SFCR 2020
Solvency and Financial Condition Report
Munich Re Group

2020

WE DRIVE BUSINESS AS ONE

Munich RE

This document is a translation of the original German version and is intended to be used for informational purposes only. While every effort has been made to ensure the accuracy and completeness of the translation, please note that the German original is binding.

Executive summary

Part		Page
A – Business and performance	The business activities in our reinsurance and ERGO fields of business are broken down into material lines of business and regions. The technical result for the Group as a whole was below the level of the previous year. In property-casualty reinsurance, high COVID-19-related loss expenditure led to a significant decline in the result. In life and health reinsurance, the technical result was also impacted by the pandemic. In the ERGO field of business, by contrast, the technical result was up, mainly thanks to the ERGO Life and Health Germany division. Our investment result was down on the previous year, primarily on account of lower regular income and impairment losses owing to price falls in equity markets in the first quarter. Conversely, higher gains on disposals and an improved net balance of derivatives had an increasing effect on the result.	5–14
B – System of governance	Munich Re has an effective system of governance that is adequate for the nature, scale and complexity of the risks inherent in its business. The remuneration system meets the relevant company and supervisory law requirements, and is in line with our business and risk management strategy. Persons who run the undertaking or perform other key tasks, including the key functions under Solvency II, have the professional qualifications, knowledge and experience to perform the relevant tasks and have the requisite fitness for office. The risk management system, including the own risk and solvency assessment (ORSA), is closely integrated into Group-wide planning, risk strategy and decision-making processes. Processes that are subject to material risks are reviewed on a regular basis as part of the internal control system. The outsourcing of operational activities and functions is monitored.	16–35
C – Risk profile	We use an internal model to quantify the solvency capital requirements (SCR) of the Munich Re Group. At Group level, the SCR increased to €19.2bn, compared with the previous year's €17.5bn. Increases were seen in all risk categories. In property-casualty reinsurance, the higher capital requirement was mainly attributable to further business growth in areas exposed to natural hazards in accordance with our business strategy. The SCR for life and health reinsurance and primary insurance increased, mainly due to the fall in interest rates worldwide and new business in life reinsurance. The market risk for the reinsurance field of business decreased appreciably owing to the lower currency and equity risk, whereas the market risk in the ERGO field of business was up, mainly as a result of lower interest rates. The credit risk SCR also rose as a consequence of the fall in interest rates. We use appropriate limit and early-warning systems to manage risks and limit risk concentrations. Risk is mitigated by means of reinsurance and retrocession, and through the transfer of risk to the capital markets.	37–50
D – Valuation for solvency purposes	We describe material differences in measurement between the solvency balance sheet and IFRS financial reporting for individual balance sheet items under assets, technical provisions and other liabilities, and explain the underlying methods and main assumptions in detail. These differences in measurement are mainly attributable to the fact that the solvency balance sheet is fully based on fair value, whilst IFRS uses a mixed measurement model based on fair value and amortised cost accounting. Three life primary insurance undertakings apply a transitional deduction on technical provisions, and six primary insurance undertakings apply the volatility adjustment.	52–74

E – Capital management	We pursue active capital management, which ensures that our capitalisation is needs-based and risk-commensurate. Our eligible own funds (EOF) total €46.1bn. EOF decreased by €1.8bn in the reporting period. Munich Re's solvency capital requirement totalling €19.2bn as at 31 December 2020 is equivalent to a solvency ratio of 240%. The solvency ratio shown includes transitional measures under Solvency II and the dividend proposed by the Board of Management for the 2020 financial year. Excluding transitional measures, the solvency ratio would have been 208%.	76–88

Due to rounding, there may be minor deviations in summations and in the calculation of percentages in the present report.

Business and performance

A

A Business and performance

A1 Business

General information

The parent company of the Munich Re Group is Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft in München (Munich Reinsurance Company Joint-Stock Company in Munich), Königinstrasse 107, 80802 München, Germany. Munich Reinsurance Company is a joint-stock company (Aktiengesellschaft) within the meaning of the German Stock Corporation Act (AktG). Its registered seat is Munich, Germany. In addition to its function as a reinsurer, the parent also fulfils the function of holding company for the Group.

Munich Reinsurance Company has three governing bodies: the Annual General Meeting, the Board of Management and the Supervisory Board. Further details about the governing bodies can be found in section B 1 Administrative, management or supervisory bodies (AMSB).

Owing to our international corporate structure, we are subject to a raft of national and international legal systems, standards and corporate governance regulations. Within the Group, our own Code of Conduct binds our management and staff members to engage in ethically and legally impeccable conduct. The principles of the United Nations Global Compact have been integrated in this Code of Conduct. Further information can be found at www.munichre.com/cg-en. Ernst & Young GmbH Wirtschaftsprüfungsgesellschaft duly audited the Group and Company financial statements and the combined management report as at 31 December 2020, and issued them with an unqualified auditor's opinion. In accordance with Section 341k of the German Commercial Code (HGB), the external auditors of German insurance companies are appointed not by the Annual General Meeting, but by the Supervisory Board.

The supervision of Munich Re is conducted by the

Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht – BaFin)
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Legal structure

Munich Re is one of the world's leading risk carriers and provides both insurance and reinsurance under one roof. This enables the Group to cover large stretches of the value chain in the risk market. Almost all reinsurance units operate under the uniform brand of Munich Re. ERGO Group AG (ERGO) is active in nearly all lines of life, health and property-casualty insurance. The majority of Munich Re's investments worldwide are managed by MEAG, which also offers its expertise to private and institutional investors outside the Group. For up-to-date information about Munich Re, visit www.munichre.com.

The reinsurance companies of the Group operate globally and in virtually all classes of business. We offer a full range of products, from traditional reinsurance to innovative solutions for risk assumption. Our companies conduct their business from their respective headquarters and via a large number of branches, subsidiaries and affiliated companies. The reinsurance group also includes specialty primary insurers, whose business requires special competence in finding appropriate solutions. In ERGO, we combine Munich Re's primary insurance activities. Some 69% of gross premiums written by ERGO derive from Germany, and 31% from international business – mainly from central and eastern European countries. ERGO also operates in Asian markets, particularly in India and China.

Munich Reinsurance Company and ERGO Group AG are under unified control within the meaning of the German Stock Corporation Act (AktG). The relevant statutory regulations, control agreements and Group directives govern the distribution of responsibilities and competences for key decisions between Group management and ERGO. Control and profit-transfer agreements are in place with many Group companies, especially between ERGO Group AG and its subsidiaries.

Material lines of business and regions

Reinsurance
Our international life and health reinsurance business is written in the Life and Health division. This is split into three geographical regions and one international unit that develops specialised solutions for savings and annuity products. The focus of the division's business activities is on traditional reinsurance solutions that concentrate on the transfer of mortality risk. Moreover, we are active in the market for living benefits products. These include products such as occupational disability, long-term care, and critical illness, which have seen increased demand. We also offer capacity for longevity risks.

In order to ensure proximity to our clients, we are represented in many markets with local subsidiaries and branches. We write the main portion of our business via our Canadian branch and our subsidiary in the USA. In Europe, we have operations in Germany, the United Kingdom, Spain and Italy. At the same time, we have a strong local presence in Australia and South Africa, and in all important growth markets in Latin America and Asia. Asian business is centrally managed by a dedicated branch in Singapore, which underlines the strategic importance of this region for life and health reinsurance.

Three other divisions conduct property-casualty reinsurance. The Global Clients and North America division handles our accounts with major international insurance groups, globally operating Lloyd's syndicates and Bermuda companies. It also pools our know-how in the North American market and is responsible for our property-casualty subsidiaries in this region, as well as international special-lines business such as marine, aviation and space, and global large-risk business, which is pooled in our Facultative & Corporate unit.

Our Europe and Latin America Division is responsible for property-casualty business with our clients from Europe, Latin America and the Caribbean. Business Units – for example, in London, Madrid, Paris and Milan – afford us market proximity and regional competence. In the South American markets, our Brazilian subsidiary Munich Re do Brasil Resseguradora S.A. and our liaison office in Bogotá help to ensure client proximity. The division also includes the divisional unit Financial Risks. Great Lakes Insurance SE, which has its headquarters in Munich and a large branch office in London, is also assigned to this division. We pool a significant share of our Group-wide business activities in the United Kingdom in these units. Munich Re is prepared for the consequences of the United Kingdom's exit from the European Union.

The Asia Pacific and Africa Division conducts property-casualty reinsurance business with our clients in Africa, Asia, Australia, New Zealand and the Pacific Islands. Branches in Mumbai, Beijing, Seoul, Singapore, Sydney and Tokyo, along with liaison offices in Bangkok and Taipei, allow us to take full advantage of the business opportunities in the rapidly growing Asia-Pacific insurance market. In the African market, we are represented by our subsidiary Munich Reinsurance Company of Africa Ltd., headquartered in Johannesburg. These units and other liaison offices guarantee our competitiveness in these key growth markets.

ERGO

Via ERGO, we offer products in all the main classes of insurance: life insurance, health insurance, and in nearly all lines of property-casualty insurance, including travel insurance and legal protection insurance. With these products – in combination with the provision of assistance, other services and individual consultancy – we cover the needs of retail and corporate clients. ERGO serves some 35 million mostly retail customers in around 30 countries, with the focus on Europe and Asia. The latest information on ERGO can be found at www.ergo.com.

