The implementation of agreed recommendations and measures in the audits is monitored by GA up until the determined deadlines.

B.6 Actuarial Function

Implementation of the Actuarial Function

Tasks and responsibilities of the Actuarial Function (AF) are defined in the AF policy which has been approved by the Executive Board. The owner of the AF coordinates the tasks of the AF.

The AF is organised in a decentralised way. Main tasks are fulfilled by departments of the central division Group Risk Management. This reflects the common understanding of AF and Risk Management Function (RMF) that a broad exchange of information and a competent support of each other's function is useful to fulfil their individual tasks in an effective and efficient way.

With respect to an opinion on the underwriting policy, the AF is supported by those departments assigned to the risk management, which are concerned with premium risk and with the measurement of underwriting risk, respectively. For the evaluation of the retrocession and the accompanying risks, there is a close collaboration between respective departments within the risk management. In addition those departments are incolved which coordinate the retrocession program of the company.

Tasks

The tasks of the AF are inter alia:

- Coordination and validation of the calculation of the Solvency II technical provisions (TP)
- Ensure the appropriateness of the applied methods, the underlying models and assumptions
  - used for the calculation of the TP for solvency as well as for accounting purposes
  - used as a basis for the appropriate recognition of the inherent risks of these methods, models and assumptions in the internal model
- Evaluation of the uncertainty associated with the estimations made in the calculation of the TP
- Regular review and assessment of the underlying data in terms of sufficiency and quality
- Regular comparison of best estimates against experience
- Reconciliation of TP between local accounting principles and Solvency II
- External validation and quality checks by actuarial consulting companies in addition to the internal validation of the TP
- Recommendations on improving processes and models used for the calculation of the TP, including data collection, if deficiencies have been observed, and monitoring of their implementation
- In the context of the contribution to the RMF inter alia
  - Support of the internal model, especially with respect to underwriting risks including the delivery and validation of models, data, parameters)
  - Monitoring of the reserve level within the scope of the system of limits and thresholds
  - Analysis of large transactions and new types of business

- Preparation of the AF report containing inter alia the following topics
  - Tasks of the AF
  - Activities of the AF in the reporting period
  - Methods, results and sensitivity analyses in respect of TP
  - Opinion on the underwriting policy, and
  - Opinion on the retrocession policy

Reporting Lines

In addition to the annual AF report, the responsible owner of the AF reports regularly directly to the Executive Board and to the Actuarial Committee, which is the responsible committee for the information exchange with the AF. If necessary, the AF reports to the Board or the Actuarial Committee on an ad hoc basis or upon requests and vice versa any requests of these two bodies were directed to the responsible owner of the AF. These direct reporting lines ensure the independence of the AF from the other key functions and the operational management.

The Actuarial Committee consists of the CEO, CFO, and the Board member who is responsible for the coordination of Property and Casualty reinsurance, the head of the AF and the head of the AF for Life & Health reinsurance business.

B.7 Outsourcing

Hannover Re has an outsourcing policy in place which is approved by the Executive Board. The outsourcing policy describes all requirements imposed on the outsourcing of (re-)insurance activities and functions. Here, the entire outsourcing management process is described, which consists of the following five process steps:

- Planning and classification
- Risk analysis and due diligence
- Contract management and notification
- Steering and monitoring
- Renewal and termination

All relevant stakeholder groups are involved in the outsourcing management process. Intra-Group outsourcings are also integrated into the outsourcing management process.

Among others, Hannover Re has currently outsourced the asset and investment management to Ampega Asset Management GmbH, located in Cologne (Germany). This matter concerns the only so-called important outsourcing of the Group.

B.8 Any other information

Evaluating the appropriateness of the system of governance

On an annual basis, the Executive Board receives an opinion from the System of Governance Assessment Committee regarding the past financial year. This opinion presented by the committee dated 24 February 2020 was assessed and approved by the Executive Board.

The committee is made up of the Heads of key functions, the Head of Corporate Development and the Head of Human Resources, and convenes at least once a year. Guests are invited on an event-driven basis. The basis for the assessment of the system of governance includes, among other things, the annual reports submitted by the key functions.

Based on the assessment conducted by the committee, the Executive Board has reached the conclusion that the system of governance of Hannover Re is appropriate considering the scope and complexity of its business activities and the inherent risks.

C. Risk Profile

In the context of its business operations, the Hannover Re Group enters into a broad variety of risks. These risks are deliberately accepted, steered and monitored in order to be able to act on the associated opportunities. The parameters and decisions of the Executive Board with respect to the risk appetite of the Hannover Re Group, which are based on the calculations of risk-bearing capacity, are fundamental to the acceptance of risks. Through our business operations on all continents and the diversification between our Property & Casualty and Life & Health reinsurance business groups we are able to effectively allocate our capital in light of opportunity and risk considerations. Along with our principal business operations as a reinsurer of property & casualty and life & health business, we also transact primary insurance in selected niche markets as a complement to our core reinsurance business. With this approach we are well positioned for further profitable growth. In this context crucial importance attaches to our risk management in order to ensure that, among other things, risks to the reinsurance portfolio remain calculable and also exceptional major losses do not have an unduly adverse impact on the result and the capital position.

The risk landscape of Hannover Re encompasses:

- underwriting risks in property & casualty and life & health reinsurance which originate from our business activities and manifest themselves inter alia in fluctuations in loss estimates as well as in unexpected catastrophes and changes in biometric factors such as mortality,
- market risks which arise in connection with our investments and also as a consequence of the valuation of sometimes long-term payment obligations associated with the technical account,
- counterparty default risks resulting from our diverse business relationships and payment obligations inter alia with clients, retrocessionaires and banks,
- operational risks which may derive, for example, from deficient processes or systems and
- other risks, such as reputational and strategic risks.

At the present time, our most significant risks are the default and spread risks within the market risks, the reserving and catastrophe risks within the underwriting risks of property and casualty reinsurance and the risk of changes in mortality within the underwriting risks of life and health reinsurance. With regard to mortality risks, annuity portfolios are generally impacted by mortality improvements while death benefit portfolios are adversely affected by deterioration in mortality.

Retrocession has a particular significance within risk appetite and risk reduction. It is used to protect the capital of the Hannover Re Group. The process of strategic retrocession placement for the Group, subsidiaries or branches is determined by the responsible Board member and overseen by the Executive Board.

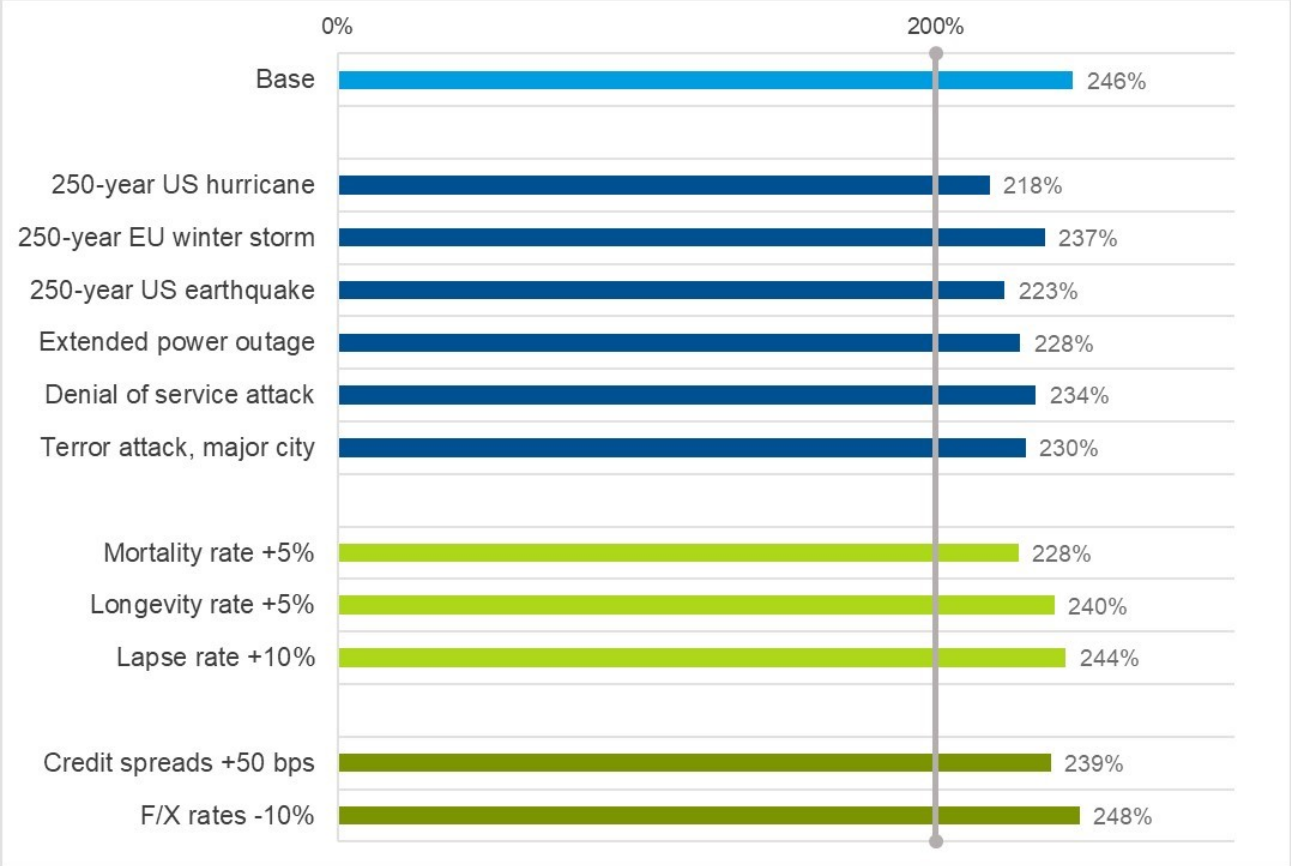
In the course of the mid-term planning, we monitor the business development over a time horizon of five years. Besides the basic scenario, we also behold alternative scenarios in respect of macro-economic developments and evolution of (re)insurance markets. Under the assumptions within the mid-term business plan, the risk profile and the capitalisation of Hannover Re Group remains comfortable. It is worthwhile to notice that the forecast of the capital requirements is based on various assumptions for the future economic and business environment and is therefore to be handled carefully.

Large transactions are assessed in regards of the influence on the risk profile, the capitalisation and the defined thresholds for different risk categories. Therewith, we secure that the risks develop in line with our risk appetite.

New reinsurance and investment products are analysed under a dedicated process, namely the New Products Process (NPP). In addition to analysing the risk profile, integration into all internal processes, such as accounting and risk monitoring, is defined.

In addition to stochastic modelling, we perform stress tests, scenario and sensitivity analyses on a regular basis. This represents a central element of our risk management. The main stress tests and analyses have to be performed at least annually and include for example analyses regarding natural catastrophes, terror events, equity and fixed-income securities as well as real estate. Some of the scenarios and stress tests, which have been performed in the course of the year based on the capital adequacy ratio for year-end 2018 (in particular based on the internal model using a constant volatility adjustment), and their impact on the capital adequacy ratio are presented in the following graph.

Sensitivities of the capital adequacy ratio
Values in percent



Additional information on individual risk categories can be found in the following.

C.1 Underwriting risk

C.1.1 Underwriting risk Property and Casualty

Risk management in property and casualty reinsurance has defined various overall guidelines for efficient risk steering. These include, among other things, the use of retrocessions to reduce volatility and protect capital. It is also crucially important to consistently maximise the available risk capacities on the basis of the risk management parameters of Hannover Re and to steer the acceptance of risks systematically through the existing central and local underwriting guidelines. In addition, our conservative reserving level is a key factor in our risk management.

We distinguish between risks that result from business operations of past years (reserve risk) and those stemming from activities in the current or future years (price / premium risk). In the latter case, special importance attaches to the catastrophe risk.

Diversification within the Property & Casualty reinsurance business group is actively managed through allocation of the cost of capital according to the contribution made to diversification. A high diversification effect arises out of the underwriting of business in different lines and different regions with different business partners. In addition, the active limitation of individual risks – such as natural catastrophes – enhances the diversification effect.

The risk capital with a confidence level of 99.5% for underwriting risks in property and casualty reinsurance breaks down as follows:

Solvency Capital Requirement for underwriting risks in property and casualty reinsurance

in TEUR	2019	2018
Premium risk (incl. catastrophe risk)	3,365,873	2,862,335
Reserve risk	2,496,274	2,275,664
Diversification	−1,429,942	−1,318,745
Underwriting risk property and casualty	**4,432,205**	**3,819,254**

The underwriting risks in property and casualty reinsurance increased during 2019 primarily as a consequence of higher premium and reserve volumes as well as larger underwriting capacities for natural perils. The increased volumes are the result of interest rate and exchange rate effects along with business growth as well as the expenditure of large losses and the associated higher reserves. Moreover, in the area of catastrophe risks the modelling approach used for cyber risks was refined, leading to an increase in required capital.

C.1.1.1 Risks arising from natural disasters

The largest share of the required risk capital for the premium risk is attributable to risks from natural disasters. They constitute the main concentration risk in property and casualty reinsurance. The following table shows the required risk capital for four of our largest natural hazards scenarios:

Solvency Capital Requirement for four of our largest natural hazards scenarios

in TEUR	2019	2018
Hurricane US	1,993,475	1,774,513
Earthquake US West Coast	1,482,856	1,437,560
Earthquake Japan	817,774	707,438
Winter storm Europe	762,365	609,774

The higher capital requirements for Europe Winter storm, Hurricane US, Earthquake US West Coast and Earthquake Japan compared to last year are primarily due to new and expansion of established business. The exposure growth for Earthquake US West Coast is partially compensated by a model update.

For the purpose of assessing our catastrophe risks from natural hazards, especially earthquake, windstorm and flood, we use licensed scientific simulation models, supplemented by the expertise of our own specialist departments. The models deliver probability distributions for losses from natural catastrophes. The monitoring of the risks resulting from natural hazards is complemented by scenario analyses.

Stress tests for natural catastrophes after retrocessions
Effect on forecasted net income

in TEUR	2019	2018
Winter storm Europe		
100-year loss	−376,290	−312,003
250-year loss	−602,199	−525,998
Hurricane US		
100-year loss	−1,154,895	−1,033,223
250-year loss	−1,595,051	−1,471,642
Typhoon Japan		
100-year loss	−216,051	−216,385
250-year loss	−302,005	−294,045
Earthquake Japan		
100-year loss	−341,226	−344,345
250-year loss	−732,965	−664,342
Earthquake US West Coast		
100-year loss	−602,681	−634,768
250-year loss	−1,258,185	−1,194,699
Earthquake Australia		
100-year loss	−148,879	−191,942
250-year loss	−474,769	−499,845

The Executive Board defines the risk appetite for natural perils once a year on the basis of the risk strategy by specifying the portion of the economic equity that is available to cover risks from natural perils. This is a key basis for our underwriting approach in this segment. As part of our holistic approach to risk management across business groups, we take into account numerous relevant scenarios and extreme scenarios, determine their effect on portfolio, evaluate them in relation to the planned figures and identify alternative courses of action.

For the purposes of risk limitation, maximum amounts are also stipulated for various extreme loss scenarios and return periods in light of profitability criteria. Risk management ensures adherence to

these maximum amounts. The Executive Board and Risk Committee are kept regularly updated on the degree of capacity utilisation. The limits and thresholds for the 200-year annual aggregate loss as well as the utilisation thereof are set out in the following table:

Limit, threshold and utilisation for natural catastrophe risk, all perils and regions

in TEUR	Limit 2019	Threshold 2019	Actual utilisation (July 2019)
200-year aggregate annual underwriting loss	2,125,000	1,912,500	1,727,000

C.1.2 Reserve risk

The reserve risk, i.e. the risk of under-reserving and the resulting strain on the underwriting result, is a high priority in our risk management. We attach importance to maintaining a conservative reserving level. In order to counter the risk of under-reserving we calculate our loss reserves based on our own actuarial estimations and establish, where necessary, additional reserves supplementary to those posted by our cedants as well as those for losses that have already occurred but have not yet been reported to us. Reserves are calculated on a differentiated basis according to lines of business and regions.

The statistical run-off triangles are another monitoring tool used by our company. They show changes in the reserve over time as a consequence of paid claims and changes in the recalculation of the reserves at each reporting date. Their adequacy is monitored using actuarial methods.

Our own actuarial calculations regarding the adequacy of the reserves are also subject to annual quality assurance reviews conducted by external reviewers and auditors.

In order to partially hedge inflation risks Hannover Re holds securities in its portfolio with inflation-linked coupons and redemption amounts. An inflation risk exists particularly inasmuch as the liabilities (e.g. loss reserves) could develop differently than assumed at the time when the reserve was constituted because of inflation.

C.1.3 Risk mitigation techniques Property & Casualty

C.1.3.1 Strategic aims and key figures

The strategic aims in relation to the placement of retrocessions are determined by the placing unit and the responsible member of the Executive Board. The Executive Board oversees the placement of the retrocessions as a whole, in particular the limits, premiums and contractual terms.

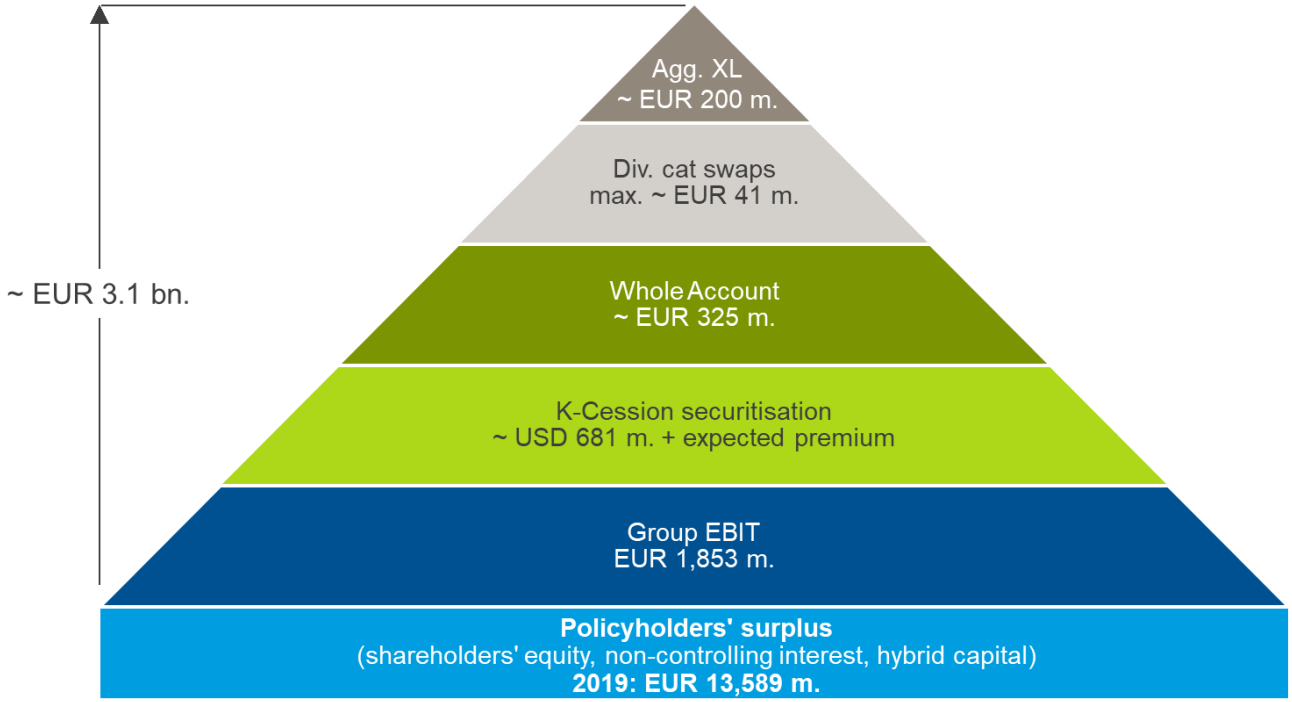
The Executive Board derives the risk budget for natural perils from the global risk budget. Many risk tolerances are based on net metrics, i.e. the placement of retrocessions plays a key role in adhering to the limits.