With ERGO Versicherung AG, our primary insurance arm is one of Germany's largest providers of property and legal protection insurance. ERGO Vorsorge Lebensversicherung AG is ERGO's life insurer for capital-market-linked and biometric products. It offers solutions for all three types of old-age provision, mainly based on innovative and flexible unit-linked insurance products. ERGO Lebensversicherung AG and Victoria Lebensversicherung AG are responsible for running off our traditional life insurance portfolio. DKV Deutsche Krankenversicherung AG offers a full portfolio of comprehensive private health insurance, products designed to supplement statutory health cover, and company health insurance. ERGO's health insurance offering focuses on products that supplement statutory health insurance, especially supplementary dental plans.

In Europe, ERGO is concentrating mainly on expanding its market presence in Poland, the Baltic States, Greece, Spain, Austria and Belgium. In Asia, ERGO is represented through joint ventures in the rapidly growing markets of India and China. In India, ERGO is well positioned in property-casualty and health insurance. In China, ERGO China Life – a joint venture with the state-owned financial investor SSAIH – is tapping into the potential of the major provinces of Shandong, Jiangsu and Hebei.

Qualifying holdings in Munich Reinsurance Company

As at 31 December 2020, no shareholdings exceeded 10% of the voting rights.

Related undertakings

Related undertakings in the scope of the Group included in our solvency balance sheet can be found in the S.32.01.22 "Undertakings in the scope of the Group" quantitative reporting template (QRT) in the annex to this report.

Intra-Group transactions

The main material intra-Group transactions of the year under review were cash-pool transactions. In the fourth quarter, Munich Reinsurance Company contributed real estate totalling €1,587m to several investment holding companies that were newly established for this purpose. In turn, these companies contributed €1,718m to Munich Reinsurance Company. Further significant intra-Group transactions in the financial year involved capital contributions by Munich Reinsurance Company to two subsidiaries, the restructuring of a shareholding and capital repatriation owing to the planned closure of an undertaking.

Munich Re pools cash for the purposes of financial management, pooling excess liquidity of the participating Group units in a centralised account at MEAG Cash Management GmbH. The funds are pooled for the purposes of optimising returns on investment, while taking account of the individual investment terms stipulated by the participants. Short-term liquidity from the cash pool is also available to participating undertakings. In the year under review, BaFin was notified of four particularly significant cash-pool transactions.

As a rule, the networking of the undertakings in our Group results in further intra-Group business relationships. Intra-Group transactions resulted from areas such as financing, reinsurance contracts, service offsetting, cost-sharing agreements, and guarantee agreements. Regular reporting to the supervisory authority takes place by means of quantitative reporting templates provided under Solvency II. In accordance with Section 274(3) of the Insurance Supervision Act (VAG), the supervisory authority is notified immediately of particularly significant transactions.

Significant business events

The reporting period was heavily influenced by pandemic-related losses totalling around €3.4bn, of which somewhat more than €3bn is attributable to property-casualty reinsurance and €370m to life and health reinsurance. These losses resulted in particular from the cancellation or postponement of major events and from increased mortality in US mortality business. At ERGO, the negative impact arising from COVID-19 totalled €64m.

Determination of consolidated data (significant differences between IFRS and Solvency II)

As a general rule, under IFRS all subsidiaries over which the parent company can exercise control are fully consolidated in the IFRS consolidated financial statements, irrespective of the business they conduct. Under Solvency II, however, the nature of the business plays a role when determining which subsidiaries are included in the Group solvency balance sheet. Here, only those subsidiary undertakings that are insurance companies, insurance holding companies, special purpose vehicles and ancillary services undertakings are fully consolidated. Alternative investment funds and undertakings for the collective investment in transferable securities (UCITS[1]) over which control can be exercised are fully consolidated in the IFRS balance sheet. In accordance with the Solvency II rules, we only recognise these types of undertaking at fair value in the Group solvency balance sheet. Under IFRS, joint ventures and associates are accounted for using the equity method. As a general rule, joint ventures are included in the solvency balance sheet in accordance with the principle of proportional consolidation of data. Currently, Munich Re does not include any proportionately consolidated undertakings in the solvency balance sheet. We recognise undertakings for which we hold at least 20% of the voting rights as associates in our IFRS consolidated financial statements. In the solvency balance sheet, undertakings for which we own a 20% or greater share of the capital or voting rights are categorised as participating interests. For the most part, they are accounted for using the adjusted equity method. Where the share in capital is not equal to that of the voting rights, there are reporting differences between the balance sheets produced under Solvency II and IFRS.

Further information on the determination of consolidated data under Solvency II can be found in section D 1 Holdings in related undertakings, including participations, and in section E 1 Consolidation methods for own funds.

[1] These are investment funds in statutorily defined types of securities and other financial instruments.

A2 Underwriting performance

The premiums and results shown below refer to the figures in our Group annual report in accordance with IFRS as at 31 December 2020.

Group underwriting performance

Munich Re generated a technical result of €600m (2,283m[2]) in the reporting year. The combined ratio in property-casualty reinsurance was 105.6% (100.2%) of net earned premiums. The reporting year was heavily influenced by pandemic-related losses totalling €3.4bn.

In the property-casualty reinsurance segment, the technical result was negative at –€171m (1,157m) owing to high claims expenditure as a result of the coronavirus pandemic. This expenditure was mainly triggered by the cancellation or postponement of major events. The technical result of life and health reinsurance totalled –€78m (365m), which fell short of the figure for the previous year, likewise owing to COVID-19-related losses attributable to increased mortality. In the ERGO field of business, the technical result increased to €849m (761m[2]). The increase is primarily attributable to the ERGO Life and Health Germany segment. Nevertheless, COVID-19-related losses from business closure and event cancellation insurance were partly offset by lower losses in personal lines business, particularly in motor.

Reinsurance

Reinsurance – Life and health

Year-on-year growth in premium primarily derived from Europe and Asia, and to a lesser extent also from North America. The increase in premium in Europe was aided by the conclusion of two new longevity treaties, one of which was written outside the United Kingdom for the very first time. The ongoing strong demand for financially motivated reinsurance also contributed to the development in premium income.

Given that we generate the majority of our business in foreign currencies, fluctuations in exchange rates have a significant impact on premium development. If exchange rates had remained unchanged, our gross premiums written would have increased by 10.1% compared with the previous year.

Based on premium volume, around 40% of our global reinsurance business is written in North America, with the USA accounting for approximately 25% and thus ranking before Canada. Around 25% of our premium stems from Europe – with approximately 10% generated in the United Kingdom and Ireland, and about 5% in Germany. Another significant share of around 25% stems from Asia and the MENA region. Australia and New Zealand contributed around 5% to premium income. We are also well positioned in Africa and Latin America, but due to the small size of these markets, their share of our global business is modest (less than 5% in total).

Gross premium in the USA increased by 2.7% to around €2.9bn (2.9bn). We therefore continue to be one of the most important reinsurers in this market, which is the largest worldwide. The segment's technical result fell short of expectations chiefly on account of COVID-19-related loss expenditure, additional negative mortality and reserving effects attributable to the US portfolio. We continue to be very satisfied with the development of our new business, both in terms of volume and profitability. In Canada, we also posted an increase in premium income to €1.8bn (1.7bn), thereby retaining our leading market position in traditional business. The technical result, in turn, accounted for an over-proportionate contribution to the overall result, even though it did not fully reach the previous year's level, partly owing to COVID-19.

Premium income was extremely gratifying in Europe, where it totalled €3.3bn (2.8bn), with €1.5bn (1.8bn) stemming from the United Kingdom and Ireland, and a further €715m (597m) from Germany. This growth was bolstered by financially motivated reinsurance and the expansion of our longevity business. The technical result was higher than expected, in particular owing to favourable claims experience in continental Europe.

In Asia/MENA, our premium income climbed to €3.4bn (3.0bn). New business continued to perform very well. Thanks to our broad diversification, we are in a position to benefit from the region's growth potential. The technical result continued to develop favourably and was within our expectations – despite a major loss.

Premium generated by our business activities in Australia and New Zealand was up slightly to €824m (808m), benefiting from the impact of premium increases under contracts in force. Our main focus here remains the rehabilitation of our existing portfolio. The technical result – adjusted for COVID-19-related losses – slightly exceeded our expectations. We profited from positive effects from our rehabilitation measures and from fewer lapses than we had anticipated in 2019. By contrast, claims expenditure was higher than we expected.

The technical result of only –€78m (365m) was significantly below our original expectations for the year, mainly owing to claims expenditure resulting from the COVID-19 pandemic.

Overall, losses attributable to COVID-19 totalled €370m. This figure comprises losses incurred in the reporting year; it does not include provisions for losses that may be incurred in 2021. The expenditure is dominated by mortality covers in the USA. In the United Kingdom, losses in mortality business that were attributable to COVID-19

[2] Previous year's figures adjusted owing to changes in accounting policies and other adjustments.

were offset by positive effects in our longevity business. Likewise, in Canada part of the expenditure was compensated for by lower benefit payments in health business. In total, the negative impact on the result was in the low double-digit million euro range. Australian disability business was also slightly impacted by claims notifications. As claims may be reported to us with delay, we recognised additional provisions. Expenditure in Africa was a single-digit million amount. We did not post significant COVID-19-related losses in continental Europe and Asia.

Following several years of favourable loss experience, we saw higher mortality in our US portfolio in 2020, even when adjusted for COVID-19 effects. This circumstance is consistent with the population mortality observed. We are of the opinion that this may be at least partially an indirect consequence of COVID-19.

Reinsurance – Property-casualty

Premium income in property-casualty reinsurance increased by 11.4% compared with the previous year. Changes in exchange rates had a negative impact on premium development. Approximately 11% of the portfolio is written in euros and 89% in foreign currency, of which 55 percentage points is in US dollars and 11 percentage points in pounds sterling. If exchange rates had remained the same, premium volume would have risen by 13.1% year on year.