Capacities are derived from the global and local risk tolerances on a per scenario and market sector basis. The capacity matrix forms the operational management tool and ensures a consistent top-down approach.

During the planning phase in September and October every year, the Executive Board decides on the capacities for the following year. The planning process includes an assessment of the utilisation

of all risk tolerances. An overutilization would be inconsistent with the risk appetite and an underutilisation would result in under-deployment of allocated capital.

The resulting multilevel protection increases the reinsurance capacity for natural catastrophes and thus provides additional revenues with a defined risk appetite.



As at March 2020

C.1.3.2 Description of main types of cover against natural perils

Details on the individual forms of reinsurance covers are described below.

Whole Account Protection 2019

The Whole Account Protections cover all property, motor hull and engineering business of the Hannover Re Group, i.e. business recorded in Hannover and through subsidiaries or branch offices. The protections are placed on a gross claim basis.

Large Loss Aggregate XL 2019

The Large Loss Aggregate XL is an aggregate protection and covers the whole Property & Casualty book of the Hannover Re Group.

K-quota share 2019

The portfolio covered under the K-quota share consists of the following segments and regions of the Cat XL business of the Hannover Re Group:

- Natural perils in Australia, Japan, Canada and USA (mainly wind and earthquakes)
- Natural perils in northern Europe (mainly wind, earthquakes, hail and floods)

- Natural perils in New Zealand (mainly earthquakes)
- Aviation (all XL contracts) and Marine & Energy (all XL contracts)

By way of its “K-transactions”, Hannover Re has raised underwriting capacity for catastrophe risks on the capital market. The “K-Cession”, which was placed with investors in North and South America, Europe and Asia, involves a quota share cession on worldwide natural catastrophe business as well as aviation and marine risks. A large part of the total volume of the K-Cession was securitised via structured entities. The transaction has an indefinite term and can be cancelled annually by the investors. Segregated accounts of Kaith Re Ltd. are used for transformer purposes for part of this transaction. Hannover Re also uses further segregated accounts of Kaith Re Ltd. and other structured entities outside the Group for various retrocessions of both its traditional and ILS covers, which in each case are passed on to institutional investors in securitised form. The structured entities are in most cases fully funded by contractually defined investments in the form of cash and equivalent liquid assets.

E+S Cat XL protection

In addition to the Hannover Re retrocessions, there is a specific cover for E+S Rück. The so-called E+S Cat XL covers all natural perils: wind, hail, flood and earthquake. The covered area is worldwide.

C.1.4 Underwriting risk Life and Health

All risks directly connected with the life of an insured person are referred to as biometric risks. They include in particular the miscalculation of mortality, life expectancy, morbidity and occupational disability. Biometric risks are the material risks for our company in the area of life and health reinsurance. Our goal is to strike a balance between biometric risks. Furthermore, we are exposed to lapse risks because the cash flows resulting from our reinsurance treaties are in part dependent on lapse rates among policyholders. Counterparty default risks are also material since we partly prefinance our cedants’ new business acquisition costs. Furthermore, we are exposed to catastrophe risks, especially events involving a high number of fatalities in our insurance portfolio.

The reserves are determined on the basis of secure biometric actuarial bases in light of the information provided by our clients. The biometric actuarial bases used and the lapse assumptions are continuously reviewed with an eye to their adequacy and if necessary adjusted. This is done using the company’s own empirical data as well as market-specific insights. Our current risk profile in life and health reinsurance is dominated by mortality and longevity risks. This is due to the fact that under some of our contracts we pay death benefits, while under others we pay survival benefits. The volume of our annuity portfolio contributes to diversification within life and health reinsurance. We calculate the diversification effect between mortality and longevity risks prudently in view of the fact that the contracts are normally taken out for different regions, age groups and individuals. The required risk capital with a confidence level of 99.5% for underwriting risks in life and health reinsurance breaks down as follows:

Required risk capital for underwriting risks life and health reinsurance
Required risk capital at a confidence level of 99.5%

in TEUR	2019	2018
Mortality risk (incl. catastrophe risk)	2,307,099	1,668,272
Longevity risk	1,660,904	1,176,580
Morbidity and disability risk	1,107,699	881,065
Lapse risk	385,433	426,631
Expense risk	191,530	206,530
Diversification	−2,917,045	−2,146,605
Underwriting risk life and health	**2,735,619**	**2,212,474**

Diversification is a central management tool for our company. We seek to spread risks as far as possible across different risk classes and different regions. In our pricing of reinsurance treaties we provide incentives to further increase diversification.

The underwriting risks in life and health reinsurance increased primarily as a consequence of the business growth in the area of longevity and morbidity risks as well as due to declined interest rates. In addition, adjustments made in the calibration of mortality risks gave rise to an increase in capital requirements.

A risk concentration in life and health reinsurance business is primarily present due to mortality risk including the risk of a pandemic event, which governs an essential fraction of our solvency capital requirement for life and health business with regard to concentration risks. In addition, longevity and morbidity risks are relevant for the consideration of risk concentrations due to the business growth in these areas. To govern our risks we regularly monitor our exposure regarding potential pandemic events in the context of internal model runs. More information is available in Section D.2.2.2.

Through our quality assurance measures we ensure that the reserves established by ceding companies in accordance with local accounting principles satisfy all requirements with respect to the calculation methods used and assumptions made (e.g. use of mortality and morbidity tables, assumptions regarding the lapse rate). In addition, the assumptions are continuously reviewed on the basis of empirical data and modified if necessary. New business is written in all regions in compliance with underwriting guidelines applicable worldwide, which set out detailed rules governing the type, quality, level and origin of risks and how these considerations are factored into the pricing. These global guidelines are revised annually and approved by the Executive Board. Special underwriting guidelines give due consideration to the particular features of individual markets. By monitoring compliance with these underwriting guidelines we minimise the risk of an inability to pay or of deterioration in the financial status of cedants. Regular reviews and holistic analyses (e.g. with an eye to lapse risks) are carried out with respect to new business activities and the assumption of international portfolios. Large transactions are also examined by our risk management department. Individual actuarial reports and documentation ensure that regular scrutiny also takes place on the level of the subsidiaries. The interest rate risk, which in the primary sector is important in life business owing to the guarantees that are given, is of only minimal relevance to our company thanks to the design of our reinsurance treaties. We have confidence in the entrepreneurial abilities of our underwriters and grant them the most extensive possible powers. In our decentralised organisation we manage risks where they arise using a consistent Group-wide approach in order to obtain an overall view of the risks in life and health reinsurance. Our global underwriting guidelines provide underwriters with an appropriate framework for this purpose.

C.1.4.1 Risk mitigation techniques Life & Health Reinsurance

In the Life & Health business group, retrocessions for the purpose of risk reduction are only used on a limited basis.

An index-based pandemic cover was structured in 2013 as a swap and, since then, has been placed with different investors in various tranches. The overall capacity placed is flexibly collateralised, such that the level of collateralisation can be increased depending on the current WHO pandemic alert phases.

Some large longevity deals are retroceded proportionally and on a regular premium basis in order to reduce the volatility of the longevity portfolio with regards to particular large contracts. Two sided collateral provisions ensure that future liabilities will be collateralised if receivables from or to the retrocessionaires are projected to exceed an agreed threshold.

The existing pool retrocessions for high sum assured individual policies mainly originate from times when a lower per life retention applied for the Hannover Re Group. For risk reduction reasons, they are no longer necessary and have been placed in run-off unless the retrocession is subject to attractive terms.

All other existing retrocessions are not placed for reasons of active risk reduction, but rather to maintain existing customer relationships, to get access to attractive fronting business or are placed with affiliates and non-affiliates in order to reduce the HGB strains originating from large financing transactions.

The effectiveness of the retrocessions is closely linked to the default risk of the retrocessionaires. The monitoring of the default risk of retrocessionaires is performed across all business segments of Hannover Re in a standardized way, using standard systems and methods which are described in section C.3.

C.2 Market risk

Faced with a challenging capital market climate, particularly high importance attaches to preserving the value of assets and the stability of the return. Hannover Re's portfolio is guided by the principles of a balanced risk / return profile and broad diversification. Based on a risk-averse asset mix, the investments reflect both the currencies and durations of our liabilities. Market price risks include equity risks, interest rate risks, foreign exchange risks, real estate risks, default and spread risks. Our portfolio currently consists in large part of fixed-income securities, and hence default and spread risks account for the bulk of the market risk. We minimise interest rate and foreign exchange risks through the matching of payments from fixed-income securities with the projected future payment obligations from our insurance contracts to a significant extent. Market risks derive from the investments managed by Hannover Re itself and from investment risks of ceding companies that we assume in connection with insurance contracts. The following table shows the risk capital with a confidence level of 99.5% for the market risks from investments under own and third-party management.

Required risk capital for market risks
Including private equity

in TEUR	2019	2018
Credit and spread risk	2,799,602	2,689,341
Interest rate risk	963,347	711,589
Foreign exchange risk	1,389,222	1,177,897
Equity risk	1,159,423	932,257
Real estate risk	660,077	608,858
Diversification	−2,808,625	−2,286,470
Market risk	**4,163,045**	**3,833,472**

The increase in market risk mainly reflects the larger volume of assets under own management mainly due to cash inflows and declined interest rates. In addition, we hold higher volumes of private equity and participations. Further factors are an increased duration and slightly riskier investment in fixed-income securities. An opposing effect results from the first time application of the dynamic volatility adjustment, which leads to a decrease in the spread risk.

With a view to preserving the value of our assets under own management, we constantly monitor adherence to a trigger mechanism based on a clearly defined traffic light system that is applied across all portfolios. This system defines clear thresholds and escalation channels for the cumulative fluctuations in fair value and realised gains / losses on investments since the beginning of the year. They are defined in conformity with our risk appetite and trigger specified information and escalation channels if a corresponding fair value development is overstepped.

Interest rate and spread markets were relatively volatile over the course of the year under review. The already very low level of the previous year was once again pushed significantly lower in all our main currency areas. While the US dollar area recorded particularly appreciable interest rate declines, pound sterling and euro interest rates also saw sharp decreases. Risk premiums on European and US corporate bonds retreated sometimes markedly in virtually all rating categories in the reporting period. Consequently, a very substantial increase in the hidden reserves for fixed-income securities was booked over the year as a whole.

The escalation levels of the early-warning system were not triggered at any time in the reporting period. For this reason, our trigger system did not cause us to make any changes to the asset allocation.

The short-term loss probability measured as the Value at Risk (VaR) is another vital tool used for operational monitoring and management of the market price risks associated with our securities positions. It is calculated on the basis of historical data, e.g. the volatility of the securities positions under own management and the correlation between these risks. As part of these calculations the decline in the fair value of our securities portfolio is simulated with a certain probability and within a certain period. The VaR of the Hannover Re Group determined in accordance with these principles specifies the decrease in the fair value of our securities portfolio under own management that with a probability of 95% will not be exceeded within ten trading days. A standard market model is used to calculate the VaR indicators for the Hannover Re Group; the risk model used in the previous reporting period was replaced with a more state-of-the-art variant in the year under review as part of our continuous efforts to strengthen our risk models. It is based on historical time series of relevant market parameters (equity prices, yield curves, spread curves and exchange rates). Against the backdrop of what was still a difficult capital market and interest rate environment, volatilities – especially of fixed-income assets – were again on a high level in the year under review. Based on continued broad risk diversification and the orientation of our investment portfolio, our

VaR was nevertheless clearly below the VaR upper limit defined in our investment guidelines. It amounted to 0.8% as at the end of the reporting period.

Stress tests are conducted in order to be able to map extreme scenarios as well as normal market scenarios for the purpose of calculating the Value at Risk. In this context, the loss potentials for fair values and shareholders' equity (before tax) are simulated on the basis of already occurred or notional extreme events.

Scenarios for changes in the fair value of material asset classes

		Portfolio change on a fair value basis	
in TEUR	Scenario	**2019**	2018
Equity securities and private equity	Share prices -10%	-120,676	-92,555
	Share prices -20%	-241,351	-185,109
	Share prices +10%	+120,676	+92,555
	Share prices +20%	+241,351	+185,109
Fixed-income securities	Yield increase +50 basis points	-1,201,818	-906,447
	Yield increase +100 basis points	-2,336,782	-1,769,214
	Yield decrease -50 basis points	+1,276,278	954,544
	Yield decrease -100 basis points	+2,631,817	1,961,562
Real Estate	Real estate market values -10%	-262,415	-237,940
	Real estate market values +10%	+262,415	+237,940

Further significant risk management tools – along with the various stress tests used to estimate the loss potential under extreme market conditions – include sensitivity and duration analyses and our asset / liability management (ALM). The internal capital model provides us with quantitative support for the investment strategy as well as a broad diversity of VaR calculations. In addition, tactical duration ranges are in place, within which the portfolio can be positioned opportunistically according to market expectations. The parameters for these ranges are directly linked to our calculated risk-bearing capacity. It should be borne in mind that the issued subordinated bonds and resulting induced interest rate exposure are actively factored into our ALM. Please note, that also the subordinated liabilities considered in Section D.5 and the resulting interest rate risk are actively managed in the ALM process.

Equity risks derive from the possibility of unfavourable changes in the value of equities, equity derivatives or equity index derivatives in our portfolio. Their relevance to our investments was, however, very slight because we currently hold only a minimal portfolio of equities and equity funds in the context of strategic participations. Our exposure to the private equity market remains unchanged. Changes in fair value here tend to be prompted less by general market conditions and more by entity-specific assessments. The risks are associated principally with the business model and profitability and less so with the interest rate component in the consideration of cash flow forecasts.

By far the largest part of our assets under own management is invested in fixed-income securities. They are exposed to the interest rate risk. Declining market yields lead to increases and rising market yields to decreases in the fair value of the fixed-income securities portfolio. The credit spread risk should also be mentioned. The credit spread refers to the interest rate differential between a risk-entailing bond and risk-free bond with the same maturity. Changes in these risk premiums, which are observable on the market, result – analogously to changes in pure market

yields – in changes in the fair values of the corresponding securities. We minimise interest rate risks by matching the durations of payments from fixed-income securities as closely as possible with the projected future payment obligations under our insurance contracts.

Foreign exchange risks are especially relevant if there is a currency imbalance between the technical liabilities and the assets. Through matching of currency distributions on the assets and liabilities side, we reduce this risk on the basis of the individual balance sheets within the Group. The short-term Value at Risk therefore does not include quantification of the foreign exchange risks. We regularly compare the liabilities per currency with the covering assets and optimise the currency coverage by regrouping assets. In so doing, we make allowance for collateral conditions such as different accounting requirements. Remaining currency surpluses are systematically quantified and monitored within the scope of economic modelling.

Real estate risks result from the possibility of adverse changes in the value of real estate held either directly or through fund units. They may be caused by a deterioration in particular qualities of a property or by a general downslide in market values. Real estate risks continued to grow in importance for our portfolio owing to our ongoing involvement in this sector. We spread these risks through broadly diversified investments in high-quality markets worldwide; each investment is preceded by detailed analyses of the property, manager and market concerned.

We use derivative financial instruments to a limited extent, only. The primary purpose of such financial instruments is to hedge against potentially adverse developments on capital markets. A portion of our cash flows from the insurance business as well as foreign exchange risks arising because currency matching cannot be efficiently achieved are hedged to some extent using forward exchange transactions. Hannover Re holds further derivative financial instruments to hedge interest rate risks from loans taken out to finance real estate. In addition, Hannover Re holds hedges in the form of equity swaps to hedge price risks in connection with the stock appreciation rights granted under the share award plan. These are intended to neutralise changes in the fair values of the awarded stock appreciation rights. Contracts are concluded with reliable counterparties and for the most part collateralised on a daily basis so as to avoid credit risks associated with the use of such transactions. The remaining exposures are controlled according to the restrictive parameters set out in our investment guidelines.

With effect from this reporting period we are entering into term repurchase agreements as a supplementary liquidity management tool. The holdings exchanged in this context are fully collateralised.

Derivatives connected with the technical account play a minor role in Hannover Re’s portfolio.

Our investments entail credit risks that arise out of the risk of a failure to pay (interest and / or capital repayment) or a change in the credit status (rating downgrade) of issuers of securities. We attach equally vital importance to exceptionally broad diversification as we do to credit assessment conducted on the basis of the quality criteria set out in the investment guidelines. We measure credit risks in the first place using the standard market credit risk components, especially the probability of default and the potential amount of loss – making allowance for any collateral and the ranking of the individual instruments depending on their effect in each case.

We then assess the credit risk first on the level of individual securities (issues) and in subsequent steps on a combined basis on the issuer level. In order to limit the risk of counterparty default we set various limits on the issuer and issue level as well as in the form of dedicated rating quotas. A comprehensive system of risk reporting ensures timely reporting to the functions entrusted with risk management.

Generally, Hannover Re aligns its investment portfolio with the principles of a balanced risk / return ratio along with a broad level of diversification. Accordingly, we subsequently counteract the risk concentrations that nevertheless arise on individual asset classes with the broadest possible diversification of different issuers per asset class. This is a central element of our investment policy, as well as the assessment and management of credit quality based on the quality criteria laid down in the investment guidelines.

C.3 Credit risk

The credit risk or counterparty default risk consists primarily of the risk of complete or partial failure of the counterparty and the associated default on payment. The following table shows the required risk capital for counterparty defaults as at 31 December. This includes counterparty risk from retrocessionaires, cedants and short-term money held at banks but not credit risk from investments. The latter is covered under market risk, see previous section.

Required risk capital (confidence level 99.5%)

in TEUR	2019	2018
Counterparty default risk	423,260	312,553

The increase in counterparty default risks can be attributed to a higher volume of receivables due from ceding companies and retrocessionaires as well as changes in credit ratings.

Our retrocession partners are carefully selected and monitored. This is also true for our broker relationships, which entail a risk inter alia through the potential loss of the premium paid by the cedant to the broker. We minimise these risks, among other things, by reviewing all broker relationships once a year with an eye to criteria such as the existence of professional indemnity insurance, payment performance and proper contract implementation. The credit status of retrocessionaires is continuously monitored. On the basis of this ongoing monitoring a Security Committee decides on measures where necessary to secure receivables that appear to be at risk of default. This process is supported by an application, which specifies cession limits for the individual retrocessionaires participating in protection cover programmes and determines the capacities still available for short-, medium- and long-term business. Depending on the type and expected run-off duration of the reinsured business, the selection of reinsurers takes into account not only the minimum ratings of external rating agencies but also internal and external expert assessments (e.g. market information). Overall, retrocessions conserve our capital, stabilise and optimise our results and enable us to act on opportunities across a broader front, e.g. following a major loss event. Regular visits to our retrocessionaires give us a reliable overview of the market and put us in a position to respond quickly to capacity changes. The following table shows the proportion of assumed risks that we do not retrocede (i.e. that we keep in our retention):

Gross written premium retained

in %	2019	2018
Total	90.0	90.7
Property and casualty reinsurance	90.3	90.7
Life and health reinsurance	89.5	90.7

Alongside traditional retrocessions in property and casualty reinsurance we also transfer risks to the capital market. Please refer also to chapter C.1.3.

Counterparty default risks are also relevant in life and health reinsurance, among other things because we finance acquisition costs for our ceding companies. Our clients, retrocessionaires and broker relationships as well as our investments are therefore carefully evaluated and limited in light of credit considerations and are constantly monitored and controlled within the scope of our system of limits and thresholds.

67.5% of our recoverables from reinsurance business are secured by deposits or letters of credit. For many of our retrocessionaires we also function as reinsurer, meaning that in most cases recoverables can potentially be set off against our own liabilities.

The average default rate from retrocessions over the past four years was 0.1%.

Retrocession gives rise to claims that we hold against our retrocessionaires. These reinsurance recoverables – i.e. the reinsurance recoverables on unpaid claims – amounted to TEUR 2,050,114 (TEUR 2,084,630) at the balance sheet date.

The following table shows our reinsurance recoverables – split by rating quality – due from our retrocessionaires. Offsetting items as letters of credit and reinsurance deposits held as security against reinsurance recoverables on unpaid claims are condolidated in the column “secured”.

Reinsurance recoverables as at the balance sheet date

in TEUR	2019	2018
Secured	1,383,032	1,451,318
AAA		
AA	362,462	244,718
A	264,727	344,579
≤ BBB, NR	39,893	44,016
Total	**2,050,114**	**2,084,630**

C.4 Liquidity risk

Liquidity risk refers to the risk of being unable to meet financial obligations when they become due. Liquidity risk consists of the refinancing risk (necessary cash could not be obtained or could only be obtained at increased costs) and the market liquidity risk (financial market transactions could only be completed at a poorer price than expected due to a lack of market liquidity). Core elements of the liquidity management of our investments are, in the first place, management of the maturity structure of our investments on the basis of the planned payment profiles arising out of our technical liabilities and, secondly, regular liquidity planning as well as the asset structure of the investments. Above and beyond the foreseeable payments, unexpected and exceptionally large payments may pose a threat to liquidity. In reinsurance business, however, significant events (major losses) are normally paid out after a lead time that can be reliably planned. As part of our liquidity management we have nevertheless defined asset holdings that have proven to be highly liquid – even in times of financial stress such as the 2008 financial crisis. Our holdings of unrestricted German, UK and US government bonds as well as cash during the year under review were larger than possible disbursements for assumed extreme events, which means that our liquidity is assured even in the unlikely case of financial crises coinciding with an extreme event that needs to be paid out quickly. In addition, we manage the liquidity of the portfolio by checking on each trading day the liquidity of the instruments contained therein. These measures effectively reduce the liquidity risk.

For the “total amount of the expected profit included in future premiums” required by Art. 295 (5) of the Delegated Regulation 2015/35 please refer to the Quantitative Reporting Template S.23.01.22, item R0790. We do not use this figure for our liquidity management.

C.5 Operational risk

Operational risks refer to the risk of losses occurring because of the inadequacy or failure of internal processes or as a result of events triggered by employee-related, system-induced or external factors. In contrast to underwriting risks (e.g. the reserve risk), which we enter into in a deliberate and controlled manner in the context of our business activities, operational risks are an indivisible part of our business activities. The focus is therefore on risk avoidance and risk minimisation.

With the aid of the Self-Assessment for Operational Risks we determine the maturity level of our operational risk management system and define action fields for improvements. The assessment is carried out, for example, by assessing the maturity level of the risk management function or of the respective risk monitoring and reporting. The system enables us, among other things, to prioritise operational risks. In order to calculate the capital commitment in our internal capital model we perform extensive scenario analyses and use the findings as a basis for specifying the parameters for the stochastic model. The following table shows the required risk capital for the operational risk as at 31 December.

Required risk capital (confidence level 99.5%)

in TEUR	2019	2018
Operational risk	532,642	575,329

The decrease in operational risks can be attributed above all to an updated expert assessment regarding the impact of individual scenarios.

Within the overall framework of operational risks we consider, in particular, business process risks and data quality risks, compliance risks, risks associated with the outsourcing of functions, fraud risks, personnel risks, information security risks and business interruption risks.

Business process risks are associated with the risk of deficient or flawed internal processes, which can arise as a consequence of an inadequate process organisation. We have defined criteria to steer the risk, leading to a high process quality. Data quality is also a highly critical success factor, especially within risk management because the validity of the internal model is crucially basing on the provided data, for instance.

Compliance risks are associated with the risk of breaches of standards and requirements, non-compliance with which may entail lawsuits or official proceedings with not inconsiderable detrimental implications for the business activities of the Hannover Re Group. Compliance with regulatory standards, the company’s Code of Conduct, tax regulations, data privacy requirements as well as the stipulations of anti-trust and competition law have been defined as issues of particular relevance. In addition to that, the Hannover Re focuses on IT compliance requirements such as VAIT (Supervisory Requirements for IT in (Re)Insurance Undertakings). We use sanctions screening software on parts of the Hannover Re Group’s portfolio and any claim information to filter out individuals who are subject to sanctions on account of a criminal or terrorist background. Suitable steps are taken if such individuals are identified. Business partners are also screened in this way. Responsibilities within the compliance organisation are regulated and documented Group-

wide and interfaces with risk management have been put in place. The set of tools is rounded off with regular compliance training programmes.

Risks associated with the outsourcing of functions can result from such outsourcing of functions, services and / or organisational units to third parties. Mandatory rules have been put in place to limit this risk; among other things, they stipulate that a risk analysis is to be performed prior to an outsourcing. In the context of this analysis, that is e.g. centrally coordinated for cloud services, a check is carried out to determine, inter alia, what specific risks exist and whether outsourcing can even occur in the first place. Additionally our external partners are assessed regularly by Due Diligence.

In selected market niches we transact primary insurance business that complements our reinsurance activities. In so doing, just as on the reinsurance side, we always work together with partners from the primary sector – such as insurance brokers and underwriting agencies. This gives rise to risks associated with such distribution channels, although these are minimised through the careful selection of agencies, mandatory underwriting guidelines and regular checks.

The proper functioning and competitiveness of the Hannover Re Group can be attributed in large measure to the expertise and dedication of our staff. In order to minimise personnel risks, we pay special attention to the skills, experience and motivation of our employees and foster these qualities through outstanding personnel development and leadership activities. Regular employee surveys and the monitoring of turnover rates ensure that such risks are identified at an early stage and scope to take the necessary actions is created.

Fraud risks refer to the risk of intentional violations of laws or regulations by members of staff and / or by externals, in order to gain a personal advantage. This risk is reduced by the internal control system as well as by the audits conducted by Group Auditing on a Group-wide and line-independent basis.

Information security risks arise, inter alia, out of the risk of the inadequate integrity, confidentiality, availability or authenticity of systems and information. By way of example, losses and damage resulting from the unauthorised passing on of confidential information, the malicious overloading of important IT systems or from computer viruses are material to the Hannover Re Group. Given the broad spectrum of such IT-related risks, which do not only encompass information security but rather the complete sphere of operational risks (so called IT risks), a diverse range of steering and monitoring measures and organisational standards, including for example the requirement to conclude confidentiality agreements with service providers, have been put in place for the entire company. In addition, our employees are made more conscious of such security risks through practically oriented tools provided online in the intranet, by way of training opportunities and through a staff information campaign.

When it comes to reducing business interruption risks, the paramount objective is the quickest possible return to normal operations after a crisis, for example through implementation of existing contingency plans. Guided by internationally accepted standards, we have defined the key framework conditions and – among other measures – we have assembled a crisis team to serve as a temporary steering body in the event of an emergency. The system is complemented by regular exercises and tests, which e.g. confirm our IT recovery ability. A leaflet is available setting out the correct behaviour in the event of a business interruption; this condenses in compact form the key information that all employees need to know, such as the information channels to use in a crisis situation.

Regular quarterly risk reporting to the Risk Committee and the Executive Board takes place with regard to all operational risks. Risks are also evaluated as part of the reporting.

C.6 Other material risks

Of material importance to our company in the category of other risks are primarily emerging risks, strategic risks and reputational risks.

Furthermore, we monitor the contagion risk between single entities of the Hannover Re Group and in respect of the relation to the HDI Group.

C.6.1 Emerging risks

The hallmark of emerging risks is that the content of such risks cannot as yet be reliably assessed – especially on the underwriting side with respect to our portfolio. Such risks evolve gradually from weak signals to unmistakable tendencies. It is therefore vital to detect these risks at an early stage and then determine their relevance. For the purpose of early detection we have developed an efficient process that spans divisions and lines of business and we have ensured its linkage to risk management. Operational implementation is handled by an expert working group assembled specially for this task. The analyses performed by this working group are used Group-wide in order to pinpoint any necessary measures (e.g. the implementation of contractual exclusions or the development of new reinsurance products). By way of example, risks associated with possible climate change are analysed by this working group. Global warming would affect not only natural perils, but also human health, the world economy, the agricultural sector and much more besides. These problematic issues may also have implications for our treaty portfolio – in the form of not just risks but also opportunities, such as increased demand for reinsurance products. Further examples of emerging risks include cyber risks, risks from the use of autonomous machines and the supply of raw materials. Altogether, we are constantly monitoring 40 emerging risks.

C.6.2 Strategic risks

Strategic risks derive from a possible imbalance between the corporate strategy of the Hannover Re Group and the constantly changing general business environment. Such an imbalance might be caused, for example, by incorrect strategic policy decisions, a failure to consistently implement the defined strategies and business plans or an incorrect allocation of resources. We therefore regularly review our corporate strategy in a multi-step procedure and adjust our processes and the resulting guidelines as and when required. We have defined performance criteria and indicators for operational implementation of the strategic principles and objectives; these are authoritative when it comes to determining fulfilment of the various targets. With the “Strategy Cockpit” the Executive Board and responsible managers have at their disposal a strategy tool that assists them with the planning, elaboration and management of strategic objectives and measures and safeguards their overall perspective on the company and its strategic risks. The process for the management of strategic risks continues to be assessed annually as part of the monitoring of business process risks.

C.6.3 Reputational risks

Reputational risks refer to the risk that the trust put in our company by clients, shareholders, employees or the public at large may be damaged. This risk has the potential to jeopardise the business foundation of the Hannover Re Group. A good corporate reputation is therefore an indispensable prerequisite for our core business as a reinsurer. Reputational risks may arise out of

all business activities conducted by the Hannover Re Group. Reputational damage may be caused, inter alia, by a data mishap that becomes public knowledge or financial difficulties on account of an underwriting risk. In addition to the risk identification methods already described, we use a number of different techniques for risk minimisation, such as our defined communication channels (e.g. Crisis Communication Guideline), a professional approach to corporate communications, tried and tested processes for specific crisis scenarios as well as our established Code of Conduct.

The Code of Conduct, in particular, and the system of governance described in chapter B are the basis for minimizing any sources of reputational risk.

C.6.4 Important developments

In this section, we describe external developments in 2019 with particular relevance for risk management.

C.6.4.1 Regulatory developments

A review of selected aspects of Solvency II commenced in the reporting period at the instigation of the European Commission. In this regard the European Insurance and Occupational Pensions Authority (EIOPA) opened up its recommendations to the insurance industry for comment. Implementation of the new rules is still pending. We participate in the consultation process via various stakeholder groups and analyse the impact of potential changes with regard to the Hannover Re. In view of pillar 1 of Solvency II the topics regarding extrapolation of basic risk-free interest rate curves, changes to the volatility adjustments as well as recommendations with respect to the calculation of group own funds will be relevant for Hannover Re and could impact the capital adequacy ratio.

Hannover Re Group and its European reinsurance subsidiaries calculate their capital requirements under Solvency II on the basis of a full internal model. The Hannover Re Group received approval from the Federal Financial Supervisory Authority (BaFin) for the end of 2018 to use the volatility adjustments pursuant to § 82 Insurance Supervision Act (VAG). This is intended to mitigate the effect of value fluctuations on the bond market. For year-end 2019, Hannover Re Group has received approval from BaFin for a dynamic modelling of the volatility adjustment. By this, the effect of the volatility adjustment is captured in the calculation of the required capital more adequately.

Parallel to the regulatory developments in Europe, we are seeing adjustments worldwide to the regulation of (re)insurance undertakings. The Common Framework for the Supervision of Internationally Active Insurance Groups (ComFrame), which was adopted on 14 November 2019 by the International Association of Insurance Supervisors (IAIS), establishes supervisory standards and provides guidance focusing on the effective group-wide supervision of Internationally Active Insurance Groups (IAIGs). An integral element of the ComFrame is the Insurance Capital Standard (ICS). The ICS monitoring phase will start in 2020.

C.6.4.2 Brexit

Despite the United Kingdom’s withdrawal from the European Union on 31 January 2020, the long-term relations between the UK and the EU have still to be determined. Hannover Re has prepared for different scenarios. A Group-wide working group has analysed the impacts on each affected

entity as well as the status of their planning and preparations. Argenta Holdings Limited is a wholly owned subsidiary of Hannover Re that operates on a stand-alone basis in the United Kingdom and as a member of Lloyd's it focuses on the solutions offered by the Lloyd's market. The operating model envisaged for the Life & Health branch in the UK after Brexit is transformation into a so-called third-country branch. We also write reinsurance business in the United Kingdom through Group companies in Hannover and Ireland. Changes in the operating models are not anticipated at this point in time. All in all, our current analyses indicate that the implications of Brexit are manageable for Hannover Re.

C.6.4.3 Capital market environment

The protracted low level of interest rates is a major external factor influencing the return that can be generated on the investments of Hannover Re Group. Interest rate declines – which in some instances were very marked – affected both euro-denominated bonds as well as the US dollar and sterling markets over the course of the year. Negative yields are now being seen on euro area government bonds extending beyond the 10-year maturity point. The uncertain signals coming from policy makers and indications of softening fundamentals led to greater volatility overall on the markets. The tense geopolitical situation and global trade disputes were also reflected in fluctuations in gold and oil price movements. At the same time, muted expectations for global growth are making themselves felt here. The continued surprising confusion in the process surrounding the United Kingdom's withdrawal from the European Union – despite the already lengthy period of acclimatisation – offered little support; the same was true of the cautious moves made by central banks, which documented the persistent lack of market stability despite the buoyant state of equity markets. Even while the US economy showed itself to be in a thoroughly robust condition, the US Federal Reserve surprisingly pulled an abrupt about-turn from its previously restrictive policy in favour of more expansionary action. As indications of declining growth began to emerge at the end of the period under review, the Fed announced a pause in the cycle of interest rate adjustments that it had initiated. At the European Central Bank, on the other hand, there is no end in sight to the expansionary monetary policy. Given the depletion of monetary policy tools and in view of the gloomy growth and inflation outlook, calls for fiscal measures are growing louder. As far as the risk premiums on corporate bonds were concerned, sharp decreases reflected a levelling off in the nervousness observed at the end of the previous year, as a result of which they were considerably lower year-on-year at the close of 2019. Hannover Re Group continues to have exposure to the private equity market. Fair value changes here tend to be less influenced by general market conditions and more by company-specific evaluations. The risks are therefore primarily associated with the business model and profitability and to a lesser extent with the interest rate component in a consideration of cash flow forecasts. In the period under review, for example, Hannover Re Group sees the need to take somewhat higher write-downs not as a reflection of an elevated risk in the market, but rather in the context of the risk profile specific to this asset class. The significance of real estate risks has continued to grow owing to our consistent participation in this sector. We spread these risks through broadly diversified investments in high-quality markets around the world, with each investment decision being preceded by extensive analyses of the relevant property, manager and market. As far as the investments are concerned, Hannover Re Group anticipates continuing elevated volatility on global capital markets in the immediate future, although Hannover Re Group also sees this as an opportunity and believes that Hannover Re Group is appropriately prepared with the current posture of the asset portfolio.

C.6.4.4 Risks from the cyber environment

Recent years have seen the increasing emergence of cyber risks affecting electronic systems. Hannover Re Group is at risk of outside attacks on its IT systems and has put in place extensive safeguards. Furthermore, Hannover Re Group offers reinsurance coverage for risks connected with electronic systems and the associated data. The dynamic pace of developments in the context of digitalisation presents a particular challenge for the assessment of such risks.

The mapping of cyber risks in the internal capital model was improved in the course of 2019, with the result that more detailed risk management encompassing both our cyber portfolio and our "silent cyber" exposure is now possible, insofar as the relevant portfolios have been analysed.

C.6.4.5 Natural catastrophe risks and climate change

It is likely that the increased storm activity of recent years is due in part to progressive global warming. Hannover Re Group works together with partners to closely monitor the implications of global warming for extreme weather events so as to be able to factor the insights gained into the models and the management of risks. The 2019 financial year was once again impacted by natural catastrophe events that caused market losses in excess of TUSD 100,000,000. In common with other market players, Hannover Re Group was among those affected – principally by hurricane Dorian and typhoon Hagibis. Given that the amounts will be paid out over the next few years, an element of uncertainty in the remaining anticipated loss payments has been allowed for as part of the estimated technical reserves.

C.6.4.6 Ogden rate

In 2017 a change (i.e. reduction) was made in the so-called Ogden rate – primarily affecting UK motor insurance – which is used to calculate personal injury compensation payments. A massive cut in the rate led to a rise in the expected loss costs. These increased amounts have since been reflected in the technical reserves for the relevant lines. The UK government changed the rate from -0.75% to -0.25% effective 5 August 2019. The decision on the rate change is appropriately reflected in the technical reserves. The future payment patterns for these claims nevertheless remain subject to uncertainty because a better run-off result is normally expected at the time of settlement.

C.6.4.7 Joint investment in specialty business with HDI Global SE

Back in 2018 Hannover Re Group had already begun making preparations with HDI Global SE, under the umbrella of Talanx AG, for the launch of a joint initiative in worldwide specialty business. Since January 2019 the specialty insurer HDI Global Specialty SE has offered, as a joint venture of HDI Global and Hannover Re, tailored insurance solutions for agency and specialty business in lines including professional indemnity, directors' & officers' liability, legal expenses, sports and entertainment, aviation, offshore energy and pet and farm pack.

C.6.4.8 COVID-19 pandemic

On the basis of regulatory requirements, this report has a strong focus on the developments in the financial year 2019. Since year-end 2019, we have experienced the emergence of the new COVID-19 virus that has been declared a pandemic by the world health organization. As part of Hannover Re's routine business continuity management and as a response to the emergence of the crisis, Hannover Re has taken significant measures to ensure business continuity. In addition, to protect Hannover Re's financial strength in times of financial market volatility, we have implemented strict asset-liability measures including the use of the volatility adjustments. Based on these measures, we are confident to operate at a capital level above our limit of 180% in 2020 and we are confident that we can ensure substantial operational continuity. It must be acknowledged, however, that current estimates are and will remain uncertain for some time as they depend on the further emergence of the crisis and the effectiveness and efficiency of countermeasures.

At Hannover Re, we support the measures taken by the public sector to reduce the number of COVID-19 infections and slow the spread of the virus. We are keenly aware of our responsibility to our clients and we know that a reliable partnership is absolutely vital to our customers – especially in difficult times of crisis such as these.