The substantial increase in premium volume was due to an expansion of business across almost all lines and regions. The main drivers were the expansion of, and new business with, selected clients in North America and selective growth in continental Europe, in the United Kingdom, and in Asia and Australia. Fire and liability were the primary sources of growth.

Reinsurance treaty renewals in 2020 saw prices rise in regions affected by natural catastrophes. In other markets and lines of business, prices remained stable or increased slightly. Despite high losses from natural catastrophes in the previous year, the supply of reinsurance capacity remained high during the 2020 renewals. In the renewals for 2020, prices rose by approximately 1.8%. Overall, we adhered to our profit-oriented underwriting policy.

Based on premium volume, around 45% of our global property-casualty reinsurance business – including Risk Solutions – is written in North America. Around 35% of our premium comes from Europe, of which around half is generated in the United Kingdom. Further substantial shares are contributed by Asia (about 10%), Australia/New Zealand (approximately 5%) and Latin America (approximately 5%).

Prices in the US market improved significantly on account of the many loss events. Owing to hurricanes, tornadoes and wildfires, major natural catastrophe losses exceeded the long-term average in 2020. In 2020, we saw growth with selected clients in reinsurance and wrote additional profitable new business.

At Munich Reinsurance America Inc., we further optimised our reinsurance portfolio, in particular thanks to a more restrictive underwriting policy in liability business. This led to lower premium volume. We were in a position to expand our business in our newly combined primary insurance unit Munich Re Specialty Insurance (MRSI). Overall, premium volume totalling €4,138m was down on the previous year (€4,449m).

The premium income of the Hartford Steam Boiler Group (HSB Group) amounted to €1,179m (1,072m) and was once again up on the previous year. This increase is mainly attributable to growth generated not only by new products, but also with our core business. The result was very gratifying. American Modern also posted a rise in premium income to €1,252m (1,168m) owing to higher prices and new business. The result situation fell short of expectations owing to natural hazard losses, such as hurricanes, tornadoes and wildfires. In Canada, we are represented by the Munich Reinsurance Company of Canada and Temple Insurance Company. Premium volume was expanded further thanks to good market conditions. The year's result was adversely affected by a local hail event in the province of Alberta.

Despite the still-difficult market environment, premium volume increased significantly year on year to €8,299m (7,234m) in the United Kingdom and in continental Europe. In many markets, the increase was driven by the targeted development of business with selected clients and additional profitable new business. The highest growth was achieved in the United Kingdom, Germany, Spain and Italy. In Germany, for instance, premium income rose to €752m (608m).

At our Swiss subsidiary, New Reinsurance Company Ltd. (New Re), business volume in the area of property-casualty increased markedly to €816m (542m). This growth benefited from the expansion of existing client relationships and profitable new business with traditional and structured products.

Premium income in Australia and New Zealand was expanded significantly to €1,073m (954m).

Premium in Japan was up appreciably year on year following two years of heavy losses; it totalled €578m (425m). Business expanded greatly in China, where premium income amounted to €885m (682m). India continued on its path to growth, with premium income climbing to €427m (367m).

In the Caribbean as well as in Central and South America, we still provide high capacity for the coverage of natural hazards, in particular windstorms and earthquakes. The increased demand owing to major losses from natural catastrophes (hurricanes, floods, earthquakes and wildfires) in recent years remained at a high level in 2020.

We took systematic advantage of this situation to further improve our portfolio. This enabled us to grow the already high premium volume attained in recent years to €1,244m (1,232m) and to achieve a further margin improvement.

In agricultural reinsurance, we saw a decline in premium income to €397m (410m) in the North American market. Claims experience saw an amelioration compared with the previous year, but storm events in the USA had an adverse impact.

Supported by a positive market environment, total premium volume in marine business increased by around 14% to €1,165m (1,022m). The result was gratifying.

At €849m (787m), credit and bond reinsurance saw significant year-on-year growth in premium volume. Whilst traditional credit business posted a moderate rise, growth was mainly attributable to profitable new business in specialty and niche segments.

The market environment in direct industrial insurance is very attractive. The renewals in the North American market were marked by price increases. We were therefore able to substantially increase premium income in our direct facultative and corporate business, which was newly established in mid-2019, to €1,199m (906m). The result was gratifying.

Premium in aviation and space business grew appreciably to €734m (595m). In spite of the loss of earnings triggered by COVID-19, premium was up thanks to price increases, especially at the beginning of the year, in the wake of numerous major losses in the previous year. The result was gratifying.

Capital Partners offers clients a broad range of structured individual reinsurance and capital-market products, as well as parametric and derivative solutions to hedge against weather and other risks. These solutions are applied to clients from the agricultural sector as well. We also use Capital Partners' services for our own purposes in order to buy retrocession cover on the basis of our defined risk strategy.

Expenditure for major losses was up, and the technical result declined significantly on the previous year. Adjusted for commissions, Munich Re's customary review of provisions resulted in a reduction in the basic claims provisions for prior years of around €938m for the full year. This positive development related to almost all lines in our portfolio. The safety margin in the provisions remained unchanged year on year.

Major losses – in excess of €10m each – totalled €4,689m (3,124m) in 2020, after retrocession and before tax. This amount includes run-off profits and losses for major claims from previous years, and is equivalent to 20.8% of net earned premium. As a consequence of COVID-19, the expenditure is much higher than in the previous year, and exceeds our major-loss expectation of 12% of net earned premium. Apart from COVID-19-related losses, 2020 was by and large a normal claims year.

At €3,784m, man-made major losses were much higher than in the previous year (€1,071m). This figure is equivalent to 16.8% (5.2%) of net earned premium. Owing to COVID-19-related burdens, the number of losses above the major-loss threshold was much higher than in previous years. COVID-19 resulted in claims expenditure in many lines of business – amounting to around €3,066m in total – and particularly affected the cancellation-of-events and business interruption reinsurance lines.

Major losses from natural catastrophes totalled €906m (2,053m) for the full year 2020. This corresponds to 4.0% (10.0%) of net earned premium. The largest natural catastrophes of the year happened in the USA, the largest individual loss being Hurricane Laura, with anticipated expenditure in the region of €280m. There were also a series of thunderstorms and wildfires.

ERGO

ERGO Life and Health Germany

For the ERGO Life and Health Germany segment, information about the German life, health and Digital Ventures operations is provided below. Approximately 59% of the segment's gross premiums written derives from the Health Germany division, around 32% from Life Germany and approximately 9% from Digital Ventures.

Gross premiums written in the segment were down in the 2020 financial year, owing to a COVID-19-related decrease in travel insurance. Positive development in Health Germany (especially in supplementary insurance) and Digital Ventures (above all in health insurance business), and growth from new products in Life Germany more than offset the planned portfolio reduction in Life Germany. The segment's total premium income was also down on the previous year. The technical result in the ERGO Life and Health Germany segment was up on the previous year, in particular because the previous year had been impacted by a one-off effect in Life Germany, and because of lower claims expenditure in Digital Ventures.

Gross premiums written in the Life Germany division in 2020 were slightly down on the previous year. This was attributable in particular to lower regular premium income owing to the ongoing portfolio reduction, which could not be sufficiently offset by premium income from new products. Total premium income was significantly down on the previous year. The reduction was mainly due to a positive, one-off accounting effect of €346m in the previous year, which had arisen from a rate change. This effect also had a significant impact on new business. In terms of annual premium equivalent, which is the performance measure customary among investors, our new business volume saw a decrease which would have amounted to 4.4% without the one-off effect. The technical result increased substantially year on year, largely because the previous year had been impacted by a one-off effect.

In the Health Germany division, premium income grew by 2.8% in supplementary health insurance and by 1.3% in comprehensive health insurance. The increase in comprehensive cover was mainly due to a premium adjustment in private long-term care insurance. The growth in supplementary insurance was attributable to business not similar to life insurance, which increased by 9.7%. Premium growth in the Health Germany division was offset by a substantial fall in premium income from travel insurance, where gross premiums written dropped by 41.1% to €386m (655m) compared with the previous year. Travel business was hit particularly hard by the coronavirus pandemic due to travel restrictions and mass cancellations of leisure and business travel. The technical result remained nearly constant despite COVID-19.

Gross premiums written in the Digital Ventures division were up year on year thanks to health insurance business, which saw 5.6% growth supported by our supplementary dental insurance plans. Gross premiums written in property-casualty business were also up, by 1.7%. The technical result increased substantially compared with the previous year, mainly driven by a temporary reduction in claims expenditure for health insurance, and business growth in supplementary dental insurance.

ERGO Property-casualty Germany

As regards premium income, our most important classes of business in the ERGO Property-casualty Germany segment were motor insurance and third-party liability insurance. They respectively accounted for around 19% and 17% of the gross premiums written.

Gross premiums written were significantly up on the previous year. The increase was mainly attributable to substantial growth (16.7%) in the other classes of business, in particular engineering and marine, and 6.8% growth in fire and property insurance. Growth in gross premiums written was also posted in third-party liability insurance (4.4%) and motor insurance (4.0%). By contrast, gross premiums written were down by 0.2% in legal protection insurance, and by 1.4% in personal accident insurance.

The technical result remained nearly constant compared with the previous year, and was at a very good level despite the challenges posed by the COVID-19 pandemic. The slight decrease was mainly attributable to organic premium growth and favourable cost development. On the claims side, COVID-19-related losses from business closure and event insurance were partly compensated for by lower losses in personal lines business, especially in motor, and lower major losses, both from natural catastrophes and man-made.