While we are taking care to safeguard the health of our employees and their families, we shall therefore do everything in our power to assure continuing business operations and offer our customers the level of service to which they are accustomed.

A large number of our employees around the world are now using the capabilities of mobile working. In this way, we are responding to the large-scale closure of kindergartens and schools in Germany and other countries and to more extensive quarantine measures being taken to contain the spread of the coronavirus. Until the end of June, we are also cancelling all travel and all participation in external seminars. Planned events involving more than 20 attendees as well as events attended by international participants are similarly cancelled until the end of June. We are making use of available alternatives such as conference calls and videoconferences.

Our goal is to ensure our usual availability for our clients and business partners by e-mail and phone. We are technically equipped to do this and we are able to work from home without any difficulty. In view of the challenges that our employees are currently facing – both in their family lives and professionally – we would ask for your understanding if, despite our best efforts, we are not always able to live up to this aspiration to the usual extent or with our customary speed.

To date, Hannover Re has not experienced any significant impacts of the coronavirus on its business operations. Our risk management is geared to preserving Hannover Re's robust financial strength. By conducting stress tests, e.g. for pandemics or capital market distortions, we have continuously reviewed the resilience of our financial strength.

Our capital resources continued to be on a very good level at year-end 2019 with a capital adequacy ratio of 251%, comfortably above our limit of 180%. This remains true even in light of the most recent interest rate cuts and increases in credit spreads. Our existing asset/liability management, including the use of the volatility adjustment, will help to cushion negative effects of market volatility on our Solvency II capital adequacy ratio.

In property and casualty reinsurance, the strains for Hannover Re should remain manageable as things stand right now. We currently expect losses for the coverage of event cancellations and business interruption. This includes a cover connected with this year's Olympic Games in Japan. At present, losses in other business segments, such as credit and surety reinsurance, cannot be

reliably estimated. They depend on the efficiency and effectiveness of countermeasures by governmental and other institutions.

In life and health reinsurance, we currently anticipate only modest impacts on our portfolio of mortality covers. Pandemics form part of our risk management calculations and are appropriate reflected in our capital models. An increase in mortality rates of 5% within the insured population in the course of a year followed by a return to normal expectancies would mean an additional strain in the order of EUR 130 million for Hannover Re. At the present time, we are still a long way away from such a massive increase in mortality rates. In the case of an extreme 200-year event, the pandemic loss for Hannover Re based on our internal model is around EUR 1.04 billion.

When it comes to our investments, we have not to date seen any defaults as a consequence of the recent very marked reaction on capital markets. As of year-end 2019, we are only marginally invested in listed equities. Nevertheless, we certainly do have significant exposures to corporate bonds and related asset classes in the fixed-income spectrum as well as private equity and real assets. The consequences of an economic downturn may make themselves felt here. In the course of the year, depending on the effectiveness and efficiency of monetary and fiscal rescue measures, we expect not only valuation declines but also defaults. It is too early to make any sufficiently valid assessment of their potential scale. At the same time, however, there will be opposing valuation effects owing to the fall in interest rates.

As far as other developments are concerned, we are monitoring the situation very closely on all levels of the Hannover Re Group, including as part of our crisis management response and through our company physicians. In addition, we are engaged in an intensive dialogue with relevant public authorities, institutions and associations.

C.6.5 Contagion risks

Contagion risk refers to the risks originated by interactions between individual entities of Hannover Re Group, or related to Hannover Re's affiliation to the HDI Group. More precisely, contagion risk is the propagation of the effect of a failure or financial distress of an organisation in a sequential manner to other organisations, markets or systems, or to other parts of a financial group or financial conglomerate.

Hannover Re manages this risk by a strict look-through approach in its management systems.

D. Valuation for Solvency purposes

A valuation principle assigns monetary values to sets of rights and obligations in a structured way. The decision on what rights and obligations need to be considered is one of the distinguishing features of the valuation principles.

Hannover Re's internal valuation approaches are based on economic valuation principles. In principle economic valuation assigns to each right or obligation the price at which this right or obligation would be traded in an arms-length transaction between willing and knowledgeable parties. This principle has the advantages of being:

- Objective, since transaction prices can (in theory) be simply observed and do not require any further input,
- Comprehensive, since a transaction would incorporate all potential cash flows arising from those rights or obligations. In particular there can be no off-balance sheet items within an economic valuation framework,
- Risk-adjusted, since trades between risk-adverse parties will always incorporate the price of risk.

Depending on the specific position being valued and the state of the market at the time of valuation, two different and mutually exclusive levels of valuation can be distinguished:

Mark-to-market: This is the prototypical and simplest level of economic valuation. It is applicable if the positions to be valued are quoted in an active market. In that case, the value of the position is just the market price. Examples for positions, which can be valued on a mark-to-market basis are US treasuries, blue chips or futures with standard maturities on broad indices, such as the S&P 500. In general, everything traded in a deep and liquid market can be valued on a mark-to-market basis.

Market-consistent valuation (mark-to-model): This principle applies if neither prices themselves nor all inputs required for generally accepted pricing models can be observed in active markets. Accordingly, at least some parameters and inputs will be based on judgmental, and thus subjective, decisions. The valuation of many investments and most insurance contracts falls within this category, which is why this level of valuation is the most important one within the internal model. For consistency of the valuation with mark-to-market principles, it is required that

1. Observable prices and model parameters derived from them are used wherever available,
2. Parameter estimates are unbiased and derived according to sound techniques based on statistics or expert judgment,
3. Unavoidable risk must be allowed for in the valuation, consistent with the prevailing market price of risk. For this, it does not matter whether the risk is caused by the cash flows themselves or due to uncertainties in models or parameter estimates. This allowance for risk is called the market value margin.

Unavoidable risk is defined as the risk, which cannot be replicated completely by instruments with mark-to-market or mark-to-model valuation. If it can be replicated by such instruments, the risk can be avoided by investing in the replicating portfolio and the price of the position will be identical to the price of the replicating portfolio. This follows from the law of one price which is valid under

certain assumptions on the markets. Of course, the liquidity of the replicating portfolio is crucial for this argument to hold.

Many risks are hedgeable in principle but some positions in the resulting hedge portfolios might not be quoted in active markets. One example is credit risk of smaller or non-listed obligors, where in theory OTC CDS are available from certain counterparties but observable market prices are not. In addition, if the position cannot be replicated perfectly, i.e. if basis risk remains, this residual risk is still considered unavoidable and requires a market value margin.

On the other hand, a position might be valued on a mark-to-market basis although it is not hedgeable, examples being long positions in small caps or mutual funds. These can neither be shorted nor are derivatives on the underlying available. The terms unavoidable and non-hedgeable will be used synonymously below.

Non-hedgeable risk is allowed for in Hannover Re's economic valuation framework by decreasing assets and / or increasing liabilities with a risk margin. Hannover Re defines the risk margin for non-hedgeable risk as the market cost of capital required for the orderly run-off of all its rights and obligations.

Fair value hierarchy according to IFRS

The fair value hierarchy according to IFRS, which reflects characteristics of the price data and inputs used for measurement purposes, is similar to Solvency II valuation methods and structured as follows:

- Level 1: Assets or liabilities measured at (unadjusted) prices quoted directly in active and liquid markets.
- Level 2: Assets or liabilities which are measured using observable market data and are not allocable to level 1. Measurement is based, in particular, on prices for comparable assets and liabilities that are traded on active markets, prices on markets that are not considered active as well as inputs derived from such prices or market data.
- Level 3: Assets or liabilities that cannot be measured or can only be partially measured using observable market inputs. The measurement of such instruments draws principally on valuation models and methods.

If input factors from different levels are used to measure a financial instrument, the level of the lowest input factor material to measurement is determinative. The operational units responsible for coordinating and documenting measurement are organisationally separate from the operational units that enter into investment risks. All relevant valuation processes and valuation methods are documented. Decisions on fundamental valuation issues are taken by a valuation committee that meets monthly.

General valuation principles

The primary objective is an economic, market-consistent approach to the valuation of assets and liabilities. According to the risk-based approach in the internal steering processes as well as under Solvency II, when valuing balance sheet items on an economic basis, the risks that arise from a particular balance sheet item need to be considered, using assumptions that market participants would use in valuing the asset or the liability.

According to this approach, assets and liabilities should be valued as follows:

- Assets should be valued at the amount for which they could be exchanged between knowledgeable willing parties in an arm's length transaction.
- Liabilities should be valued at the amount for which they could be transferred, or settled, between knowledgeable willing parties in an arm's length transaction.
- The time value of money should be reflected, i.e. all cash flows are discounted. The discount rate should take the long-term asset management strategy into account, i.e. whether the company acts as held-to-maturity investor or not.
- When valuing liabilities no adjustment to take account of the own credit standing of the insurance or reinsurance undertaking shall be made.
- Assets and liabilities shall be valued based on the assumption that the undertaking will pursue its business as a going concern.
- Individual assets and liabilities are valued separately.
- The application of materiality, whereby the omissions or misstatements of items are material if they could, individually or collectively, influence the economic decisions that users make on the basis of the Solvency II balance sheet. Materiality depends on the size and nature of the omission or misstatement judged in the surrounding circumstances. The size or nature of the item, or a combination of both, could be the determining factor.
- The application of simplifications is feasible when the method is proportionate to the nature, scale and complexity of the risks inherent.

Unless otherwise stated, assets and liabilities other than technical provisions shall be recognised in conformity with the international accounting standards, as endorsed by the Commission in accordance with Regulation (EC) No 1606/2002.

- Valuation of assets and liabilities other than technical provisions shall be carried out, unless otherwise stated, in conformity with international accounting standards, as endorsed by the Commission in accordance with Regulation (EC) No 1606/2002 provided that those standards include valuation methods that are consistent with the valuation approach set out in Article 75 of Directive 2009/138/EC. If those standards allow for more than one valuation method, only valuation methods that are consistent with Article 75 of Directive 2009/138/EC can be used.
- Where the valuation methods included in international accounting standards, as endorsed by the Commission in accordance with Regulation (EC) No 1606/2002 are either temporarily or permanently not consistent with the valuation approach set out in Article 75 of Directive 2009/138/EC, insurance and reinsurance undertakings shall use the other valuation methods that have been deemed to be consistent with Article 75 of Directive 2009/138/EC.
- When valuing liabilities using fair value, the adjustment to take account of the own credit standing as required by IFRS 13 Fair Value Measurement has to be eliminated. When valuing financial liabilities this only applies to the subsequent adjustment after initial recognition.
- As a Guidance for marking-to-market and marking-to-model the guidance on fair value measurement within IFRS 13 may be used, for example the characteristics of inactive markets described in IFRS 13.

IFRS do not always require an economic valuation as envisaged by Article 75 of Directive 2009/138/EC.

As per 31 December 2018, Hannover Re makes use of the volatility adjustment for the first time. The impact of the application of the volatility adjustment is displayed in section D.2.

Note

The German Financial Regulatory Authority (BaFin) published an Interpretative Decision on treatment of accounts receivables, accounts payables and funds withheld on 1 January 2019, which is applied by Hannover Re for the first time as at reporting date of 31 December 2019. The paper clarifies regulation of European legislation based on directive 2015/2450 of EIOPA.

According to the Interpretative Decision, receivables and payables shown under respective items of the Solvency II balance sheet are restricted to balances that are due – the due date of the underlying payment was set before the balance sheet reporting date. Not due balances – the due date of the underlying payment is set after the balance sheet reporting date – should not be included in those Solvency II balance sheet items and therefore are part of the contractual cash flows reported within best estimates of technical provisions or reinsurance recoverables.

In accordance with the Interpretative Decision, funds withheld need to be recorded on respective balance sheet items as gross amounts. In rare cases, however, a netting of funds withheld with underlying contractual cash flows will still be applicable.

The outlined clarifications have impact on the Solvency II balance sheet. The following subsections provide further information on changes with respect to the Interpretative Decision.

D.1 Solvency II balance sheet

Difference in valuation

in TEUR	Item	Solvency II	IFRS
Assets			
Goodwill	R0010		88,303
Deferred acquisition costs	R0020		2,931,722
Intangible assets	R0030		167,908
Deferred tax assets	R0040	196,620	442,469
Property, plant & equipment held for own use	R0060	150,265	139,286
Investments (other than assets held for index-linked and unit-linked contracts)	R0070	46,949,950	46,452,621
Property (other than for own use)	R0080	2,131,705	1,749,517
Holdings in related undertakings, including participations	R0090	525,440	523,944
Equities	R0100	18,704	18,704
Equities - listed	R0110	18,704	18,704
Equities - unlisted	R0120	0	
Bonds	R0130	39,813,772	40,922,559
Government Bonds	R0140	20,898,644	23,713,827
Corporate Bonds	R0150	17,613,066	15,906,158
Structured notes	R0160	234,091	234,091
Collateralised securities	R0170	1,067,972	1,068,483
Collective Investments Undertakings	R0180	3,815,862	2,418,710
Derivatives	R0190	25,894	240,890
Deposits other than cash equivalents	R0200	479,589	439,311
Other investments	R0210	138,985	138,985
Assets held for index-linked and unit-linked contracts	R0220		
Loans and mortgages	R0230		91,824
Other loans and mortgages	R0260		91,824
Reinsurance recoverables from:	R0270	1,757,781	3,028,243
Non-life and health similar to non-life	R0280	1,340,681	1,987,643
Non-life excluding health	R0290	1,317,978	1,980,227
Health similar to non-life	R0300	22,703	7,416
Life and health similar to life, excluding health and index-linked and unit-linked	R0310	385,279	1,040,600
Health similar to life	R0320	316,273	383,735
Life excluding health and index-linked and unit-linked	R0330	69,006	656,865
Life index-linked and unit-linked	R0340	31,821	
Deposits to cedants	R0350	11,793,171	11,273,771
Insurance and intermediaries receivables	R0360	842,073	5,165,605
Reinsurance receivables	R0370	128,044	104,187
Receivables (trade, not insurance)	R0380	190,635	184,539
Own shares (held directly)	R0390		
Cash and cash equivalents	R0410	1,090,782	1,090,852
Any other assets, not elsewhere shown	R0420	156,387	195,079
Total assets	**R0500**	**63,255,708**	**71,356,409**

in TEUR	Item	Solvency II	IFRS
Liabilities			
Technical provisions – non-life	R0510	26,916,261	32,786,667
Technical provisions – non-life (excluding health)	R0520	24,834,754	30,255,280
TP calculated as a whole	R0530		
Best Estimate	R0540	24,153,780	
Risk margin	R0550	680,974	
Technical provisions - health (similar to non-life)	R0560	2,081,507	2,531,388
TP calculated as a whole	R0570		
Best Estimate	R0580	2,025,507	
Risk margin	R0590	56,000	
Technical provisions - life (excluding index-linked and unit-linked)	R0600	12,314,711	14,302,633
Technical provisions - health (similar to life)	R0610	2,940,084	3,347,948
TP calculated as a whole	R0620		
Best Estimate	R0630	2,591,172	
Risk margin	R0640	348,912	
Technical provisions – life (excluding health and index-linked and unit-linked)	R0650	9,374,627	10,954,685
TP calculated as a whole	R0660		
Best Estimate	R0670	6,983,281	
Risk margin	R0680	2,391,345	
Technical provisions – index-linked and unit-linked	R0690	1,064,661	
TP calculated as a whole	R0700		
Best Estimate	R0710	1,054,679	
Risk margin	R0720	9,982	
Contingent liabilities	R0740	3,554	
Provisions other than technical provisions	R0750	197,985	197,985
Pension benefit obligations	R0760	201,952	201,952
Deposits from reinsurers	R0770	1,130,750	4,738,870
Deferred tax liabilities	R0780	3,096,689	2,189,373
Derivatives	R0790	17,335	56,670
Debts owed to credit institutions	R0800	402,878	395,793
Financial liabilities other than debts owed to credit institutions	R0810	950,733	885,591
Insurance & intermediaries payables	R0820	604,604	1,094,949
Reinsurance payables	R0830	157,490	410,731
Payables (trade, not insurance)	R0840	291,085	291,085
Subordinated liabilities	R0850	2,343,100	2,234,388
Subordinated liabilities not in BOF	R0860		
Subordinated liabilities in BOF	R0870	2,343,100	2,234,388
Any other liabilities, not elsewhere shown	R0880	215,238	215,238
Total liabilities	**R0900**	**49,909,024**	**60,001,927**
Excess of assets over liabilities	**R1000**	**13,346,685**	**11,354,483**

For general differences in valuation between Solvency II and IFRS please refer to chapter D.

Comparison to prior year

in TEUR	Item	Solvency II 2019	Solvency II 2018
Assets			
Intangible assets	R0030		37,232
Deferred tax assets	R0040	196,620	265,894
Pension benefit surplus	R0050		
Property, plant & equipment held for own use	R0060	150,265	102,652
Investments (other than assets held for index-linked and unit-linked contracts)	R0070	46,949,950	41,729,838
Property (other than for own use)	R0080	2,131,705	1,952,795
Holdings in related undertakings, including participations	R0090	525,440	262,057
Equities	R0100	18,704	18,091
Equities - listed	R0110	18,704	18,091
Equities - unlisted	R0120	0	0
Bonds	R0130	39,813,772	35,477,235
Government Bonds	R0140	20,898,644	18,938,621
Corporate Bonds	R0150	17,613,066	15,380,040
Structured notes	R0160	234,091	229,410
Collateralised securities	R0170	1,067,972	929,165
Collective Investments Undertakings	R0180	3,815,862	3,402,451
Derivatives	R0190	25,894	40,601
Deposits other than cash equivalents	R0200	479,589	419,589
Other investments	R0210	138,985	157,019
Assets held for index-linked and unit-linked contracts	R0220		
Loans and mortgages	R0230		13,980
Loans and mortgages to individuals	R0250		
Other loans and mortgages	R0260		13,980
Reinsurance recoverables from:	R0270	1,757,781	2,169,006
Non-life and health similar to non-life	R0280	1,340,681	1,585,243
Non-life excluding health	R0290	1,317,978	1,571,448
Health similar to non-life	R0300	22,703	13,796
Life and health similar to life, excluding health and index-linked and unit-linked	R0310	385,279	587,344
Health similar to life	R0320	316,273	417,081
Life excluding health and index-linked and unit-linked	R0330	69,006	170,264
Life index-linked and unit-linked	R0340	31,821	−3,582
Deposits to cedants	R0350	11,793,171	3,189,132
Insurance and intermediaries receivables	R0360	842,073	4,100,240
Reinsurance receivables	R0370	128,044	89,877
Receivables (trade, not insurance)	R0380	190,635	246,529
Cash and cash equivalents	R0410	1,090,782	1,151,349
Any other assets, not elsewhere shown	R0420	156,387	147,568
Total assets	**R0500**	**63,255,708**	**53,243,298**

in TEUR	Item	Solvency II 2019	Solvency II 2018
Liabilities			
Technical provisions – non-life	R0510	26,916,261	24,209,930
Technical provisions – non-life (excluding health)	R0520	24,834,754	22,431,296
TP calculated as a whole	R0530		
Best Estimate	R0540	24,153,780	21,882,335
Risk margin	R0550	680,974	548,962
Technical provisions - health (similar to non-life)	R0560	2,081,507	1,778,634
TP calculated as a whole	R0570		
Best Estimate	R0580	2,025,507	1,732,817
Risk margin	R0590	56,000	45,817
Technical provisions - life (excluding index-linked and unit-linked)	R0600	12,314,711	8,312,352
Technical provisions - health (similar to life)	R0610	2,940,084	2,387,312
TP calculated as a whole	R0620		
Best Estimate	R0630	2,591,172	2,207,039
Risk margin	R0640	348,912	180,273
Technical provisions – life (excluding health and index-linked and unit-linked)	R0650	9,374,627	5,925,039
TP calculated as a whole	R0660		
Best Estimate	R0670	6,983,281	4,416,830
Risk margin	R0680	2,391,345	1,508,209
Technical provisions – index-linked and unit-linked	R0690	1,064,661	−34,587
TP calculated as a whole	R0700		
Best Estimate	R0710	1,054,679	−43,416
Risk margin	R0720	9,982	8,829
Contingent liabilities	R0740	3,554	6,649
Provisions other than technical provisions	R0750	197,985	183,450
Pension benefit obligations	R0760	201,952	184,005
Deposits from reinsurers	R0770	1,130,750	499,077
Deferred tax liabilities	R0780	3,096,689	2,885,424
Derivatives	R0790	17,335	6,625
Debts owed to credit institutions	R0800	402,878	326,558
Financial liabilities other than debts owed to credit institutions	R0810	950,733	829,850
Insurance & intermediaries payables	R0820	604,604	763,562
Reinsurance payables	R0830	157,490	494,228
Payables (trade, not insurance)	R0840	291,085	407,265
Subordinated liabilities	R0850	2,343,100	1,617,143
Subordinated liabilities in BOF	R0870	2,343,100	1,617,143
Any other liabilities, not elsewhere shown	R0880	215,238	142,928
Total liabilities	**R0900**	**49,909,024**	**40,834,458**
Excess of assets over liabilities	**R1000**	**13,346,685**	**12,408,840**

Solvency II recognition, valuation and presentation of balance sheet items follows regulatory requirements. The IFRS balance sheet is taken from Hannover Re Group's annual financial statements and shown in the column "IFRS" on the right hand side.

Note that for allocation of investments under own management to Solvency II balance sheet items, detailed EIOPA regulations on classification as well as BaFin regulations (e.g. regarding collective investment undertakings) have to be followed and are not utilised for the IFRS balance sheet items.

Comparing Solvency II and IFRS balance sheets, Hannover Re Group classifies differences in recognition, valuation and presentation into the following categories:

- Adjustments of self-managed investments, which comprise market valuation vs. valuation at amortised cost for several, but not all self-managed investments under IFRS,
- Adjustments of technical items (incl. risk margin), where technical items are revaluated for Solvency II purposes as described in section D.2,
- Adjustments of other balance sheet items (without deferred taxes), which mostly consist of differences in recognition of balance sheet items for Solvency II vs. IFRS (e.g. intangible assets) as well as reclassifications, together with market valuation (e.g. of subordinated liabilities),
- Deferred tax, which comprises the effects on deferred tax assets and deferred tax liabilities when moving from IFRS to Solvency II valuation.

Those adjustments amounted to a difference in excess of assets over liabilities (including minorities) for Solvency II compared to IFRS of TEUR 1,992,202 as at the balance sheet date.

For the Solvency II balance sheet as at the balance sheet date, the principles of recognition, valuation and presentation remained unchanged compared to the previous period, with the exception of the first-time application of the BaFin Interpretative Decision as mentioned at the beginning of this section. The change of presentation of payables and receivables decreased both total assets and total liabilities, respectively, whereas grossing up of funds withheld lead to an increase of total assets and total liabilities.

D.2 Technical provisions

The technical provision (TP) under Solvency II is determined as the sum of the best estimate liability (BEL) and the risk margin (RM).

Cash flows are discounted with risk-free rates in line with EIOPA requirements. A matching adjustment is not applied. Furthermore, the risk-free yield curves are not adjusted as set out in Art. 308c of the directives 2009/138/EC.

A temporary deduction according to Art. 308d of the directives 2009/138/EC is not applied. Furthermore, the concept of calculating the "TP as a whole" is currently not applied.

The volatility adjustment according to Article 77d of the Directive 2009/138/EC was applied for calculating the BEL. For year-end 2019 Hannover Re has received the approval from BaFin for a dynamic modelling of the volatility adjustment. By this the effect of the volatility adjustment is captured in the calculation of the required capital more adequately. The following table shows the impact of a non-application of a volatility adjustment on the TP, the Solvency Capital Requirement (SCR) and the basic own funds and the amounts of own funds eligible to meet the SCR.

Even under a non-application of a volatility adjustment, the solvency ratio is still comfortable.

Impact of non-application of a volatility adjustment

in TEUR	Amount with Long Term Guarantee measures and transitionals	Impact of volatility adjustment set to zero
Technical provisions	40,295,633	472,489
Basic own funds	14,336,678	−297,529
Eligible own funds to meet Solvency Capital Requirement	14,336,678	−297,529
Solvency Capital Requirement	5,719,129	306,326

For Solvency II purposes, all contracts have to be evaluated over the whole lifetime within the individual contract boundaries (ultimate view). The contract boundary is defined as the future date on which at least one of the following criteria is met:

- The (re)insurance undertaking has an unilateral right to terminate the contract.
- The (re)insurance undertaking has an unilateral right to reject premiums payable under the contract.
- The (re)insurance undertaking has an unilateral right to amend the premiums or benefits payable under the contract in such a way that the premiums fully reflect the risks.

In case no such condition is met, the policies are projected until their natural expiry.

The BEL is shown on a gross basis in the following, i.e. before the reduction of reinsurance recoverables, if not stated otherwise. The RM is shown on a net basis, i.e. reflecting the risk mitigating effect of retrocessions. This is consistent with the methodology used in the Solvency II balance sheet.

Best Estimate Liability (BEL)

The calculation of the BEL is based on the projection of future cash in- and outflows including premiums, claims, and expenses. Best estimate assumptions are used in the calculation of the BEL. The expenses consist of direct administration expenses and costs of on-going operations.

Cash flows in connection with funds withheld (FWH) – increase, decrease or interest on FWH – of the underlying business are usually no longer netted against the liability cash flows (according to the Interpretative Decision on treatment of funds withheld published by BaFin on 1 January 2019). Any FWH shown as such in the IFRS balance sheet will need to be shown as a FWH in the Solvency II balance sheet. For very risk remote transactions a netted presentation is still proceeded in line with the IFRS presentation. For all other transactions the FWH are grossed up. This is a change from previous (more wider netting) practice but it is just of presentational nature (extension of the balance sheet) with no impact on the Solvency II Own Funds.

According to the Interpretative Decision on treatment of accounts receivables and account payables published by BaFin on 1 January 2019, the not due balances of accounts payables and receivables were allocated to the best estimates of technical provisions (for assumed business) or reinsurance recoverables (for retroceded business).

According to Solvency II there is a differentiation between business accepted – shown on the liability side – and business ceded – shown on the asset side. According to IFRS, the assignment to the asset and liability side, respectively, partially depends on the sign of the accounting figures.

For the Property & Casualty business, the TP does not include any financial options and guarantees (FOGs). For the Life & Health business, there is an immaterial amount of FOGs for US business. The latter is included in the BEL.

The projections are done separately for assumed and retroceded business using the same bases, methods and assumptions.

Risk Margin (RM)

According to Art. 37 (1) of the delegated acts (EU) 2015/35, a uniform Cost of Capital (CoC) approach is used for calculating the risk margin.

The CoC factor is 6%. The required capital is the SCR under Solvency II according to Hannover Re's internal model. The allocation of the SCR to the lines of business reflects the contribution to the SCR (Art. 37). The allocated SCR contributions are projected to future periods using appropriate risk drivers for each line of business.

According to Solvency II principles, the risk margin of all legal entities is calculated on a standalone basis, thus there is no allowance for diversification effects between legal entities. Diversification is taken into account within a legal entity including diversification effects between Property & Casualty and Life & Health.

D.2.1 Technical provisions of Property and Casualty Reinsurance

This section provides information on the technical provisions held for property and casualty reinsurance and insurance. The next sections shows BEL and RM per line of business and the following section provides further detail on the valuation methods.

D.2.1.1 Value of technical provisions

Gross technical provisions property & casualty by lines of business
in TEUR

Line of business	BEL	RM	TP	TP IFRS	Difference SII and IFRS
General liability insurance	3,219,803	90,245	3,310,048	3,996,629	−686,581
Workers' compensation insurance	175,898	4,786	180,683	242,348	−61,665
Income protection insurance	372,158	13,667	385,825	421,734	−35,909
Fire and other damage to property insurance	3,747,911	100,708	3,848,619	4,089,093	−240,474
Motor vehicle liability insurance	2,102,806	64,220	2,167,026	2,424,658	−257,632
Credit and suretyship insurance	1,137,833	24,309	1,162,142	1,439,411	−277,269
Marine, aviation, transport	1,020,812	25,635	1,046,447	1,276,871	−230,424
Other motor insurance	844,598	22,127	866,725	904,115	−37,391
Other insurance	207,083	6,258	213,341	280,615	−67,275
Non-proportional health reinsurance	1,451,273	36,649	1,487,922	2,140,189	−652,267
Non-proportional property reinsurance	3,724,580	120,972	3,845,552	4,906,219	−1,060,667
Non-proportional marine, aviation and transport	852,254	23,958	876,212	1,278,689	−402,477
Non-proportional casualty reinsurance	7,322,278	203,441	7,525,719	9,386,096	−1,860,377
Total Non-Life Obligation	**26,179,288**	**736,974**	**26,916,261**	**32,786,667**	**−5,870,406**

The line of business "Other insurance" comprises assistance, legal expenses insurance, medical expense insurance and miscellaneous financial loss.

Compared to 2018, the figures change due to the different treatment of payables receivables and depots see also D.2.

The technical provisions under Solvency II decreased in 2019 due to the partial sale of HGS (formerly Inter Hannover) to HDI Global SE. Nevertheless, business directly assumed by Hannover Re from HGS still remains within the figures.

D.2.1.2 Valuation of technical provisions

For the calculation of the BEL under Solvency II the business of the company is split into homogeneous risk groups such that the nature, scale and complexity of the business is adequately taken into account.

In general, there are no deviations regarding the valuation methods between the different lines of business, therefore the valuation methods described in the following paragraphs are valid for all segments of property and casualty reinsurance.

The evaluation of the BEL is based on the estimation of future cash flows, including all expected (future) cash in- and outflows related to existing obligations taking into account the time value of money. The BEL is calculated separately with respect to the best estimate premium provisions and the best estimate claims provisions.

The Solvency II calculations to determine all relevant cash flows for premium and claims provision reflect a best estimate projection. The calculation of the BEL is based on gross data. Cash flows for premiums, claims and costs are modelled separately.

For the calculation, a whole-contract-view (with respect to the contractual agreements) is taken into account, i.e. all cash in- and outflows are projected to the economic ultimate within the contract boundaries.

The BEL comprises the sum of the discounted cash flows and is aggregated to the minimum lines of business according to Solvency II requirements.

For the calculation of the BEL, development pattern and estimated ultimates are applied on the homogeneous risk groups. The pattern and the ultimates are determined on run-off triangles using standard actuarial methods, in particular, variations of the Chain-Ladder-Method. The triangles are generated using up-to-date and trustworthy data.

The cash flows are discounted using the risk-free interest rates provided by EIOPA and converted to the reporting currency EUR using the exchange rate on the valuation date.

Overall, the described valuation bases, methods and assumptions ensure that the calculation of the BEL is proportionate to the nature, scale and complexity of the underlying risks.

Reinsurance Recoverables

In general, the projection of the reinsurance recoverables is undertaken analogously to the principles applied for the calculation of technical (gross) provisions of property and casualty reinsurance.

The reinsurance recoverables are adjusted with regard to the expected loss upon default of the counterparty. This adjustment is determined separately and is based on the valuation of the probability of a default per counterparty over the whole lifetime – whether be it through insolvency

or legal dispute – as well as the resulting change in cash flows due to loss per default at the respective time under consideration.

D.2.1.3 Comparison with other provisions

Comparison to IFRS provisions

This section outlines the reconciliation of the net technical provisions from IFRS to the Solvency II.

Reconcilliation Solvency II vs. IFRS
in TEUR

Description	2019
IFRS "net technical provisions" property and casualty (incl. unearned premium reserve)	**30,799,024**
Discounting of cash flows	−1,758,798
Risk margin	736,974
Differences in actuarial estimates and business volume differences	−1,682,610
Total revaluation effect from IFRS to Solvency II	**−2,704,434**
Netting of accounts payables and receivables	−2,519,010
Solvency II net technical provisions property and casualty	**25,575,580**

The individual items of the reconciliation refer to the following aspects:

- Solvency II technical provisions are present values of future cash flows discounted at the risk-free interest rate, whereas under IFRS generally annuity reserves are discounted, only.
- The risk margin under Solvency II covers the costs of providing an amount of eligible own funds equal to the Solvency Capital Requirement necessary to support the insurance and reinsurance obligations over their lifetime.
- Solvency II technical provisions are calculated as a probability weighted average, whereas under IFRS the technical provisions represent a more prudent best estimate. In addition, Solvency II takes a homogenous ultimate view while IFRS distinguishes earned and unearned loss and premium reserves. Both effects are presented as item “Differences in actuarial estimates and business volume differences”.
- Due to the interpretative decision, the payables receivables are netted.

Comparison to BEL of last year

Comparison to prior year

in TEUR	2019	2018
BEL gross	26,179,288	23,615,152
BEL net	24,838,606	22,029,908
RM	736,974	594,779

Most of the increase of the BEL is due to the effect that the funds withheld (FWH) are not netted anymore. The net effect of this change is TEUR 2,015,153.

The BEL (excluding funds withheld) increases due to declined interest rates, a weaker Euro and increased business volumes.

Beside this, the large loss Jebi showed an unfavorable development. Furthermore, the US casualty development and the decision on the Ogden rate lead to a further increase of the BEL. At the same time, the BEL reduced due to lower future expenses estimates and due to the partial sale of HGS (formerly Inter Hannover) to HDI Global SE. Nevertheless, business directly assumed by Hannover Re from HGS still remains within the figures.

D.2.2 Technical provisions Life & Health

In the section, we provide quantitative information with respect to Life&Health BEL, RM, TP as well as a comparison to the IFRS liability.

Details with respect to the basis of valuation, the valuation methods, and the main assumptions underlying the calculation of the TP are given in Section „D.2.2.2 Valuation of technical provisions".

Material differences between the TP and the IFRS liability are explained in Section D.2.2.4.

D.2.2.1 Quantitative Information on technical provisions Life & Health

The following companies comprise the Life & Health business for the Hannover Re Group

- Hannover Rück SE, Hannover
- E+S Rückversicherung AG, Hannover
- Hannover Life Reassurance Company of America, Orlando
- Hannover Life Re of Australasia Ltd, Sydney
- Hannover Re (Ireland) DAC, Dublin
- Hannover Life Reassurance Bermuda Ltd, Hamilton
- Hannover Life Reassurance Africa Ltd, Johannesburg.

The following table provides an overview of the liabilities of the segments. The index-linked and unit-linked business is contained in the life segment.

Technical provisions Life & Health per line of business
in TEUR

Line of Business	BEL	RM	TP	IFRS liability	Comparison IFRS/ Solvency II
Life	8,037,960	2,401,328	10,439,288	10,954,685	−515,398
Health	2,591,172	348,912	2,940,084	3,347,948	−407,863
Total	**10,629,132**	**2,750,240**	**13,379,372**	**14,302,633**	**−923,261**

Details regarding the changes in the treatment of funds withheld (FWH) as well as payables and receivables are provided in Section D.2. The segmentation into the Life and Health lines of business is slightly different under Solvency II and IFRS. A reconciliation from the IFRS liability net of reinsurance to the Solvency II TP net of reinsurance is provided in Section D.2.2.4.

D.2.2.2 Valuation of the technical provisions Life & Health

Valuation basis

All business is valued employing current best estimate assumptions. The general methodology used for calculating the BEL, RM and TP is described in Section D.2.

For material treaties the BEL is calculated individually per treaty. The calculation is based on weighted model points or – if available and material – based on individual policy data. Short-term treaties are combined in modelling groups. The portfolio development is modelled using appropriate mortality and morbidity tables, respectively, as well as lapse rates. A certain part of the risk premium basis business is modelled based on a loss-ratio based approach.

Valuation methods

Based on weighted model points (e.g. tariff, gender mix, entry age, policy term, reinsurance conditions) and policy data, respectively, as well as assumptions for mortality, morbidity, lapse and relevant interest rate curves, the portfolio development and all resulting reinsurance profit items (i.e. premium, commission, benefits, reserve changes, and interest) are projected into the future.

Assumed and retroceded business is projected separately. Management expenses are allocated to treaties / modelling groups and projected into the future. The BEL is calculated in the respective treaty main currency and using currency specific interest rate curves.

Solvency II admissible simplified methods are not used for calculating the BEL and RM, respectively.

Material assumptions for the Life & Health business (excluding longevity business)

Business is written all over the world with a wide range of different policy types, tariffs and mortality / morbidity tables.

For treaties projected individually, the calculation of the BEL is initially based on weighted model points (or detailed policy data). The assumptions are monitored when the accounts from the cedants are booked and adjusted, if necessary. The base mortality / morbidity table is usually the table used in pricing. Also here adjustments are made in case that the actual figures materially differ from expectation, or if other relevant information becomes available.

For the majority of the business in the US and UK market, specific mortality and morbidity assumptions are derived from Hannover Re's base standard tables and updated regularly. For financial solution and morbidity risk solution business in the US market, mortality / morbidity assumptions are set using best estimate pricing assumptions. Also they are validated regularly. The projection of structured financial transactions in the US market allows for counterparty recapture assumptions. Rates can be increased for certain health business in the US market. This circumstance is reflected in the projections since this is market practice of managing the business.

Lapse rates are set from the original pricing basis of the treaty and adjusted for actual experience where credible data exists and for changes of the internal view of long-term lapse rates.

The reinsurance conditions of the treaty are reflected in the calculation of the BEL.

With exception of mortality business in the US, UK and Irish market, no allowance for future mortality improvement is made.

For smaller treaties modelled in an aggregate manner, more general assumptions are made. Base mortality / morbidity tables are chosen in order to be appropriate for the respective market covered by the modelling group calculation. Reinsurance conditions are representative for the respective modelling group. The assumptions are monitored based on the booked results per modelling group in the past and adjusted if necessary.

For a small portion of the individually modelled business as well as of the business modelled in groups, expected claims are based on claims ratios. I.e. instead of using explicit mortality / morbidity and lapse rates the claims are estimated via a certain proportion of the premium.

Generally, future management actions are only taken into account for the SCR calculations of certain American and Australian business. Therefore they affect only the RM via the SCR (determined with the internal model), but not the best estimate projections. There are some exceptions for our US business, most importantly, the US mortality business. A detailed management action plan (“FMA Plan”) has been implemented to address issues with parts of the US mortality portfolio. The expected cash flows from in-force management are reflected in the 2019 TP.

Material assumptions for the longevity business

The calculation of the BEL is based on policy data. Best estimate base mortality assumptions are set on a treaty level. Best estimate mortality improvement assumptions are set either by treaty or by country.

The assumptions are monitored when the accounts from the cedants are booked and adjusted, if necessary, or if other relevant insight emerges. Furthermore, detailed mortality studies are carried out to allow for a comparison between expectation and experience and to adjust if necessary.