ERGO International

With regard to the segment's gross premiums written, property-casualty insurance accounted for around 56%, health for about 31% and life insurance for approximately 13%. Our biggest markets are Poland, accounting for approximately 31% of the premium volume, Spain (approx. 19%) and Belgium (approx. 18%). Gross premiums written decreased marginally overall, chiefly owing to the sale of companies outside Germany as part of portfolio optimisation and negative currency effects. Adjusted for the sales and for currency effects, gross premiums written in the ERGO International segment would have increased by 2.3% year on year. The segment's total premium income was also slightly down on the previous year.

In international property-casualty business, gross premiums written were down 2.8% to €2,714m (2,791m). The decline was mainly attributable to the sale of companies outside Germany and negative currency effects from our business in Poland. We posted premium growth mainly in the Netherlands, Austria and Greece.

As a result of organic growth in our Spanish and Belgian markets, gross premiums written developed favourably in international health business, climbing by 6.0% to €1,509m (1,424m) in the financial year. At €639m (698m), gross premiums written in international life insurance business were down by 8.4% on the previous year. Negative development in Belgium, where we stopped writing new business already in 2017, and a decline in new business in Austria due to COVID-19 contributed to this outcome. Total premium income was down by 7.8% year on year to €861m (934m).

The technical result improved compared with the previous year. Spanish health business and Belgian life business were the main drivers of this positive development. In Spain, the increase was partly attributable to premium growth. In Belgian life business, the previous year's figure had been affected by higher impairment losses on deferred acquisition costs owing to the low-interest-rate environment. In international property-casualty business, the technical result was down on the previous year, mainly on account of the disposal of our Turkish company in 2019.

A3 Investment performance

Income and expenses with respect to investment activities

Investment result

€m	2020	Prev. year
Regular income	6,273	6,751
Write-ups/write-downs of non-derivative investments	–1,957	–309
Gains/losses on the disposal of non-derivative investments	3,698	2,779
Net balance of derivatives	74	–717
Other income/expenses	–690	–681
Total	**7,398**	**7,822**

Regular income decreased on the previous year, primarily due to lower interest and dividend income. The average reinvestment yield in the financial year was 1.5% (2.1%). Due to the low interest rates in the reporting year, yields on new investments remained lower than the average return on our existing portfolio of fixed-interest investments.

Where impairment losses and reversals of impairment losses on non-derivative investments were concerned, we posted much higher impairment losses because – in the first quarter in particular – our equity portfolio had been affected by heavy price falls on the stock markets on account of the impact of the coronavirus pandemic.

Gains on disposal were higher overall than in the previous year, and chiefly related to our portfolio of fixed-interest securities and equities, as well as Q1 and Q4 gains from the disposal of real estate.

We posted a net profit from write-downs and write-ups of derivatives and from the disposal of derivatives, primarily due to gains on interest-rate derivatives, which compensated for losses on equity and credit derivatives held for hedging purposes.

The investment result can be broken down by asset class as follows:

Investment result by type of investment (before deduction of income from technical interest)

€m	2020	Prev. year
Land and buildings, including buildings on third-party land	**807**	**550**
Investments in affiliated companies	**-49**	**10**
Investments in associates and joint ventures	**157**	**213**
Loans	**2,240**	**2,070**
Other securities available for sale		
Fixed-interest	4,281	4,214
Non-fixed-interest	62	1,475
Other securities at fair value through profit or loss		
Held for trading		
Fixed-interest	0	0
Non-fixed-interest	7	15
Derivatives	172	-595
Designated at fair value through profit or loss		
Fixed-interest	18	17
Non-fixed-interest	14	51
Deposits retained on assumed reinsurance, and other investments	**288**	**396**
Expenses for the management of investments, other expenses	**-597**	**-592**
Total	**7,398**	**7,822**

The result for land and buildings includes rental income of €563m (513m). The expenses for the management of investments include running costs and expenses for repair and maintenance of property totalling €64m (103m). We earned interest income of €1,708m (1,857m) on loans. Other securities available for sale produced regular income of €3,407m (3,696m), while derivatives generated €128m (146m). Interest expenses on non-derivative investments amounted to €15m (11m), administrative expenses to €385m (363m), and other expenses to €148m (126m).

Gains and losses recognised directly in equity

The following table provides an overview of the income and expenses recognised directly in equity in the financial year.

Income and expenses recognised directly in equity

€m	2020	Prev. year
Items where income and expenses recognised directly in equity are reallocated affecting net income	168	4,073
from currency translation	–1,392	422
from investments	1,654	3,661
from equity method measurement	–91	–15
from cash flow hedges	–2	1
from other changes	–1	4
Items where income and expenses recognised directly in equity are not reallocated affecting net income	–204	–411
from defined benefit plans	–204	–411
from other changes	0	0
Total	**–36**	**3,661**

The income and expenses newly recognised directly in equity were negative overall in the financial year. The effect from currency translation was mainly attributable to the US dollar. The increase in unrealised gains on investments was significantly lower than in the previous year, primarily on account of the reduction in our equity portfolio.

Investments in securitisations

The portfolio of structured credit products at fair value increased slightly as a result of acquisitions, and totalled 2% of the overall portfolio of interest-bearing securities as at the reporting date. This asset class involves securitised receivables (asset-backed securities or mortgage-backed securities), e.g. securitisations of real estate finance, consumer credit or student loans. Around 52% of our structured credit products have a rating of AAA.

A4 Performance of other activities

Munich Re as lessee

Since the 2019 reporting year, we have recognised liabilities arising from our lessee agreements as liabilities. These relate predominantly to rented office buildings. Further information on leases can be found in section D 1 Property, plant and equipment held for own use.

Munich Re as lessor

Operating leases mainly involve leased property.

Future minimum lease payments under operating leases

€m	31.12.2020	Prev. year
Up to one year	591	341
Over one year and up to five years	872	1,040
Over five years	627	765
Total	**2,090**	**2,145**

There were several finance leases for property at the end of the reporting period, which are listed in the following table:

Due dates

	31.12.2020			Prev. year		
€m	Gross investment	Interest element	Net investment	Gross investment	Interest element	Net investment
Minimum lease payments up to one year	1	0	0	1	0	0
Minimum lease payments of over one year and up to five years	2	1	1	2	1	1
Minimum lease payments of over five years	70	56	14	70	56	14
Total minimum lease payments	**72**	**57**	**16**	**73**	**57**	**16**
Unguaranteed residual values	41	31	10	41	32	10
Total	**114**	**88**	**26**	**114**	**88**	**26**

A5 Other information

There were no matters in the year under review which require disclosure under Other information.

System of governance

B

B System of governance

B1 General information on the system of governance

Administrative, management or supervisory bodies (AMSB)

Münchener Rückversicherungs-Gesellschaft Aktiengesellschaft in München (Munich Reinsurance Company) has three governing bodies: the Annual General Meeting, the Board of Management, and the Supervisory Board. Their functions and powers are defined by law, the Articles of Association, the Co-Determination Agreement applicable to Munich Reinsurance Company, and by rules of procedure and internal guidelines. Employee co-determination on the Supervisory Board is governed by the Co-Determination Agreement concluded pursuant to the German Act on the Co-Determination of Employees in Cross-Border Mergers (MgVG). The principle of parity co-determination on the Supervisory Board has been strengthened by taking into account staff employed in the European Union and in the European Economic Area (EU/EEA).

Additional corporate governance requirements are set out in the regulatory requirements for (re)insurance companies, especially the German Insurance Supervision Act (VAG) and the European supervisory regulations (Solvency II). They include specific rules on various issues such as business organisation or the qualifications and remuneration of members of the Board of Management, Supervisory Board members and other individuals.

Annual General Meeting

The principle of "one share, one vote" applies at the Annual General Meeting of Munich Reinsurance Company. Shareholders can opt for postal or electronic voting.

The Annual General Meeting on 29 April 2020 was conducted as a virtual Annual General Meeting – with neither shareholders nor their authorised representatives physically present – on account of the special circumstances caused by the COVID-19 pandemic and in accordance with Section 1(2) of the German Act Concerning Measures Under the Law of Companies, Cooperative Societies, Associations, Foundations and Commonhold Property to Combat the Effects of the COVID-19 Pandemic of 27 March 2020 (Federal Law Gazette, Part 1, p. 570).

Board of Management

In 2020, the Board of Management of Munich Reinsurance Company comprised nine members, including one woman. The Board of Management is responsible for managing the Company, in particular for setting the Company's objectives and determining strategy. It is bound to act in the Company's best interests. It should take account of the interests of shareholders, employees, and other stakeholders of Munich Reinsurance Company, with the objective of sustainable value creation. The Board of Management is responsible for effecting adequate risk management and risk control in the Company. It must ensure that statutory requirements and internal Company rules are observed, and works to ensure compliance by Group companies.

Working procedures of the Board of Management

The work of the Board of Management, in particular the allocation of responsibilities among the individual Board members, matters reserved for the full Board of Management, and the majority required to pass resolutions, is regulated by rules of procedure issued by the Supervisory Board. The full Board of Management decides on all matters that, either by law, or according to the Articles of Association or rules of procedure, require a resolution of the Board of Management. In particular, it is responsible for matters requiring the approval of the Supervisory Board, for items which have to be submitted to the Annual General Meeting, for tasks which constitute management functions or are of exceptional importance, and for significant personnel issues.