Assumptions changes in comparison to the previous reporting period

For certain products in the US mortality market, detailed analyses were undertaken, which resulted in an increase in BEL. Furthermore, an adjustment of the mortality and lapse assumptions for certain long-term treaties of the UK branch as well as a mortality assumption update for selected treaties of the Australian and South African market resulted in an increase in BEL.

In contrast, the following effects caused a decrease in BEL. For some products in the US market there exists a right to convert a term policy into a permanent policy until death. The assumptions regarding the level of exercise of this option were adjusted. The mortality improvement assumptions were updated for longevity business in the UK market. Furthermore, the mortality assumptions were adjusted for long-term life business of the HK branch and for certain life and longevity treaties of the UK branch.

Reinsurance recoverables

For all retrocessions to third party reinsurers where the recoverable represents an asset to Hannover Re, a default adjustment according to their rating was included.

In total the reinsurance recoverables under Solvency II are positive (TEUR 417,100), i.e. this position is to be seen as an asset for Hannover Re and reduces the net Solvency II reserves.

The respective IFRS reinsurance recoverables amount to TEUR 1,040,600. Some revaluation steps between IFRS and Solvency II are provided in Section D.2.2.4.

Risk assessment

The main area of uncertainty around the level of the TP relates to a potential deviation of actual experience from the underlying assumptions and the sensitivity of cash flows to changes in those assumptions. The Risk Margin can serve as an indicator of such uncertainty.

The key driver to the overall level of uncertainty comes in the form of the mortality, longevity and morbidity business. This also becomes evident from the capital requirements under Solvency II presented in Section E.

For the mortality business, small changes in the mortality rates can have significant effects on the claims payments. However, for a significant share of the portfolio, this risk is largely mitigated by profit commission arrangements or by limits regarding the retention of the cedant such that changes in mortality rates would change the underlying cash flow pattern but would have a limited impact on the associated BEL. The mortality rates are well grounded from available data. For longer tailed products, in particular in the US and UK market, mortality improvement and expert setting can also play an important role. The valuation of the US mortality business reflects the expected cash flows from inforce management activity, most notably rate increases pursuant to the contractual rights.

Significant mortality risk is stemming from US mortality business. The actual mortality experience for the portfolio in question proved to be better than expected in 2019. Experience continues to be monitored on an ongoing basis.

The valuation of this business reflects the expected cash flows from inforce management activity, most notably rate increases initiated in 2018 pursuant to our contractual rights. Uncertainty results since it is expected that some cedants will seek arbitration proceedings with respect to the implemented rate increases. Based on information currently available to us, we take a favorable view of our legal position.

The longevity business is very dependent on the appropriateness of the underlying mortality tables and mortality improvement assumptions in particular due to the long contractual period. While the premiums are known, the expected claim payments are sensitive to the underlying mortality table, and more importantly in the later years, the mortality improvement that is applied to the underlying table. The underlying mortality assumptions are based on copious amounts of data and experience studies, both internally held and industry accepted. However, a certain level of judgment is involved in assessing the applicability of historical mortality improvement observations for forward-looking purposes. In general, changes in the interest rates have little impact as to the cash flows; however, they can have a material impact on the discounting of the cash flows.

Morbidity risks are another driver of uncertainty in the modelling of business. Relevant morbidity risks are stemming from potential changes of incidence rates for Asian critical illness business as well as Australian disability business.

Changes in lapse rates are material for certain products as well, with a varying level of confidence based on product design and the experience available. The direction of the lapse effect is dependent on the treaty and type of reinsurance used. In aggregate, an increase in lapse rates would be more adverse in that Hannover Re Group would forgo positive expected future cash flows.

Pandemic risk is a tail risk, i.e. a risk with a low probability of occurrence but a potential high impact. It has no impact on the expected mortality claims used for the calculation of the BEL. However, pandemic risk is one of the key drivers of capital requirements and is therefore allowed for in the Risk Margin.

Financing business is generally not or only moderately exposed to mortality or morbidity risks and thus experiences a low level of uncertainty. Repayment of the outstanding financing amount can diminish on a combination of adverse biometric experience and lapses, but this is accounted for in the Risk Margin. Cedant default risk is also accounted for in the Risk Margin.

D.2.2.3 Comparison of the technical provision with the IFRS liability

In the following, a reconciliation between IFRS and Solvency II liabilities is provided. The reconciliation steps are explained below. The figures are net of reinsurance recoverables.

Reconciliation from IFRS to Solvency II
in TEUR

Reconciliation Step	Explanation	2019
(1)	**IFRS liability net of reinsurance**	**13,262,033**
(2)	Deferred Acquisition Costs (DAC) and Contract Deposit (CD)	1,315,127
(3)=(1)+(2)	**Technical IFRS liability net of reinsurance**	**14,577,160**
(4)	Book-to-Market value adjustments for non-capital market exposed deposits	712,985
(5)	Risk Margin	2,750,240
(6)	Further differences in methods/ assumptions	−3,964,731
(7)	Netting of accounts payables and receivables	−1,113,382
(8)=(3)+…+(7)	**Solvency II TP net of reinsurance**	**12,962,272**

(2) DAC and CD are not applicable under Solvency II.

(4) For deposits which are not exposed to capital market risks, the IFRS values are reconciled to the Solvency II values (Book-to-Market value adjustments). These are mainly grounded in recognizing the excess of interest rate guarantees over the discount rate used.

In the following, the sources of the differences in methods and assumptions are described.

(6a) The calculation of the BEL includes all future cash flows. For certain business, this means negative liabilities. In contrast, IFRS does not allow for negative liabilities.

(6b) The IFRS liability includes for certain treaties a provision for the risk of adverse deviation (PAD) in the form of buffers in the assumptions, but no further explicit risk margin like in the Solvency II methodology. The TP includes a risk margin but no buffers.

(6c) The BEL reflects current best estimate assumptions (e.g., regarding mortality, mortality improvements and lapse), whereas the IFRS assumptions are locked-in for certain business (depending on the IFRS / US GAAP FAS type).

(6d) The BEL (and the RM) is discounted with current risk free interest rates, whereas the IFRS liabilities are calculated using locked-in interest rates. The average valuation interest rate is higher than the current swap rates.

(6e) For some treaties the Solvency II contract boundaries differ from the contract boundaries under IFRS.

(6f) Due to different reporting deadlines under IFRS and Solvency II there may appear differences.

(6g) Reclassification from non-technical positions to technical items may cause further differences.

E. Capital Management

This section presents the main elements of Hannover Re's capital management.

E.1 Own Funds

E.1.1 Management of own funds

Hannover Re aims to maintain a capitalisation of at least 180% under Solvency II. In addition, a threshold of 200% is defined. Own funds are managed in such a way that the minimum capitalisation is not undercut in the planning. This is achieved through coordinated planning and management of all own funds components, dividend payments and the risk profile.

The capital management process contains a classification of all own funds components with regard to the Solvency II tiering specifications, with regard to basic and ancillary own funds and an assessment of the availability of the different own funds components.

In general, it is our objective for our hybrid capital instruments to correspond with the tier 2 category requirements. The timing of each issue takes into account the current market conditions and our medium-term growth objectives. In case of a required replacement of a subordinated bond, the detailed replacement planning process normally begins a year before the regular call date.

Hannover Re Group’s economic capital model is used for the evaluation of both the quantitatively measurable individual risks and also the overall risk position. The assumptions and calculation methods for the determination of the risk-bearing capacity of the company are recorded in the documentation of the risk model and in regular reports.

E.1.2 Tiering

The classification of own funds with regard to their ability to cover losses represents a central component of regulatory capital requirements pursuant to Solvency II. The individual components of the own funds will be classified into one of three quality classes (“tiers”).

Own fund items classified under tier 1 possess the highest degree of quality, due to the fact that they are permanently available. They equalise verifiably unexpected losses, both during ongoing business operations and in the event of a company liquidation. Tier 2 refers to basic own funds and ancillary own funds which possess the ability to equalise losses incurred in the event of a company liquidation. Own fund items, which are not categorised under tier 1 or tier 2, are categorised under tier 3.

E.1.3 Basic own funds

The following table displays the composition of basic own funds held by Hannover Re Group as of 31 December 2019.

Basic own funds

in TEUR	2019	2018
Tier 1 unrestricted	11,943,140	10,935,567
Ordinary Share capital	120,597	120,597
Share premium account related to ordinary share capital	880,608	880,608
Reconciliation reserve	11,587,746	10,639,839
Non available minority interests at Group level	−645,811	−705,477
Tier 1 restricted	546,522	538,136
Subordinated liabilities	546,522	538,136
Tier 2	1,796,577	1,079,007
Subordinated liabilities	1,796,577	1,079,007
Tier 3	50,439	81,848
Net deferred tax assets	50,439	81,848
Total	**14,336,678**	**12,634,559**

The change in basic own funds is a result of the increasing reconciliation reserve, a slight decrease in minorities, the issue of a subordinated bond in the period under review, the change in the value of existing subordinated capital as well as a reduction of the net deferred tax assets position.

The reconciliation reserve change results from a change in excess of assets over liabilities and – compared to the previous year – change in foreseeable dividend. All changes in individual balance sheet items are explained in section D and together result in a change of excess of assets over liabilities.

Solvency II imposes restrictions on the availability of own funds to cover SCR. For Hannover Re restrictions arise from non-available minority interests at Group level which relate primarily to the minority interests in E+S Rück.

Tier 3 capital arises as a consequence of net deferred tax assets in branches and subsidiaries of the Hannover Re Group.

Restrictions may arise from limitations to use tier 2 and tier 3 capital to meet SCR and MCR. Such restrictions do not arise for Hannover Re with respect to SCR coverage but with respect to the availability of tier 2 and tier 3 capital to cover MCR.

Funds are denoted as eligible if they can effectively be used to cover the SCR or MCR.

Available and eligible own funds

in TEUR	2019	2018
Available own funds	14,336,678	12,634,559
Eligible own funds to meet SCR	14,336,678	12,634,559
Eligible own funds to meet MCR	13,272,736	12,182,188

E.1.3.1 Movement analysis of eligible own funds and solvency capital requirements

The movement analysis of Solvency II eligible own funds and SCR in the year under consideration is presented in the table below.

Eligible own funds and SCR movement analysis

in TEUR	Eligible own funds	SCR
Year end 2018	**12,634,559**	**5,135,387**
Model changes	279,834	−145,725
Operating Impact	1,245,830	547,717
Market variances	430,299	410,200
Taxes	−277,751	−228,449
Capital management	23,908	-
Year end 2019	**14,336,678**	**5,719,129**

Model changes include internal model changes approved by the regulator in the course of the model governance process. In addition, it includes model updates for the calculation of technical provisions or other items. The main impact for eligible own funds during the reporting period relates to lower future expenses estimates for property and casualty business. This is partly offset by an increase in life and health risk margin as a result of a recalibrations of US mortality risk. The introduction of the dynamic volatility adjustment is the main driver for SCR model changes. Offsetting effects result from the new model for cyber risks as well as the mentioned US mortality recalibration.

Operating impacts mainly comprise the investment result, unwind, new business value and the P&C run-off result as well as assumption changes. During the reporting period, the main drivers are the investment income and the positive contribution from new business in life and health reinsurance as well as a favourable run-off of the existing portfolio in property and casualty reinsurance. For the SCR the effect from operating experiences mainly stems from an increased business volume.

Market variances comprise changes in eligible own funds and SCR due to changes of foreign exchange rates, interest rates, credit spreads and other financial market indicators. The depreciation of the Euro against our main foreign currencies and the decrease in credit spreads with the associated valuation increase in fixed-income securities lead to an increase in own funds and SCR. The decline in interest rates has a negative impact on own funds and SCR.

All items are shown on a pre-tax basis, tax effects including tax payments and changes in deferred taxes are shown separately. The large SCR impact is mainly due to an increase in pre-tax SCR, which is caused by an increase in business volume.

Capital management comprises dividend payments, minor changes in foreseeable dividends as well as the issuance of another subordinated bond, see below.

E.1.3.2 Reconcilliation IFRS to Solvency II basic own funds

Finally, we present the transition from IFRS shareholders' equity to Solvency II basic own funds.

Reconciliation of IFRS shareholders' equity to Solvency II own funds

in TEUR	2019	2018
Shareholders' equity IFRS incl. minority interests	**11,354,482**	**9,542,028**
Adjustments Solvency II to IFRS		
Adjustments of investments under own management	584,123	515,356
Adjustments of technical items (incl. risk margin)	2,953,439	4,062,828
Adjustments of other balance sheet items	−392,196	−337,316
Deferred tax	−1,153,165	−1,374,056
Economic shareholders' equity incl. minority interests	**13,346,685**	**12,408,840**
Foreseeable dividends	−707,295	−685,948
Subordinated liabilites	2,343,100	1,617,143
Available economic shareholders' equity incl. minority interests	**14,982,489**	**13,340,036**
Non available minority interests at Group level	−645,811	−705,477
Total amount of basic own funds after deductions	**14,336,678**	**12,634,559**

E.1.3.3 Ordinary share capital

The ordinary share capital (capital stock of Hannover Rück SE) stands at TEUR 120,597 as of the balance sheet date. The shares have been paid up in full. The capital stock is divided into 120,597,134 no-par value registered shares which carry both voting and dividend rights. Every share grants the same right to vote and same dividend entitlement. As at the balance sheet date no treasury shares were held by the company.

No new shares were issued in the reporting period.

The capital stock paid in and the corresponding issue premium in the capital reserve form the own funds bearing the highest degree of quality, which can be relied upon to equalise losses in the course of business operations.

E.1.3.4 Share premium account related to ordinary share capital

The issue premium in relation to the capital stock of Hannover Re Group stands at TEUR 880,608 as of the balance sheet date.

The share premium account is a separate item to which premiums, the amount between the value attained at the point in time of issuance and the value recorded in the capital stock, are transferred in accordance with national statutory provisions.

E.1.3.5 Reconciliation reserve

The reconciliation reserve pursuant to Solvency II represents an item of basic own funds attributable (in unlimited capacity) to category tier 1. It primarily comprises the excess of assets over liabilities, adjusted by the subscribed capital, the capital reserve and shareholder dividend payouts.

At the balance sheet date, the reconciliation reserve was TEUR 11,587,746.

The reconciliation reserve represents reserves (in particular retained earnings) less value adjustments (e.g. ring-fenced funds); it does, moreover, contain the differences between the accounting valuation pursuant to IFRS and the valuation pursuant to the Directive 2009/138/EC.

E.1.3.6 Subordinated own funds

Hannover Re Group holds three subordinated loans in its portfolio at the balance sheet date, which fulfil the criteria stipulated under Solvency II pertaining to subordinated liabilities, and which thus can be categorised under basic own funds.

Subordinated own funds

in TEUR	2019	2018
Subordinated debts (Tier 1 – restricted)	546,522	538,136
Subordinated debts (Tier 2)	1,796,577	1,079,007
Total	**2,343,100**	**1,617,143**

In the reporting period, a new subordinated bond was issued. The issue took place on 9 October 2019. The nominal value is TEUR 750,000 and the bond is classified as tier 2.

In addition, further subordinated liabilities with equity character exist as of the reporting date:

On 15 September 2014 Hannover Rück raised a subordinated debt with a nominal value of TEUR 500,000 from capital markets. This debt is classified under Solvency II as “(grandfathered) restricted tier 1” own funds for a transitional period of a maximum of 10 years.

On 20 November 2012 and 14 September 2010, Hannover Rück placed two subordinated debts, each of an amount of TEUR 500,000 in the European capital market via its subsidiary Hannover Finance (Luxembourg) S.A. These subordinated debts are classified under Solvency II as (grandfathered) tier 2 own funds of Hannover Re Group.

E.1.4 Transferability

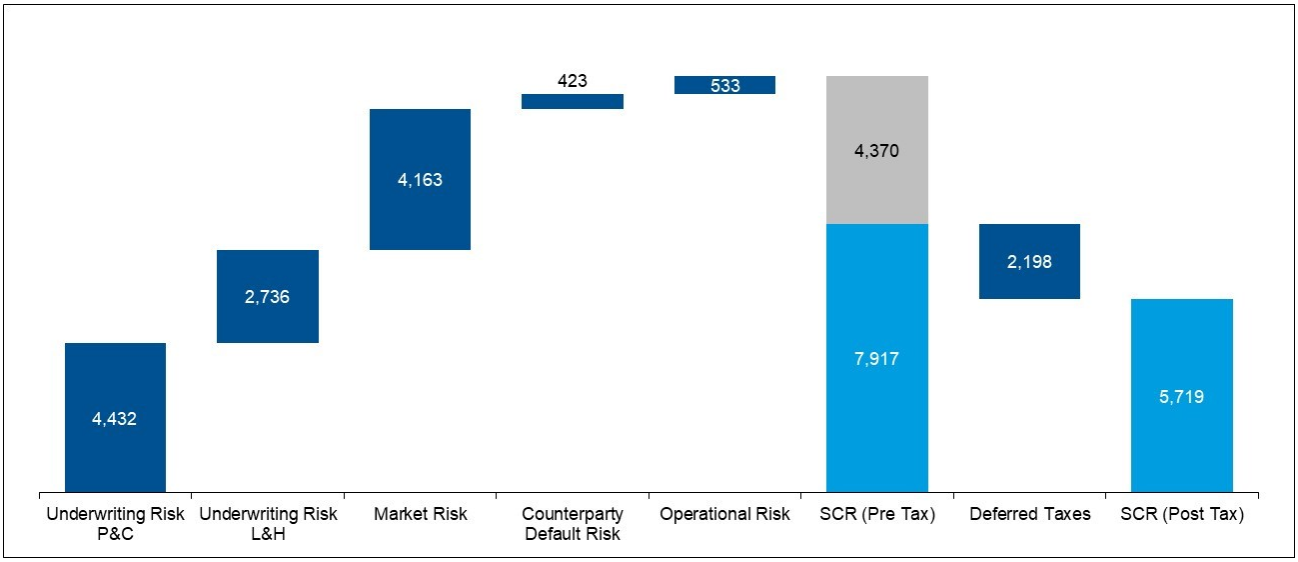
Hannover Re Group actively manages its capital resources. Restraints in transferability arise due to minority interests in E+S Rück of TEUR 645,811. In the period under consideration, no further issues were identified that restrict the transferability of the capital for the covering of the solvency capital requirements.

E.2 Solvency Capital Requirement and Minimum Capital Requirement

E.2.1 Solvency Capital Requirement per Risk Category

This chapter deals with the Solvency Capital Requirement and its sources. The risk categories of the internal model of Hannover Re are defined in Chapter E.4.1.4. Capital requirements per risk category are shown in the following.

Solvency Capital Requirement – per risk category
in EUR million



Solvency Capital Requirement (SCR)
in TEUR

Solvency Capital Requirement	2019	2018
Underwriting risk - Property & Casualty	4,432,205	3,819,254
Underwriting risk - Life & Health	2,735,619	2,212,474
Market risk	4,163,045	3,833,472
Counterparty default risk	423,260	312,553
Operational risk	532,642	575,329
Diversification	−4,369,544	−3,648,048
Total risk (pre-tax)	**7,917,227**	**7,105,035**
Deferred tax	2,198,097	1,969,648
Total risk (post-tax)	**5,719,129**	**5,135,387**

The required capital has been calculated based on the approved internal model. Since year-end 2018 Hannover Re applies the volatility adjustment according to § 82 VAG. This is intended to mitigate the effect of value fluctuations on the bond market. For year-end 2019 Hannover Re has received the approval from BaFin for a dynamic modelling of the volatility adjustment. By this the effect of the volatility adjustment is captured in the calculation of the required capital more adequately.