Meetings of the Board of Management take place as required, but generally at least once a month, and are presided over by the Chairman of the Board of Management. The adoption of a resolution requires the majority of votes cast; in the event of a tie, the Chairman has the casting vote. The members of the Board of Management cooperate closely for the benefit of the Company. On an ongoing basis, they inform each other about all important business transactions.

Composition and working procedures of the Board of Management committees

Three Board of Management committees ensure efficient work by the Board of Management: the Group Committee, the Reinsurance Committee, and the Strategy Committee.

Group Committee
The Group Committee (GC) is the central management committee of the Group. It decides in particular on fundamental issues concerning the strategic and financial management of the Group for all fields of business, and on the principles of general business policy and organisation within the Group. The Committee also makes decisions on all matters of fundamental importance relating to the divisions headed by its voting members. In addition, it

serves as an executive committee with responsibility for important ongoing issues, in particular the approval of significant individual transactions.

Reinsurance Committee

The Reinsurance Committee (RC) is the central management committee of the reinsurance field of business. It decides on all matters of fundamental importance for this field of business, except investments.

Strategy Committee

The Strategy Committee (StratC) is the central management committee for fundamental strategic matters in the fields of business (reinsurance, primary insurance). It makes decisions on all strategic matters of fundamental importance for the fields of business, including own investments and administered (third-party) funds.

The following applies to all Board of Management committees: Where decisions within the sphere of responsibility of a committee relate to issues reserved for the full Board of Management, the respective committee will prepare these matters for decision. Committee meetings are held regularly, and as required. Only members of the Board of Management have voting rights on the committees. The committees are further governed by their respective rules of procedure, as adopted by the full Board of Management.

Subcommittees of the Board of Management Committees

Both the Group Committee and the Reinsurance Committee have set up subcommittees. The Group Committee has set up the Group Risk Committee; the Reinsurance Committee has set up the Global Underwriting and Risk Committee as well as the Board Committee IT Investments. These subcommittees also include senior executives from Munich Reinsurance Company and the Group who do not have voting rights. The work of these subcommittees is governed by their own written rules of procedure. Both the Group Risk Committee and the Global Underwriting and Risk Committee deal with risk management issues, albeit with different emphases. The Board Committee IT Investments is responsible for IT investments.

The Group Investment Committee – a subcommittee of the Group Committee responsible for substantiating investment principles for the Group and the fields of business, and for other important issues in relation to investments – was dissolved as at 30 November 2020.

Collaboration between Board of Management and Supervisory Board

The Board of Management and the Supervisory Board work together closely and in a spirit of trust for the benefit of the Company.

The Board of Management determines the strategic direction of the Company in conjunction with the Supervisory Board. The Board of Management reports regularly and as needed to the Supervisory Board about all questions relevant to the Company. The Chairman of the Supervisory Board maintains regular contact with the Board of Management between meetings – in particular with the Chairman of the Board of Management – in order to discuss issues of strategy, planning, business development, the risk situation, risk management and Company compliance. The Supervisory Board has defined the Board of Management's information and reporting obligations in detail. The Supervisory Board's consent is required before the Board of Management can conduct specific types of transactions, which include the following: annual financial planning, certain investments and divestments, the implementation of share buy-back programmes, the conclusion of inter-company agreements, and the execution of corporate restructurings in which the Company holds a stake. The Supervisory Board's approval is also required for sideline activities assumed by members of the Board of Management and for important transactions involving persons closely associated with them as defined in Section 111b(1) of the German Stock Corporation Act (AktG).

Supervisory Board

Pursuant to the Articles of Association, the Supervisory Board of Munich Reinsurance Company comprises twenty members: half are shareholder representatives and are elected by the Annual General Meeting. The other ten members are elected employee representatives from Group companies in the EU and EEA.

The Supervisory Board advises the Board of Management and monitors the management of the Company, but it is not authorised to take management action in place of the Board of Management. In accordance with a special rule applicable to (re)insurance companies, the Supervisory Board in particular also appoints the external auditor for the Company and Group financial statements and for the Half-Year Financial Report.

Working procedures of the Supervisory Board

The Supervisory Board has its own rules of procedure, which specify responsibilities, work processes and further modalities for the adoption of resolutions. The Audit Committee also has its own rules of procedure, which have been adopted by the full Supervisory Board.

You will find details on the main responsibilities of the committees of the Supervisory Board and its composition on the Munich Re website under www.munichre.com/supervisory-board.

Self-assessment

The Supervisory Board and its committees regularly assess how effectively the Supervisory Board as a whole and also its individual committees perform their duties. Following preparations by the Standing Committee, the Supervisory Board conducted an internal self-assessment in 2020

based on a wide-ranging questionnaire. The Supervisory Board discussed the findings of the self-assessment in depth at its meeting on 15 October 2020. The self-assessment confirms that the working relationships within the Supervisory Board and with the Board of Management are professional and constructive, and characterised by a high degree of trust and candour. In addition, the findings document the efficient organisation and execution of meetings, as well as appropriate reporting by the Board of Management. There was no indication of any fundamental need for change. A few optimisation measures were identified and are being put into practice.

Work of the committees

The Supervisory Board has set up six committees from among its members – the Standing Committee, the Personnel Committee, the Remuneration Committee, the Audit Committee, the Nomination Committee and the Conference Committee.

The committees adopt decisions by the majority of votes cast. With the exception of the Conference Committee, the chair of the committee has a casting vote in case of a tie. The full Supervisory Board is regularly informed about the work of the committees by their respective chairs.

Personnel Committee

The Personnel Committee held six meetings in the reporting period. The Committee essentially prepared the resolutions on matters involving the Board of Management already mentioned in the report on the work of the full Supervisory Board, unless these fell under the remit of the Remuneration Committee. One focus of the Personnel Committee's work was the assessment of fitness and propriety requisite for the new appointment of a member of the Board of Management. In addition, the Personnel Committee approved the assumption of mandates on supervisory, advisory and similar boards by members of the Board of Management. Taking into account diversity aspects, it also dealt with the Group-wide succession planning – in particular as regards Board members.

Remuneration Committee

The Remuneration Committee also met six times in 2020. In particular, it is responsible for preparing resolutions on matters involving the Board of Management – as already mentioned above when reporting on the work of the full Supervisory Board – as far as these resolutions concerned the remuneration system for the Board of Management, the amount of remuneration, the establishment of the assessment basis for variable remuneration and the corresponding evaluation, fringe benefits and benefits in kind, as well as the sections of the Board members' contracts relating to remuneration. A significant focus of the Committee's work in the reporting year related to the intensive discussion of the requirements and resultant need for action pursuant to ARUG II and the German Corporate Governance Code as well as the expectations of investors and other stakeholders as regards Board of Management remuneration.

Standing Committee

At its six meetings, the Standing Committee dealt with the preparation of the respective Supervisory Board meetings and, in particular, with topics of corporate governance. It prepared the assessment of the effectiveness of the Supervisory Board as a whole and its individual committees on the basis of a comprehensive self-assessment form. Furthermore, it approved proposals by the Board of Management concerning the share buy-back programme and the procedure regarding answering questions at the virtual Annual General Meeting. In deliberations spanning a number of meetings, the Standing Committee also discussed the internal procedure set up to assess whether related-party transactions are entered into in the ordinary course of business and concluded on normal market terms. The Chairman of the Board of Management gave the Standing Committee regular updates on the shareholder structure.

Audit Committee

The Audit Committee also held six meetings in the reporting period. All of these meetings were attended by the external auditors. The Audit Committee heard regular reports on the key Solvency II figures and discussed the quarterly reporting to the supervisory authority in these meetings. Another key task of the Committee consisted in monitoring the Group's risk situation and risk management on an ongoing basis, and discussing its risk strategy: the Group Chief Risk Officer provided detailed verbal input at several meetings of the Committee in addition to the quarterly written reports submitted. In one meeting, the Head of the Actuarial Function gave a report on significant developments at Munich Re. The internal control system and compliance topics were discussed regularly. The Group Chief Auditor informed the members of the Committee in full about the outcome of the audits for 2019 and the audit planning for 2020. The Committee received updates on the current status of individual compliance issues and the progress of audits. Without the Board of Management being present, the members of the Committee took the opportunity to confer amongst themselves or with the Group Chief Auditor, the Group Chief Compliance Officer, the Group Chief Risk Officer and the external auditors on a regular basis. In addition, the Audit Committee and the external auditors exchanged views on selected topics on an ad-hoc basis between meetings.

Nomination Committee

The Nomination Committee held two meetings in the reporting period. It discussed the medium-term succession planning of the Supervisory Board and deliberated on suitable candidates for nomination to the Supervisory Board. When making proposals for nomination, the Committee took into account the objectives approved by the Supervisory Board regarding its composition, the competence profile for the Supervisory Board as a whole, and the set of criteria for the selection of shareholder representatives.

Conference Committee
There was again no need to convene the Conference Committee in the 2020 financial year.

Changes on the Board of Management
For personal reasons, Hermann Pohlchristoph did not extend his appointment that expired on 30 April 2020, and has left the Company. Achim Kassow was appointed his successor with effect from 1 May 2020, and he took over responsibility for the Asia Pacific and Africa division and for the Central Procurement and Services central divisions.

Board member Peter Röder retired on 31 December 2020. Stefan Golling was appointed his successor with effect from 1 January 2021. In addition to the Global Clients and North America division, he is also responsible for the US subsidiaries HSB and AMIG, and the Lloyd's and Bermuda markets.

Changes on the Supervisory Board
Kurt Wilhelm Bock resigned from the Supervisory Board with effect from the end of the 2020 Annual General Meeting. On 29 April 2020, the Annual General Meeting elected Carsten Spohr for the remainder of Kurt Wilhelm Bock's term of office.