The model is subject to strict internal quality checks and extensive validation. Moreover, the continuous model supervision has not revealed any material limitations in the determination of capital requirements so far. In particular, there are no capital add-ons imposed by the regulator.

Overall, the required capital increased in the course of the year. This was driven principally by the larger business volumes, which have led to an increase in market risks and underwriting risks. In addition, the weaker Euro compared to our main currencies contributes to a rise in volumes denominated in foreign currencies and an increase in all risk categories, as does the lower level of interest rates.

The increase in market risk mainly reflects the larger volume of assets under own management mainly due to cash inflows and declined interest rates. In addition, we hold higher volumes of private equity and participations. Further factors are an increased duration and slightly riskier investment in fixed-income securities. An opposing effect results from the first time application of the dynamic volatility adjustment, which leads to a decrease in the spread risk.

The underwriting risks in property and casualty reinsurance increased primarily as a consequence of higher premium and reserve levels as well as larger underwriting capacities for natural perils. The increased volumes are the result of interest rate and exchange rate effects along with business growth as well as the expenditure of large losses and the associated higher reserves. Moreover, in the area of catastrophe risks the modelling approach used for cyber risks was refined, leading to an increase in required capital.

The underwriting risks in life and health reinsurance increased primarily as a consequence of the business growth in the area of longevity and morbidity risks as well as due to declined interest rates. In addition, adjustments made in the calibration of mortality risks gave rise to an increase in capital requirements.

The increase in counterparty default risks can be attributed to a higher volume of receivables due from ceding companies and retrocessionaires as well as changes in credit ratings.

The decrease in operational risks can be attributed above all to an updated expert assessment regarding the impact of individual scenarios.

The loss-absorbing effect of taxes remained stable. The slight increase in the diversification effect is a consequence of the diversified business growth and the associated risk structure.

The following table displays the Solvency Capital Requirement and the ratio of eligible own funds to SCR taking into account tiering restrictions.

Ratio of eligible own funds to Solvency Capital Requirement

in TEUR	2019	2018
Eligible own funds	14,336,678	12,634,559
SCR	5,719,129	5,135,387
Ratio of eligible own funds to SCR	**251%**	**246%**

E.2.2 Minimum Capital Requirement (MCR)

The following table displays the Minimum Capital Requirement and the ratio of eligible own funds to MCR taking into account tiering restrictions.

Ratio of eligible own funds to Minimum Capital Requirement

The group MCR is the result of the sum of the MCRs of the different legal entities.

in TEUR	2019	2018
Eligible own funds	13,272,736	12,182,188
MCR	3,915,373	3,542,422
Ratio of eligible own funds to MCR	**339%**	**344%**

E.3 Use of the duration-based equity risk sub-module in the calculation of the Solvency Capital Requirement

Germany did make no use of the option to allow the use of a duration-based equity risk sub-module.

Consequently, Hannover Re does not use a duration-based equity risk sub-module in the calculation of the Solvency Capital Requirement.

E.4 Differences between the standard formula and any internal model used

E.4.1 The internal model

Hannover Re received approval from the regulatory authorities to calculate its solvency requirements using a partial internal capital model with effect from the entry into force of Solvency II on 1 January 2016. The capital requirements for underwriting risk P&C and L&H, market risk and counterparty default risk are determined according to the internal model, the capital requirements for operational risks were calculated according to the Solvency II standard formula. In 2017, Hannover Re Group additionally received permission from the Federal Financial Supervisory Authority (BaFin) to calculate the operational risk using the internal model on group level and thus has a full internal model.

This section provides further information regarding the internal capital model.

E.4.1.1 Introduction

The quantitative risk management of Hannover Re provides a standardised framework for the assessment and management of all risks facing our undertaking and capital position. In this context, the internal model is our key instrument. It is a stochastic enterprise model, covering all subsidiaries and business areas of Hannover Re.

The central key figure in risk and company management is the economic capital, which is evaluated according to market-consistent valuation principles and the basis for calculation of the Solvency II capital.

The internal model of Hannover Re reflects all risks influencing the development of the economic capital. These risks are classified into underwriting, market, counterparty default and operational risks. For each of these risk categories, we have determined a series of risk factors for which we define a probability distribution. Risk factors are, as for instance, economic indicators, like interest rates, exchange rates and inflation rates, as well as insurance-specific indicators such as the mortality rates in a specific age group of our insurance portfolio in a certain country, or the number of natural disasters in a certain region and the insured loss per disaster.

We use publicly accessible and historical data to specify the probability distributions of risk factors. In addition, we use industry specific and internal (re-)insurance data of Hannover Re. The judgement of internal and external experts supplements this process. The suitability of probability distributions is subject to regular review by our specialist departments and verified in conjunction with the regular, company-wide application of the capital model and allocation of costs of capital. Hannover Re calculates the required capital using the Value at Risk (VaR) reflecting the changes in economic value over a period of one year with a confidence level of 99.97%. This is equivalent to the target to limit the ruin probability over a horizon of one year to 0.03%. The internal target capitalisation of Hannover Re is significantly larger than that to a confidence level of 99.5% as required by Solvency II.

The internal capital model uses state of the art techniques of insurance and financial mathematics. In case of underwriting risks, we draw on a comprehensive history of internal data to estimate probability distributions, e.g., for reserving risk. In the context of natural catastrophe risks, we use external models that we adjusted in the course of detailed internal reviews to represent our risk profile adequately. For Life and Health reinsurance we determine long-term cash flows for different scenarios. The determination of scenarios and probability distributions is based on internal data for all mentioned risks. The internal data base is enriched with parameters set by experts. These parameters are of importance in particular in the area of extreme events that have not been observed by now.

The aggregation of single risks takes into account dependencies between risk factors. Dependencies arise, e.g., during financial crises, which affect several market segments at the same time. Furthermore, market phenomena such as pricing cycles can cause dependencies over time. We generally assume that extreme events do not occur all simultaneously. The absence of complete dependency is denoted as diversification. Hannover Re's business model is based i.a. on establishing a preferably well-balanced portfolio such that a significant diversification effect is achieved and the capital can be used efficiently. Diversification effects exist between reinsurance contracts, divisions, business segments and risks. Given the costs of capital of our business segments, divisions and on their contribution to the diversification effect, we determine the costs of capital that have to be achieved per single business units.

E.4.1.2 Basic principles

A key purpose of the capital model of Hannover Re relates to the calculation of the required and available capital for Hannover Re. The principles outlined below are the manifestation of Hannover Re's risk capacity and how it is consistently measured within a quantitative framework.

- Target variable: Our main target variable for the calculation of risk based capital is the deviation of the net asset value (or own funds) from its expected value.
- Time horizon: For calculating the required capital a one-year time horizon is considered.
- Risk measure: We use two statistics to measure and allocate risk capital, namely the Value-at-Risk (VaR) and the Expected Shortfall (ES).

- Ongoing business operations: We operate on the premise of existing business and a going-concern assumption.
- New business assumptions: We consider one year of new business. This assumption holds for all lines of business.
- Stochastic simulation: The capital model of Hannover Re is based on stochastic simulations, i.e. we generate discrete approximations for the probability distribution of our target variables.
- Capital fungibility: Hannover Re's capital model covers the risks stemming from several (legally independent) business units within the Group. We assume full capital fungibility. This is based on the assessment of stress tests for capital fungibility and transferability.
- Consolidation method: The capital model of Hannover Re comprises all business units by using the consolidation method. Deduction and aggregation as defined under Solvency II as an alternative method is not applied.

The capital model uses a stochastic simulation model for the purposes of implementing these principles, which combines random variables using the company-specific dependency structure.

E.4.1.3 Main applications

Hannover Re considers its internal capital model a key component of its enterprise risk management system to analyse its overall risk position, to quantify risks and to determine the economic capital required to meet those risks.

The results of Hannover Re's internal model provide support to senior management of Hannover Re in their decision-making. Main applications are:

- Analysis of the financial position
- Assessment of the overall required capital and monitoring of key risk metrics
- Capital consumption by each risk category
- Capital allocation for pricing and performance measurement
- Risk budgeting, limit allocation and monitoring
- Strategic asset allocation
- Assessment of risk mitigation strategies
- Assessment of new business

E.4.1.4 Scope of the model

Hannover Re's complete risk landscape comprises the main risk categories underwriting risks (life and non-life), market risks, counterparty default risks, operational risks and other risks (see chapter "C. Risk Profile").

The risk categories addressed by the internal model of Hannover Re using a quantitative model are the categories underwriting risk life, underwriting risk non-life, market risk, counterparty default risk and operational risk. These risks and their interactions are accounted for in the presentation of target variables through the application of stochastic simulation models. Concentration risk is taken into account in the calculations of required capital for each risk category.

E.4.2 Calculation techniques for the purposes of integrating results into the standard formula

With the approval of the internal model for operational risk, Hannover Re uses a full internal model. In consequence, there are no results of standard formula modules which have to be integrated in the internal model.

E.4.2.1 Type and suitability of data

Hannover Re has a comprehensive internal control system in place to ensure quality and timeliness of data. The specific data used in the internal model is documented in the data requirements for the different modules and interfaces. All data used in the internal model is subject to the data standards for the internal model. This set-up is appropriate to provide for timely data that is free of material errors.

Hannover Re utilises the relevant historical company data, in order to calibrate the model – above all for the underwriting risk. Generally speaking, company data relating to insurance performance within non-life is available for more than 30 years. This is deemed sufficiently historical information. However, due to the particular characteristics of early underwriting years, e.g. low premium volume, changing business segmentation or non-representative market segments, only portions of this data are used as part of the internal model calibration.

Internal company data, above all for the model validation, is used for underwriting risk pertaining to life and health insurance, due to the fact that only a limited number of significant (and thus rare) deviations are available that are suitable for the calibration of extreme events.

Long-term market data is used for the calibration of the market and counterparty risk model.

The operational risk model is based on information retrieved from a self-assessment process with experts from all relevant units and departments. Wherever possible available data and additional information are used. Given the limited history of operational risk events as well as the low frequency and high severity character of some operational risks, Hannover Re is convinced that input parameters for the SCR calculation cannot be solely derived by quantitative methods.

In general, Hannover Re relies on data that is used in other business applications, too, as often as appropriate to ensure consistent use of information within the company. Examples are the technical provisions which are calculated as part of the Solvency II balance sheet process and data items used in the accounting process under IFRS, thereby providing an anchor to other established reporting processes. Thus, many data items are subject to multiple quality checks and internal as well as external review.

E.4.3 Comparison between the internal model and the standard formula

The standard formula is designed to fit a typical European (or EEA) primary insurer. As a consequence, mainly European data has been used to calibrate the standard formula.

There are many aspects which make Hannover Re quite different from a typical European primary insurer, in particular, its access to global diversification across regions, markets, cedants and all lines of business. The difference in diversification is the driving force of differences between the

standard formula and the internal model for life, health and non-life underwriting risk. It also has some influence on counterparty and market risk.

The standard formula offers a detailed module for the quantification of EU natural catastrophe risk. Due to its focus it does offer a very broad, premium-based approximation for non-EU and non-proportional natural catastrophe risk, only. Hannover Re assumes more than 70% of its natural catastrophe risk outside the EU and thus has a detailed internal model for such risks.

The standard formula is designed for a single primary insurer and thus has no module to recognise diversification between different primary insurers. The latter is an important feature of Hannover Re's internal model and founded on Hannover Re's internal data analysis.

The standard formula allows for appropriate recognition of some but not all reinsurance structures. For example multi-line covers are not fully effective. The internal model is able to recognise all retrocession structures currently implemented by Hannover Re.

Technically, the internal model is a stochastic approach while the standard formula is a factor-based (deterministic) approach. The concept for underlying risk factors is in many areas similar, e.g. for market and counterparty risk but in general more detailed in Hannover Re's internal model. Hannover Re's internal model allows for bottom-up, non-linear dependency structures within and between market, underwriting, operational and counterparty risk.

E.5 Non-compliance with the Minimum Capital Requirement and non-compliance with the Solvency Capital Requirement

Both solvency and minimum capital requirements – with and without application of the volatility adjustment - were complied with at all times during the period under consideration.

Abbreviations and glossary

AF: Actuarial function

BaFin: Bundesanstalt für Finanzdienstleistungsaufsicht, Federal Financial Supervisory Authority

BEL: Best Estimate Liability

BOF: Basic own funds

CDS: Credit Default Swap

CEO: Chief Executive Officer

CFO: Chief Financial Officer

CMS: Compliance Management System

EBIT: Earnings before interest and taxes

EEA: European Economic Area

EIOPA: European Insurance and Occupational Pensions Authority

E+S Rück: E+S Rückversicherung AG, Hannover

FAS: Financial Accounting Standard

FWH: Funds withheld

GA: Group Auditing, internal audit of Hannvor Re

GLS: Group Legal Services, legal division of the Hannover Re Group

Hannover Re: Hannover Re Group, Hannover

Hannover Rück: Hannover Rück SE, Hannover

HDI: HDI Haftpflichtverband der Deutschen Industrie V.a.G., Hannover

HGB: Handelsgesetzbuch, German Commercial Code

IAS: International Accounting Standard

ICS: Internal Control System

IFRS: International Financial Reporting Standards

Inter Hannover: International Insurance Company of Hannover SE, Hannover, since 1 January 2019: HDI Global Specialty SE, Hannover

L&H: Life and Health

MCR: Minimum Capital Requirement

ORSA: Own Risk and Solvency Assessment

P&C: Property and Casualty

QRT: Quantitative Reporting Template

RM: Risk margin

RMF: Risk Management Function

SCR: Solvency Capital Requirement

SII: Solvency II

TP: Technical provisions

US GAAP: United States Generally Accepted Accounting Principles

VAG: Gesetz über die Beaufsichtigung der Versicherungsunternehmen (Versicherungsaufsichtsgesetz), Insurance Supervision Act

VaR: Value-at-Risk

Quantitative Reporting Templates

All values are shown in TEUR if not otherwise stated.

Values below TEUR 0.5 are displayed as “0”. Empty cells represent the fact that Hannover Re has no value to state.

Additional disclosure according to Art. 192 (2) of the Delegated Regulation 2015/35

The Hannover Re Group has collateral arrangements with a total value well below 60% of total assets. The threshold of 60% is defined in Art. 192 (2) of the Delegated Regulation 2015/35. This information is relevant to calculate the counterparty default risk with respect to the Hannover Re Group in the Solvency II standard formula.

S.02.01.02: Balance sheet

S.02.01.02: Balance sheet, page 1		Solvency II
Assets		**C0010**
Intangible assets	**R0030**	
Deferred tax assets	**R0040**	196,620
Pension benefit surplus	**R0050**	
Property, plant & equipment held for own use	**R0060**	150,265
Investments (other than assets held for index-linked and unit-linked contracts)	**R0070**	46,949,950
Property (other than for own use)	**R0080**	2,131,705
Holdings in related undertakings, including participations	**R0090**	525,440
Equities	**R0100**	18,704
Equities - listed	**R0110**	18,704
Equities - unlisted	**R0120**	0
Bonds	**R0130**	39,813,772
Government Bonds	**R0140**	20,898,644
Corporate Bonds	**R0150**	17,613,066
Structured notes	**R0160**	234,091
Collateralised securities	**R0170**	1,067,972
Collective Investments Undertakings	**R0180**	3,815,862
Derivatives	**R0190**	25,894
Deposits other than cash equivalents	**R0200**	479,589
Other investments	**R0210**	138,985
Assets held for index-linked and unit-linked contracts	**R0220**	
Loans and mortgages	**R0230**	
Loans on policies	**R0240**	
Loans and mortgages to individuals	**R0250**	
Other loans and mortgages	**R0260**	
Reinsurance recoverables from:	**R0270**	1,757,781
Non-life and health similar to non-life	**R0280**	1,340,681
Non-life excluding health	**R0290**	1,317,978
Health similar to non-life	**R0300**	22,703
Life and health similar to life, excluding health and index-linked and unit-linked	**R0310**	385,279
Health similar to life	**R0320**	316,273
Life excluding health and index-linked and unit-linked	**R0330**	69,006
Life index-linked and unit-linked	**R0340**	31,821
Deposits to cedants	**R0350**	11,793,171
Insurance and intermediaries receivables	**R0360**	842,073
Reinsurance receivables	**R0370**	128,044
Receivables (trade, not insurance)	**R0380**	190,635
Own shares (held directly)	**R0390**	
Amounts due in respect of own fund items or initial fund called up but not yet paid in	**R0400**	
Cash and cash equivalents	**R0410**	1,090,782
Any other assets, not elsewhere shown	**R0420**	156,387
Total assets	**R0500**	**63,255,708**

S.02.01.02: Balance sheet, page 2		Solvency II
Liabilities		**C0010**
Technical provisions – non-life	**R0510**	26,916,261
Technical provisions – non-life (excluding health)	**R0520**	24,834,754
Technical provisions calculated as a whole	**R0530**	
Best Estimate	**R0540**	24,153,780
Risk margin	**R0550**	680,974
Technical provisions - health (similar to non-life)	**R0560**	2,081,507
Technical provisions calculated as a whole	**R0570**	
Best Estimate	**R0580**	2,025,507
Risk margin	**R0590**	56,000
Technical provisions - life (excluding index-linked and unit-linked)	**R0600**	12,314,711
Technical provisions - health (similar to life)	**R0610**	2,940,084
Technical provisions calculated as a whole	**R0620**	
Best Estimate	**R0630**	2,591,172
Risk margin	**R0640**	348,912
Technical provisions – life (excluding health and index-linked and unit-linked)	**R0650**	9,374,627
Technical provisions calculated as a whole	**R0660**	
Best Estimate	**R0670**	6,983,281
Risk margin	**R0680**	2,391,345
Technical provisions – index-linked and unit-linked	**R0690**	1,064,661
Technical provisions calculated as a whole	**R0700**	
Best Estimate	**R0710**	1,054,679
Risk margin	**R0720**	9,982
Contingent liabilities	**R0740**	3,554
Provisions other than technical provisions	**R0750**	197,985
Pension benefit obligations	**R0760**	201,952
Deposits from reinsurers	**R0770**	1,130,750
Deferred tax liabilities	**R0780**	3,096,689
Derivatives	**R0790**	17,335
Debts owed to credit institutions	**R0800**	402,878
Financial liabilities other than debts owed to credit institutions	**R0810**	950,733
Insurance & intermediaries payables	**R0820**	604,604
Reinsurance payables	**R0830**	157,490
Payables (trade, not insurance)	**R0840**	291,085
Subordinated liabilities	**R0850**	2,343,100
Subordinated liabilities not in Basic Own Funds	**R0860**	
Subordinated liabilities in Basic Own Funds	**R0870**	2,343,100
Any other liabilities, not elsewhere shown	**R0880**	215,238
Total liabilities	**R0900**	**49,909,024**
Excess of assets over liabilities	**R1000**	**13,346,685**

S.12.01.02: Life and Health SLT Technical Provisions

TP Life, page 1

		Insurance with profit participation	Index-linked and unit-linked insurance		
				Contracts without options and guarantees	Contracts with options or guarantees
		C0020	C0030	C0040	C0050
Technical provisions calculated as a whole	R0010				
Total Recoverables from reinsurance/SPV and Finite Re after the adjustment for expected losses due to counterparty default associated to TP calculated as a whole	R0020				
Technical provisions calculated as a sum of BE and RM					
Best Estimate					
Gross Best Estimate	R0030				
Total Recoverables from reinsurance/SPV and Finite Re after the adjustment for expected losses due to counterparty default	R0080				
Best estimate minus recoverables from reinsurance/SPV and Finite Re - total	R0090				
Risk Margin	R0100				
Amount of the transitional on Technical Provisions					
Technical Provisions calculated as a whole	R0110				
Best estimate	R0120				
Risk margin	R0130				
Technical provisions - total	R0200				