You will find details on the composition and responsibilities of the Board of Management, Supervisory Board and the relevant committees in Munich Re's Group Annual Report 2020 on pages 18 – 24. More information on corporate governance can be found at www.munichre.com/cg-en.

Compensation

Principles of the compensation policy
The "Solvency II: Munich Re Group Compensation Policy (MR GCP)" sets uniform and generally applicable standards for compensation policy at the Munich Re Group. Existing compensation policies at the undertakings of the Munich Re Group remain in force and apply in addition to the MR GCP. The standards comprise substantive, procedural and formal requirements. The object of the MR GCP is to implement the regulatory requirements resulting from Solvency II in accordance with uniform principles for the Munich Re Group. The undertakings of the Munich Re Group that are obliged to implement these requirements must implement the requirements of the MR GCP in their own compensation policies, which take into account local conditions.

Pursuant to the MR GCP, the remuneration schemes of the Munich Re Group must be established, implemented and maintained in line with the respective undertaking's business and risk management strategy, its risk profile, objectives, risk management practices and the long-term interests and performance of the undertaking as a whole. The remuneration schemes must also incorporate measures aimed at avoiding conflicts of interest. Furthermore, the remuneration schemes must promote effective risk management and must not encourage risk-taking that exceeds the risk-tolerance limits of the undertaking.

Pursuant to the MR GCP, specific agreements must be concluded for a group of individuals that includes AMSB members, persons who effectively run the business, key functions and risk takers. These agreements must take the following into account in particular:

Where the remuneration schemes for this group of individuals include both fixed and variable components, such components must be balanced so that the fixed or guaranteed component represents a sufficiently high proportion of the total remuneration. This ensures that employees are not overly dependent on the variable components.

The payment of a substantial portion of the variable remuneration component must contain a flexible, deferred component that takes account of the nature and time horizon of the undertaking's business. This deferral period must be no less than three years and must be aligned with the nature of the business, the risks, and the activities of the employees in question. Further general requirements and specific agreements are regulated by the MR GCP.

AMSB
The principles for the members of the AMSB of Munich Reinsurance Company are documented in the Solvency II: Compensation Policy of Munich Reinsurance Company. They are fully taken into consideration in the compensation systems of the AMSB of Munich Reinsurance Company. With regard to the remuneration for the Board of Management of Munich Reinsurance Company, the relation of fixed and variable remuneration components was chosen such that it is balanced as far as the amount of remuneration is concerned, and does not result in any misplaced incentives to take unreasonable risk.

For the members of the AMSB of other undertakings belonging to the Munich Re Group, the principles are set out in the respective compensation policies of the individual undertakings. All compensation policies of the undertakings of the Munich Re Group required to implement these requirements must comply with the aforementioned principles of the MR GCP.

Employees
The employees of Munich Reinsurance Company are subject to the principles laid down in the MR GCP. Another policy sets out the principles of compensation and contract terms for top managers in Munich Re's International Organisation.

The Human Resources Policy regulates not only the principles of compensation for all employees that are not covered by the Compensation Policy for top managers in Munich Re's International Organisation, but also those principles governing other benefits after termination of employment, lump-sum settlements, succession planning and staff development. The Human Resources Policy is in

line with regulations at Munich Re and with the MR GCP. The remuneration components for Munich Reinsurance Company employees are regulated by internal company agreements and by corresponding policies pursuant to the German Managerial Staff Committee Act (SprAuG) and on the basis of individual contracts, and reflect the statutory and collective bargaining environment.

The remuneration scheme at ERGO is based on statutory, collective bargaining and company requirements and regulations. The undertakings that are obliged to implement these requirements according to Solvency II have implemented the requirements of the MR GCP in their own compensation policies. More specific principles of compensation at ERGO are described in the Compensation Policy for ERGO Group AG and its subsidiaries.

Individual and collective performance criteria

AMSB

Details on the structure of the remuneration system for the members of the Board of Management of Munich Reinsurance Company and on the parameters used are available in the remuneration report of the 2020 Annual Report of the Munich Re Group under "Remuneration of the members of the Board of Management in 2020". The remuneration system for the Board of Management has been adjusted, effective 1 January 2021. This adjusted system will be submitted to the 2021 Annual General Meeting for approval.

Members of the Supervisory Board of Munich Reinsurance Company receive fixed remuneration only.

For members of the AMSB of the Munich Re Group whose variable remuneration is performance-related, the total amount of the variable remuneration is based on a combination of assessments of the performance of the individual and of the divisional unit concerned on the one hand, and the overall performance of the relevant undertaking or the Group on the other. Financial and non-financial criteria must be taken into account as part of the assessment of an individual's performance.

The remuneration structure for the risk takers in the International Organisation and risk takers on international assignments is largely geared to the remuneration scheme for members of the Board of Management of Munich Reinsurance Company.

Moreover, the variable remuneration for all staff in the reinsurance group is regulated on the basis of uniform principles in terms of its components and the way it works.

All staff are paid an annual bonus in the form of a variable remuneration component that gives employees a share in corporate success. The key indicator used is the IFRS result of the Munich Re Group. The targets correspond to the Group objective for the variable remuneration of members of the Board of Management.

In addition, staff who contribute to the long-term performance of the undertaking benefit from a long-term incentive plan. This plan is a share-based remuneration component. The longer-term performance of the Company is determined on the basis of the development of the total shareholder return in comparison with a defined peer group. The long-term incentive plan provides for flexible payment deferred over a period of four years. The possibility of a downwards adjustment for exposure to current and future risks is included. The long-term incentive plan largely corresponds with that of the multi-year bonus of the members of the Board of Management.

Senior executive staff

The fixed components for Munich Reinsurance Company senior executive staff (including holders of key functions) comprise a fixed annual basic remuneration, paid out as a monthly salary, plus market-standard fringe benefits and remuneration in kind (most notably a company car and a company pension scheme). The variable components are made up of the short-term Company result bonus, and the share-price-linked component Long-Term Incentive Plan.

The higher the management level, the higher the share of the Company result bonus and Long-Term Incentive Plan in the staff member's total remuneration.

The Company result bonus ensures that the performance of the undertaking is systematically reflected in the remuneration of staff. The Long-Term Incentive Plan, with a duration of four years, provides senior executive staff with a share in the undertaking's longer-term success.

The combination of short- and long-term components is well-balanced and ensures that the participation of senior executive staff bears a reasonable relationship to overall corporate performance. In addition, negative incentives are avoided, in particular taking disproportionately high risks. The monitoring function of the control units is not impaired. By using the same key indicators as for the AMSB, the variable remuneration is geared to achievement of the objectives defined by the strategy of the undertaking and significant risks and their time horizon are taken adequate account of. No guaranteed variable remuneration components are granted.

A total remuneration approach is applied to senior executive positions at ERGO. This includes not only basic and variable remuneration components but also provision for old age and any fringe benefits.

The remuneration system for senior executive staff at ERGO is structured in such a way that

– it is geared to achievement of the objectives laid down ERGO's strategy; in the case of changes in strategy, the structure of the remuneration system is reviewed and adjusted as required;

– it avoids negative incentives, in particular conflicts of interest and taking disproportionately high risks, and does not run counter to the monitoring function of the control units;
– it takes adequate account of significant risks and their time horizon.

The monetary remuneration for senior executive office-based staff comprises fixed remuneration only. Agreements made prior to 1 January 2018 concerning variable remuneration, the payment of which depends on the achievement of long-term incentives, will remain unaffected until the end of the agreed period in question.

The monetary remuneration for senior-executive sales staff comprises fixed remuneration and a variable sales success component.

We regard all remuneration components – individually and as a whole – as adequate. Information on the structure and changes to the remuneration parameters relevant to senior executive staff are provided in writing.

Non-executive staff

The fixed components for Munich Reinsurance Company non-executive staff comprise a fixed annual basic remuneration, paid out as a monthly salary and as a holiday and Christmas bonus, plus standard market fringe benefits and remuneration in kind. Variable remuneration comprises the short-term component Company-result bonus (see Senior executive staff).

The remuneration for non-executive staff at ERGO is based on the collective bargaining agreements for the private insurance industry and on internal company agreements concluded at local and regional level.

Non-executive staff also receive fringe benefits that are described in the collective bargaining agreements for the private insurance industry and in internal company agreements concluded at local and regional level.

Supplementary pension or early retirement schemes

AMSB

Members of the AMSB of the Munich Re Group are generally entitled to pension benefits from a defined contribution plan. Early retirement schemes are geared to the respective country-specific circumstances. Details on supplementary pensions or early retirement schemes for members of the Board of Management of Munich Reinsurance Company are available in the remuneration report of the 2020 Annual Report of the Munich Re Group.

Members of the Supervisory Board of Munich Reinsurance Company are not entitled to pension benefits.

Senior executive and non-executive staff

The pension scheme for senior executive and non-executive staff at Munich Reinsurance Company is a defined contribution plan. In the case of disability, senior executive and non-executive staff receive an occupational disability pension. The amount of disability pension is based on a fixed percentage of the basic salary. Surviving dependants of senior executive or non-executive staff receive a lump-sum payment.

If senior executive or non-executive staff leave the service of the Company before a benefit becomes payable, the rules and regulations of the German Company Pension Act apply. In addition, senior executive and non-executive staff who joined the Company prior to 1 January 2019 are members of the Munich Re pension scheme, which is a defined contribution plan.

Senior executive and non-executive staff at ERGO are entitled to a company pension. Under this pension scheme, benefits for senior executive staff are based on individual contractual agreements in the staff member's employment contract, and benefits for non-executive staff on are based on internal company agreements.

Material transactions

If members of the Company's Board of Management or Supervisory Board or any persons closely associated with them undertake transactions with shares, debt instruments of Munich Reinsurance Company or with associated derivatives or other related financial instruments, these transactions must be immediately notified to the Company if the total amount of transactions carried out by the Board member or person closely associated with them in a calendar year totals or exceeds €20,000 within that calendar year.

Munich Reinsurance Company publishes information of this kind on its website without undue delay at https://www.munichre.com/en/company/investors/mandatory-announcements/managers-transactions.html.

Main duties and responsibilities of the key functions

The following four Group-wide key functions conduct their activities at Group level and at Munich Reinsurance Company level:

Compliance

The Head of Group Compliance and Legal (GCL) is the Group Chief Compliance Officer (GCCO) and, as such, the holder of the compliance key function at Munich Re with responsibility for the compliance organisation at Munich Re. The GCCO has an unrestricted right to full disclosure of and access to all information required for the discharge of his compliance duties.

The GCCO compiles a written compliance report for the Board of Management and the Audit Committee of the Supervisory Board of Munich Reinsurance Company at least once a year. This report includes an overview of the compliance management system and the adequacy and effectiveness of the processes in place to comply with

external requirements, as well as compliance risks and violations of Group-wide relevance.

You will find a detailed explanation of the main duties and responsibilities in section B 4.

Internal audit

As an independent control function, Group Audit is responsible for reviewing and assessing all components of the system of governance at Munich Re. It prepares independent and objective analyses and recommendations for the Board of Management and senior management, and provides information on the audited activities.

A description of the authorities and independence of the internal audit function is available in section B 5 Internal audit function.

Risk management function

The Group Chief Risk Officer (Group CRO) is Head of Integrated Risk Management (IRM) and is responsible for the risk management function (RMF). In this role, the Group CRO is responsible for organising and implementing an adequate risk management system. This includes developing the risk strategy, assessing all risks throughout the Group, and ensuring the adequacy of risk management processes.

The independence of the RMF is safeguarded and laid down in the Risk Management Policy, among others.

The RMF of the Group is supported by the local mirror functions in the Group undertakings and by specific risk management functions at Munich Reinsurance Company. You will find a detailed description of the main duties and responsibilities of the RMF in section B 3.

Actuarial function

The Head of IRM1.2 Risk Analytics & Reporting is responsible for the actuarial function (AF).

The independence of the AF, in particular from the RMF, is safeguarded and laid down in the Risk Management Policy, among others. To discharge its duties, the AF works in close collaboration with the internal actuarial services of the fields of business. The main duties and authorities, and basis of collaboration, are described in section B 6.

The human resources available for all key functions are sufficient in order to meet the internal and external requirements with regard to the adequate performance of the respective function. We also consider the budget and non-monetary resources available to be adequate overall.

B2 Fit and proper requirements

Description of the specific requirements

The Solvency II: Fit and Proper Policy (F&P Policy) of Munich Reinsurance Company, which has existed since 2015, with a revised version coming into force in 2017, and which was last amended in 2020, lays down criteria, procedures and responsibilities to ensure the fitness and propriety of persons who effectively run the undertaking or perform other key tasks. Insurance undertakings in the EU/EEA and insurance holding companies domiciled in Germany must adopt a policy that is equivalent to the F&P Policy of Munich Reinsurance Company. By contrast, insurance undertakings outside the EU/EEA and non-insurance undertakings worldwide that are classified as risk units are only obliged to implement the main requirements of the F&P Policy. Non-insurance undertakings worldwide that are not classified as risk units and institutions for occupational retirement provision are only obliged to comply with local legal fit and proper requirements.

Every undertaking that is obliged to implement these requirements must adapt its F&P Policy to the local legal requirements. In the event of a contradiction, local law takes precedence. If the local legal requirements are less stringent than the requirements of the Fit and Proper Policy of Munich Reinsurance Company, the requirements of the latter apply.

The specific requirements of Munich Reinsurance Company concerning skills, knowledge and expertise applicable to the persons who effectively run the undertaking or have other key tasks are based on the relevant supervisory requirements.

Only persons who have the skills, knowledge and expertise necessary to perform the tasks assigned to them in an orderly manner may be employed to effectively run the undertaking or to be responsible for other key tasks. The fitness requirements set out depend on the responsibilities they have and the work they do. Where management duties are to be undertaken, experience in management should be taken into consideration.

Proportionality is to be applied in meeting the requirements concerning the skills, knowledge and expertise of the persons concerned.

The assessment of whether the persons who effectively run the undertaking or perform other key tasks are deemed fit includes an assessment of their professional and formal qualifications, knowledge and relevant experience within the (re)insurance sector, in other financial sectors or in other undertakings, and takes into account the duties assigned to the persons concerned and – where relevant to the position in question – their (re)insurance, financial, accounting, actuarial and management skills.

Persons who effectively run the undertaking

The undertakings of the Munich Re Group must determine individually which persons effectively run the undertaking.

The persons who effectively run Munich Reinsurance Company include the members of the Board of Management and the heads of branches both inside and – pursuant to a decision by the Board of Management and Supervisory Board – outside the EU/EEA.

Members of the Board of Management have individual responsibility for their divisions and overall responsibility for Munich Reinsurance Company, and must be fit to assume such responsibilities. This is monitored by the Supervisory Board. They must also be able to ensure compliance with the governance requirements at the Munich Re Group level.

The responsibilities assigned to each individual member of the Board of Management are set out in the distribution of responsibilities.

Collectively, the members of the Board of Management must have appropriate qualifications, experience and knowledge in the following areas as a minimum:

– Insurance and financial markets
– Business strategy and business model
– System of governance
– Financial and actuarial analysis
– Regulatory framework and requirements
– Internal model (risk model)

Each individual member of the Board of Management must have sufficient knowledge of all areas to be in a position to understand and exercise supervision over the actions of other members of the Board of Management. When changes are made to the membership of the Board of Management, the collective knowledge of the members of the Board of Management should be maintained at an appropriate level at all times.

The members of the Board of Management of Munich Reinsurance Company in 2020 have the professional qualifications, knowledge and experience to guarantee the sound and prudent management of Munich Reinsurance Company. They therefore have the requisite fitness.

Heads of branches inside and outside the EU/EEA are subject to the aforementioned requirements concerning members of the Board of Management in proportion to:

– the influence they are able to exert on decisions at Munich Reinsurance Company,
– the significance of their branch, and
– the ability of the head of a branch to exert specific influence over outcomes, results and decisions.

All heads of branches of Munich Reinsurance Company meet the fitness and propriety requirements.

Persons responsible for other key tasks

The undertakings of the Munich Re Group both inside and outside the EU/EEA must determine individually which persons perform other key tasks.

Persons who perform other key tasks at Munich Reinsurance Company include:

- members of the Supervisory Board, and
- holders of key functions (RMF, compliance, internal audit and actuarial function) and their deputies. The holders of key functions have overall responsibility for the Group.

Munich Reinsurance Company currently has no staff who perform additional "other key tasks" at Group level, it has not outsourced key tasks, and it has no staff who perform tasks relating to other key tasks of Munich Reinsurance Company and tasks transferred to them that are specific to those key tasks.

Members of the Supervisory Board must always have the experience and knowledge required to exercise appropriate control over and supervise the Board of Management of Munich Reinsurance Company, and to actively oversee the development of the undertaking. In order to fulfil that function, they must understand the business conducted by the undertaking and be able to assess the risks for the undertaking. Members of the Supervisory Board must be familiar with laws and regulations of relevance to the undertaking. A basic knowledge of risk management specific to insurance is useful. Collectively, the Supervisory Board must in any case have expertise in the areas of investment, underwriting and accounting. Each time a new member of the Supervisory Board is appointed, but at least once annually, it is necessary to demonstrate to the Federal Financial Supervisory Authority (BaFin) which members of the Supervisory Board have expertise in these areas.

Maintenance of fitness includes ongoing training to ensure that the members of the Supervisory Board are in a position to meet changing or increasing requirements relating to their responsibilities at the undertaking.

Notwithstanding that, each and every member of the Supervisory Board must possess sufficient theoretical and practical knowledge of all areas of the business to guarantee that appropriate control is exercised. The knowledge and experience of other members of the Supervisory Board are no substitute for the fitness of an individual member. A member of the Supervisory Board does not, in principle, have to have specialist knowledge, but must be capable of recognising when it is necessary to seek advice.

At least one member of the Supervisory Board must have expertise in accounting or auditing. The members of the Supervisory Board must collectively be familiar with the sector in which Munich Reinsurance Company operates.

The skills, knowledge and expertise needed to exercise supervision may also have been acquired in the course of exercising (previous) functions in other sectors or in public administration, or political mandates, provided that such functions or mandates involved or involve dealing with economic and legal issues over a prolonged period, and were not or have not been purely secondary in nature.

Other specific requirements are defined in the sets of criteria for the shareholder and employee representatives.

The members of the Supervisory Board of Munich Reinsurance Company in 2020 have the professional qualifications, knowledge and experience to supervise and advise the Board of Management of Munich Reinsurance Company in a professional manner. They therefore have the requisite fitness.

Holders of key functions must always be in possession of the professional qualifications, knowledge and experience necessary for them to fulfil their position in the key function. The tasks assigned to each holder of a key function arise from the current responsibilities. Collectively, the key functions must guarantee the effectiveness of the system of governance at the undertaking. Deputies of holders of key functions must also be deemed to have the requisite fitness.