TP Life, page 2

		Other life insurance		
			Contracts without options and guarantees	Contracts with options or guarantees
		C0060	C0070	C0080
Technical provisions calculated as a whole	**R0010**			
Total Recoverables from reinsurance/SPV and Finite Re after the adjustment for expected losses due to counterparty default associated to TP calculated as a whole	**R0020**			
Technical provisions calculated as a sum of BE and RM				
Best Estimate				
Gross Best Estimate	**R0030**			
Total Recoverables from reinsurance/SPV and Finite Re after the adjustment for expected losses due to counterparty default	**R0080**			
Best estimate minus recoverables from reinsurance/SPV and Finite Re - total	**R0090**			
Risk Margin	**R0100**			
Amount of the transitional on Technical Provisions				
Technical Provisions calculated as a whole	**R0110**			
Best estimate	**R0120**			
Risk margin	**R0130**			
Technical provisions - total	**R0200**			

TP Life, page 3

		Annuities stemming from non-life insurance contracts and relating to insurance obligation other than health insurance obligations	Accepted reinsurance	Total (Life other than health insurance, incl. Unit-Linked)
		C0090	C0100	C0150
Technical provisions calculated as a whole	R0010			
Total Recoverables from reinsurance/SPV and Finite Re after the adjustment for expected losses due to counterparty default associated to TP calculated as a whole	R0020			
Technical provisions calculated as a sum of BE and RM				
Best Estimate				
Gross Best Estimate	R0030		8,037,960	8,037,960
Total Recoverables from reinsurance/SPV and Finite Re after the adjustment for expected losses due to counterparty default	R0080		100,827	100,827
Best estimate minus recoverables from reinsurance/SPV and Finite Re - total	R0090		7,937,133	7,937,133
Risk Margin	R0100		2,401,328	2,401,328
Amount of the transitional on Technical Provisions				
Technical Provisions calculated as a whole	R0110			
Best estimate	R0120			
Risk margin	R0130			
Technical provisions - total	R0200		10,439,288	10,439,288

TP Life, page 4

		Health insurance (direct business)		
			Contracts without options and guarantees	Contracts with options or guarantees
		C0160	C0170	C0180
Technical provisions calculated as a whole	**R0010**			
Total Recoverables from reinsurance/SPV and Finite Re after the adjustment for expected losses due to counterparty default associated to TP calculated as a whole	**R0020**			
Technical provisions calculated as a sum of BE and RM				
Best Estimate				
Gross Best Estimate	**R0030**			
Total Recoverables from reinsurance/SPV and Finite Re after the adjustment for expected losses due to counterparty default	**R0080**			
Best estimate minus recoverables from reinsurance/SPV and Finite Re - total	**R0090**			
Risk Margin	**R0100**			
Amount of the transitional on Technical Provisions				
Technical Provisions calculated as a whole	**R0110**			
Best estimate	**R0120**			
Risk margin	**R0130**			
Technical provisions - total	**R0200**			

TP Life, page 5

		Annuities stemming from non-life insurance contracts and relating to health insurance obligations	Health reinsurance (reinsurance accepted)	Total (Health similar to life insurance)
		C0190	C0200	C0210
Technical provisions calculated as a whole	R0010			
Total Recoverables from reinsurance/SPV and Finite Re after the adjustment for expected losses due to counterparty default associated to TP calculated as a whole	R0020			
Technical provisions calculated as a sum of BE and RM				
Best Estimate				
Gross Best Estimate	R0030		2,591,172	2,591,172
Total Recoverables from reinsurance/SPV and Finite Re after the adjustment for expected losses due to counterparty default	R0080		316,273	316,273
Best estimate minus recoverables from reinsurance/SPV and Finite Re - total	R0090		2,274,899	2,274,899
Risk Margin	R0100		348,912	348,912
Amount of the transitional on Technical Provisions				
Technical Provisions calculated as a whole	R0110			
Best estimate	R0120			
Risk margin	R0130			
Technical provisions - total	R0200		2,940,084	2,940,084

S.17.01.02: Non-life Technical Provisions

S.17.01.02: TP Non-Life, page 1

		Direct business and accepted proportional reinsurance								
		Medical expense insurance	Income protection insurance	Workers' compen-sation insurance	Motor vehicle liability insurance	Other motor insurance	Marine, aviation and transport insurance	Fire and other damage to property insurance	General liability insurance	Credit and suretyship insurance
		C0020	C0030	C0040	C0050	C0060	C0070	C0080	C0090	C0100
Technical provisions calculated as a whole	R0010									
Total Recoverables from reinsurance / SPV and Finite Re after the adjustment for expected losses due to counterparty default associated to TP as a whole	R0050									
Technical provisions calculated as a sum of BE and RM										
Best estimate										
Premium provisions										
Gross	R0060	1,586	83,755	6,263	339,088	145,449	136,451	903,504	323,671	168,677
Total recoverable from reinsurance / SPV and Finite Re after the adjustment for expected losses due to counterparty default	R0140		3	6	204	450	5,732	12,460	67	−242
Net Best Estimate of Premium Provisions	R0150	1,586	83,752	6,258	338,883	144,999	130,719	891,044	323,605	168,919
Claims provisions										
Gross	R0160	24,593	288,403	169,634	1,763,719	699,149	884,361	2,844,407	2,896,132	969,156
Total recoverable from reinsurance / SPV and Finite Re after the adjustment for expected losses due to counterparty default	R0240		85	16,343	29,518	5,661	224,991	421,403	60,884	6,633
Net Best Estimate of Claims Provisions	R0250	24,593	288,318	153,292	1,734,200	693,488	659,371	2,423,004	2,835,248	962,523
Total Best estimate - gross	R0260	26,179	372,158	175,898	2,102,806	844,598	1,020,812	3,747,911	3,219,803	1,137,833
Total Best estimate - net	R0270	26,179	372,070	159,549	2,073,084	838,487	790,089	3,314,047	3,158,853	1,131,442
Risk margin	R0280	898	13,667	4,786	64,220	22,127	25,635	100,708	90,245	24,309

S.17.01.02: TP Non-Life, page 2

		Direct business and accepted proportional reinsurance								
		Medical expense insurance	Income protection insurance	Workers' compen-sation insurance	Motor vehicle liability insurance	Other motor insurance	Marine, aviation and transport insurance	Fire and other damage to property insurance	General liability insurance	Credit and suretyship insurance
		C0020	C0030	C0040	C0050	C0060	C0070	C0080	C0090	C0100
Amount of the transitional on Technical Provisions										
Technical Provisions calculated as a whole	R0290									
Best estimate	R0300									
Risk margin	R0310									
Technical provisions - total										
Technical provisions - total	R0320	27,076	385,825	180,683	2,167,026	866,725	1,046,447	3,848,619	3,310,048	1,162,142
Recoverable from reinsurance contract / SPV and Finite Re after the adjustment for expected losses due to counterparty default - total	R0330		88	16,348	29,722	6,111	230,723	433,864	60,950	6,391
Technical provisions minus recoverables from reinsurance / SPV and Finite Re - total	R0340	27,076	385,737	164,335	2,137,304	860,614	815,724	3,414,755	3,249,097	1,155,751

S.17.01.02: TP Non-Life,
page 3

		Direct business and accepted proportional reinsurance			Accepted non-proportional reinsurance				Total Non-Life obligation
		Legal expenses insurance	Assistance	Miscella-neous financial loss	Non-propor-tional health reinsu-rance	Non-propor-tional casualty reinsu-rance	Non-pro-portional marine, aviation and transport reinsu-rance	Non-propor-tional property reinsu-rance	
		C0110	C0120	C0130	C0140	C0150	C0160	C0170	C0180
Technical provisions calculated as a whole	**R0010**								
Total Recoverables from reinsurance / SPV and Finite Re after the adjustment for expected losses due to counterparty default associated to TP as a whole	**R0050**								
Technical provisions calculated as a sum of BE and RM									
Best estimate									
Premium provisions									
Gross	**R0060**	3,620	−1,505	28,451	34,505	358,773	31,615	311,321	**2,875,224**
Total recoverable from reinsurance / SPV and Finite Re after the adjustment for expected losses due to counterparty default	**R0140**			2	−67	−3,190	−765	5,281	**19,941**
Net Best Estimate of Premium Provisions	**R0150**	3,620	−1,505	28,449	34,572	361,963	32,380	306,039	**2,855,283**
Claims provisions									
Gross	**R0160**	35,527	−3,866	118,676	1,416,768	6,963,505	820,640	3,413,260	**23,304,064**
Total recoverable from reinsurance / SPV and Finite Re after the adjustment for expected losses due to counterparty default	**R0240**			−452	6,334	36,538	149,065	363,736	**1,320,740**
Net Best Estimate of Claims Provisions	**R0250**	35,527	−3,866	119,128	1,410,434	6,926,967	671,575	3,049,524	**21,983,323**
Total Best Estimate - gross	**R0260**	39,148	−5,371	147,127	1,451,273	7,322,278	852,254	3,724,580	**26,179,288**
Total Best Estimate - net	**R0270**	39,148	−5,371	147,577	1,445,006	7,288,929	703,954	3,355,563	**24,838,606**
Risk margin	**R0280**	1,201	28	4,132	36,649	203,441	23,958	120,972	**736,974**

S.17.01.02: TP Non-Life,
page 4

		Direct business and accepted proportional reinsurance			Accepted non-proportional reinsurance				Total Non-Life obligation
		Legal expenses insurance	Assistance	Miscella-neous financial loss	Non-propor-tional health reinsu-rance	Non-propor-tional casualty reinsu-rance	Non-pro-portional marine, aviation and transport reinsu-rance	Non-propor-tional property reinsu-rance	
		C0110	C0120	C0130	C0140	C0150	C0160	C0170	C0180
Amount of the transitional on Technical Provisions									
Technical Provisions calculated as a whole	R0290								
Best Estimate	R0300								
Risk margin	R0310								
Technical provisions - total									
Technical provisions - total	R0320	40,348	−5,343	151,259	1,487,922	7,525,719	876,212	3,845,552	26,916,261
Recoverable from reinsurance contract / SPV and Finite Re after the adjustment for expected losses due to counterparty default - total	R0330			−450	6,267	33,348	148,300	369,017	1,340,681
Technical provisions minus recoverables from reinsurance/SPV and Finite Re - total	R0340	40,348	−5,343	151,709	1,481,655	7,492,371	727,912	3,476,535	25,575,580

S.22.01.22: Impact of long term guarantees measures and transitionals

S.22.01.22: Impact of long term guarantees measures and transitionals		Amount with Long Term Guarantee measures and transitionals	Impact of transitional on technical provisions	Impact of transitional on interest rate	Impact of volatility adjustment set to zero	Impact of matching adjustment set to zero
		C0010	C0030	C0050	C0070	C0090
Technical provisions	R0010	40,295,633			472,489	
Basic own funds	R0020	14,336,678			−297,529	
Eligible own funds to meet Solvency Capital Requirement	R0050	14,336,678			−297,529	
Solvency Capital Requirement	R0090	**5,719,129**			**306,326**	

S.23.01.22: Own Funds

S.23.01.22: Own funds, page 1

		Total	Tier 1 - unrestricted	Tier 1 - restricted	Tier 2	Tier 3
		C0010	C0020	C0030	C0040	C0050
Basic own funds before deduction for participations in other financial sector as foreseen in article 68 of Delegated Regulation (EU) 2015/35						
Ordinary share capital (gross of own shares)	R0010	120,597	120,597			
Non-available called but not paid in ordinary share capital at group level	R0020					
Share premium account related to ordinary share capital	R0030	880,608	880,608			
Initial funds, members' contributions or the equivalent basic own - fund item for mutual and mutual-type undertakings	R0040					
Subordinated mutual member accounts	R0050					
Non-available subordinated mutual member accounts at group level	R0060					
Surplus funds	R0070					
Non-available surplus funds at group level	R0080					
Preference shares	R0090					
Non-available preference shares at group level	R0100					
Share premium account related to preference shares	R0110					
Non-available share premium account related to preference shares at group level	R0120					
Reconciliation reserve	R0130	11,587,746	11,587,746			
Subordinated liabilities	R0140	2,343,100		546,522	1,796,577	
Non-available subordinated liabilities at group level	R0150					
An amount equal to the value of net deferred tax assets	R0160	50,439				50,439
The amount equal to the value of net deferred tax assets not available at the group level	R0170					
Other own fund items approved by the supervisory authority as basic own funds not specified above	R0180					
Non available own funds related to other own funds items approved by supervisory authority	R0190					
Minority interests (if not reported as part of a specific own fund item)	R0200					
Non-available minority interests at group level	R0210	645,811	645,811			

S.23.01.22: Own funds, page 2

		Total	Tier 1 - unrestricted	Tier 1 - restricted	Tier 2	Tier 3
		C0010	C0020	C0030	C0040	C0050
Own funds from the financial statements that should not be represented by the reconciliation reserve and do not meet the criteria to be classified as Solvency II own funds						
Own funds from the financial statements that shall not be represented by the reconciliation reserve and do not meet the criteria to be classified as Solvency II own funds	R0220					
Deductions						
Deductions for participations in financial and credit institutions	R0230					
whereof deducted according to art 228 of the Directive 2009/138/EC	R0240					
Deductions for participations where there is non-availability of information (Article 229)	R0250					
Deduction for participations included by using D&A when a combination of methods is used	R0260					
Total of non-available own fund items	R0270	645,811	645,811			
Total deductions	R0280	645,811	645,811			
Total basic own funds after deductions	R0290	14,336,678	11,943,140	546,522	1,796,577	50,439
Ancillary own funds						
Unpaid and uncalled ordinary share capital callable on demand	R0300					
Unpaid and uncalled initial funds, members' contributions or the equivalent basic own fund item for mutual and mutual - type undertakings, callable on demand	R0310					
Unpaid and uncalled preference shares callable on demand	R0320					
A legally binding commitment to subscribe and pay for subordinated liabilities on demand	R0330					
Letters of credit and guarantees under Article 96(2) of the Directive 2009/138/EC	R0340					
Letters of credit and guarantees other than under Article 96(2) of the Directive 2009/138/EC	R0350					
Supplementary members calls under first subparagraph of Article 96(3) of the Directive 2009/138/EC	R0360					
Supplementary members calls - other than under first subparagraph of Article 96(3) of the Directive 2009/138/EC	R0370					
Non available ancillary own funds at group level	R0380					
Other ancillary own funds	R0390					
Total ancillary own funds	R0400					

S.23.01.22: Own funds, page 3

		Total	Tier 1 - unrestricted	Tier 1 - restricted	Tier 2	Tier 3
		C0010	C0020	C0030	C0040	C0050
Own funds of other financial sectors						
Credit Institutions, investment firms, financial insitutions, alternative investment fund manager, financial institutions	R0410					
Institutions for occupational retirement provision	R0420					
Non regulated entities carrying out financial activities	R0430					
Total own funds of other financial sectors	R0440					
Own funds when using the D&A, exclusively or in combination of method 1						
Own funds aggregated when using the D&A and combination of method	R0450					
Own funds aggregated when using the D&A and combination of method net of IGT	R0460					
Total available own funds to meet the consolidated group SCR (excluding own funds from other financial sector and from the undertakings included via D&A)	R0520	14,336,678	11,943,140	546,522	1,796,577	50,439
Total available own funds to meet the minimum consolidated group SCR	R0530	14,286,239	11,943,140	546,522	1,796,577	
Total eligible own funds to meet the consolidated group SCR (excluding own funds from other financial sector and from the undertakings included via D&A)	R0560	14,336,678	11,943,140	546,522	1,796,577	50,439
Total eligible own funds to meet the minimum consolidated group SCR	R0570	13,272,736	11,943,140	546,522	783,075	
Minimum consolidated Group SCR	R0610	3,915,373				
Ratio of Eligible own funds to Minimum Consolidated Group SCR	R0650	3.3899				
Total eligible own funds to meet the group SCR (including own funds from other financial sector and from the undertakings included via D&A)	R0660	14,336,678	11,943,140	546,522	1,796,577	50,439
Group SCR	R0680	5,719,129				
Ratio of Eligible own funds to group SCR including other financial sectors and the undertakings included via D&A	R0690	2.5068				

S.23.01.22: Own funds, page 4 / Reconciliation reserve

		C0060
Reconciliation reserve		
Excess of assets over liabilities	**R0700**	13,346,685
Own shares (held directly and indirectly)	**R0710**	
Foreseeable dividends, distributions and charges	**R0720**	707,295
Other basic own fund items	**R0730**	1,051,644
Adjustment for restricted own fund items in respect of matching adjustment portfolios and ring fenced funds	**R0740**	
Other non available own funds	**R0750**	
Reconciliation reserve	**R0760**	**11,587,746**
Expected profits		
Expected profits included in future premiums (EPIFP) - Life business	**R0770**	3,796,923
Expected profits included in future premiums (EPIFP) - Non- life business	**R0780**	
Total EPIFP	**R0790**	**3,796,923**

S.25.03.22: Solvency Capital Requirement – for Groups on Full Internal Models

Unique number of component	Components description	Calculation of the Solvency Capital Requirement
C0010	C0020	C0030
101	Market risk according to IM	4,163,045
102	Counterparty default risk according to IM	423,260
103	Life underwriting risk according to IM	2,735,619
104	Non-life underwriting risk according to IM	4,432,205
105	Operational risk according to IM	532,642
107	LAC TP according to IM	
108	LAC DT according to IM	−2,198,097

Calculation of Solvency Capital Requirement		C0100
Total undiversified components	R0110	10,088,673
Diversification	R0060	−4,369,544
Capital requirement for business operated in accordance with Art. 4 of Directive 2003/41/EC	R0160	
Solvency capital requirement excluding capital add-on	R0200	5,719,129
Capital add-ons already set	R0210	
Solvency capital requirement	R0220	5,719,129
Other information on SCR		
Amount/estimate of the overall loss-absorbing capacity of technical provisions	R0300	
Amount/estimate of the overall loss-absorbing capacity ot deferred taxes	R0310	−2,198,097
Total amount of Notional Solvency Capital Requirements for remaining part	R0410	
Total amount of Notional Solvency Capital Requirements for ring fenced funds	R0420	
Total amount of Notional Solvency Capital Requirement for matching adjustment portfolios	R0430	
Diversification effects due to RFF nSCR aggregation for article 304	R0440	
Minimum consolidated group solvency capital requirement	R0470	3,915,373
Information on other entities		
Capital requirement for other financial sectors (Non-insurance capital requirements)	R0500	
Capital requirement for other financial sectors (Non-insurance capital requirements) — Credit institutions, investment firms and financial institutions, alternative investment funds managers, UCITS management companies	R0510	
Capital requirement for other financial sectors (Non-insurance capital requirements) — Institutions for occupational retirement provisions	R0520	
Capital requirement for other financial sectors (Non-insurance capital requirements) — Capital requirement for non-regulated entities carrying out financial activities	R0530	
Capital requirement for non-controlled participation requirements	R0540	
Capital requirement for residual undertakings	R0550	

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