The holders of key functions in 2020 have the professional qualifications, knowledge and experience to perform the relevant tasks. They therefore have the requisite fitness.

Assessment of fitness and propriety

The undertakings of the Munich Re Group that are obliged to implement these requirements must determine in their respective F&P Policy the applicable provisions concerning the assessment of the fitness and propriety of persons who effectively run the undertaking or perform other key tasks.

Munich Reinsurance Company carries out an internal assessment of the fitness and propriety of persons who effectively run the undertaking and perform other key tasks prior to a first appointment, election, assignment of responsibility, or necessary reassessment. A reassessment is performed after a maximum of five years if there have been no grounds for an earlier reassessment. This applies in particular when facts and circumstances give reason to believe that a person may no longer meet the fit or proper requirements, or significant changes are made to the duties assigned. In addition, a reassessment is always carried out when the appointment of a member of the Board of Management is due for renewal and a member of the Supervisory Board is due for re-election.

The assessment or reassessment is carried out on the basis of appropriate documents. When assessing professional qualifications, these documents include a detailed curriculum vitae, employer references and evidence of further training or education. With regard to propriety, these documents comprise the BaFin form

"Persönliche Erklärung mit Angaben zur Zuverlässigkeit" (personal declaration with information on propriety), a police certificate of good conduct, and an excerpt from the Gewerbezentralregister (Central Trade Register). The result of the assessment of fitness and propriety and the reasons for the result must be documented.

Munich Reinsurance Company notifies BaFin in writing of the following persons concerned who effectively run the undertaking or perform other key tasks:

– Members of the Board of Management
– Heads of branches in the EU/EEA
– Members of the Supervisory Board
– Holders of key functions

At Munich Reinsurance Company, the following bodies and organisational units are responsible for the assessment of the fitness and propriety of the persons who effectively run the undertaking or are responsible for other key tasks:

– The Supervisory Board is responsible for assessing members of the Board of Management and – taking account of the rules of co-determination – of the members of the Supervisory Board.
– The Board of Management is responsible for the assessment of heads of branches inside and outside the EU/EEA and of holders of key functions.

The persons concerned have a duty towards Munich Reinsurance Company to cooperate in the assessment of their fitness and propriety. In particular, they must submit to Munich Reinsurance Company all necessary documents and declarations on time, in full and in the required form. Members of the Supervisory Board must additionally submit an annual self-assessment of their fitness for the office.

B3 Risk management system including the own risk and solvency assessment (ORSA)

Description of the risk management system: Strategies, processes and reporting procedures

Organisational structure

Munich Re has set up a governance system as required under Solvency II. The main elements of this system are the risk management, compliance, audit and actuarial functions. At Group level, risk management is part of the division IRM and reports to the Group CRO. In addition to the Group functions, there are risk management units in the fields of business, each headed up by its own CRO.

Risk governance

Our risk governance ensures that an appropriate risk and control culture is in place by clearly assigning roles and responsibilities for all material risks. Risk governance is supported by various committees at Group and field-of-business level. The Board of Management must consult the risk management function on major decisions to be taken.

Defining the risk strategy

The risk strategy, which is aligned with Munich Re's business strategy, defines where, how and to what extent we are prepared to incur risks. The further development of our risk strategy is embedded in the annual planning cycle, and hence in our business planning. The risk strategy is approved by the Board of Management, and discussed with both the Audit Committee of the Supervisory Board and the full Supervisory Board as a material element of the own risk and solvency assessment (ORSA) process.

We determine the risk strategy by defining risk tolerances for a number of risk criteria and limits for risk concentrations that are based on the capital and liquidity available, and on our earnings target, and provide a frame of reference for the Group's operating divisions.

Implementation of strategy and the risk management cycle

The risk appetite defined by the Board of Management is reflected in our business planning and integrated into the management of our operations. If capacity shortages or conflicts with the limit system or regulations arise, defined escalation and decision-making processes are followed. These have been designed to ensure that the interests of the business and risk management considerations are weighed and reconciled with each other as far as possible.

Our implementation of risk management at the operational level embraces the identification, analysis and assessment of all material risks. This provides a basis for risk reporting, the control of limits and monitoring.

Risk identification is performed by means of appropriate processes and indicators, which are complemented by expert opinions. At Munich Re, the early identification of risks is primarily operationalised using the emerging risk process. We define emerging risks as new or sudden trends or events that are characterised by a high degree of uncertainty in terms of occurrence probability, expected loss amount, and/or possible effects on Munich Re.

As part of the risk analysis, a quantitative and qualitative assessment of all risks at consolidated Group level is made in order to take into account possible interactions between risks across all fields of business. Internal risk reporting provides the Board of Management with regular, detailed information on the risk situation, as regards the individual risk categories and the entire Group alike. This ensures that negative trends are identified in sufficient time for countermeasures to be taken. The purpose of our external risk reporting is to provide clients, shareholders and the supervisory authorities with a clear overview of the Group's risk situation. Actual risk limits are derived from the risk strategy: taking the defined risk appetite as a basis, limits, rules and any risk-reducing measures required are approved and implemented. We also have a comprehensive early-warning system that draws our attention to any potential shortages of capacity.

Quantitative risk monitoring based on indicators is carried out both centrally and within units. We monitor risks that cannot be expressed directly as an amount either centrally or in our units, depending on their materiality and allocation. The risk management system is regularly audited by Group Audit.

Control and monitoring systems

Our internal control system (ICS) is described in section B 4.

Risk management function

The RMF is one of four key functions within (re)insurance undertakings under Solvency II. The RMF at Munich Re is carried out locally in the individual fields of business, at MEAG – the asset manager of the Group – and in the individual insurance undertakings of the Group, as well as centrally by the central division IRM.

IRM is responsible for an integrated and Group-wide view of all risks. Its responsibility encompasses the recognition of all relevant risks, the quantification of capital requirements and a qualitative risk management process, including the development of the Group's risk strategy.

IRM is responsible for the following in particular:

– Risk identification and control
– Group-wide risk reporting
– Group-wide emerging risk management

– Internal control system and operational risk management
– Group-wide accumulation control
– Information security and business continuity risk management
– Development and maintenance of the internal model
– Models to quantify relevant risks; calculation of risk capital
– Allocation of risk capital for management purposes (in coordination with the gatekeeper process defined by Reinsurance Controlling)
– Scenario calibration
– Risk strategy, including the definition of limit and trigger values (risk tolerance) and the ORSA
– Development of replication portfolios for measuring market risk and managing assets (for the reinsurance group)
– Risk governance

In the area of information security, the Group Chief Information Security Officer (Group CISO) is responsible for defining, maintaining and implementing our information security strategy, through measures and projects such as launching our Group-wide risk management methodology and a consistent governance structure for information security. This enables information security risks to be consistently assessed and managed Group-wide. At the same time, the projects and measures work to continually improve information security at Munich Re, and aim to satisfy the steadily growing number of legal and regulatory requirements.

Implementation of the risk management system in the Group

We implement risk management consistently throughout the Group with the help of local mirror functions in the Group companies and specific risk management functions at Munich Reinsurance Company. The risk management objectives and principles define the basic framework for a consistent application of risk management standards throughout the Group. Strict adherence to these principles, risk management components and functions may pose a challenge in smaller-sized Group undertakings with limited human resources. In these instances, practical solutions are sought in adherence with the principle of proportionality. This means that the minimum requirements with regard to risk management are always met taking into account undertaking-specific risks and the nature, size and complexity of the undertaking and its operations.

There is a clear assignment of roles and responsibilities between the central RMF at Group level (central function) and the RMF at individual undertakings (local mirror functions). The central function develops a framework and sets standards, ensures consistent methods, defines risk appetite and permanently ensures a common risk culture. The local units adapt and implement the framework. They act within guidelines, incorporate local specifics (e.g. legal requirements and provisions) and provide local knowledge. Further principles are:

– Standardised risk management set-up for undertakings in terms of risk management components.
– Representation at Board level: Reporting directly to a member of the local board of management (e.g. the Chief Financial Officer, CFO, or Chief Executive Officer, CEO) or the local board or senior management.

In the primary insurance and reinsurance fields of business, important risk management structures, concepts and components such as the ICS and legal entity capital models have been implemented consistently in the bigger undertakings with complex risk situations.

Governance of the internal model

IRM informs the Board of Management and Supervisory Board of Munich Reinsurance Company on an ongoing basis about the correct functioning of the Group-wide internal model. The Group Risk Committee is informed annually by IRM about the results of the validation. It is the responsibility of the Group Risk Committee to guarantee that Munich Re has adequate systems in place for identifying and measuring risks at Group and segment level. This includes the setting of principles and minimum requirements that apply throughout the Group for the development of risk models and systems.

The actuarial function supports the RMF, in particular in shaping and implementing the internal model, for instance with regard to determining homogeneous risk groups or identifying significant risks. The actuarial function also provides its actuarial expertise when testing and validating the internal model.

To ensure the necessary regular exchange of information between the key functions of the Group, the heads of the key functions regularly share important findings.

The results of the validation, which is largely carried out by internal staff in the RMF of Munich Reinsurance Company and ERGO Group AG on the basis of a guideline applicable throughout the Group, are included in the annual ORSA process.

Own risk and solvency assessment – ORSA

The ORSA encompasses processes in the area of risk management, business strategy/planning and capital management. The main task of the ORSA is to combine these processes, to collect and assess the outcome of the individual processes, and to report these results at regular intervals.

It lies within the responsibility of the Group CRO to carry out the Group ORSA. The adequacy of the framework and ORSA Policy is reviewed by the Group Risk Committee on an annual basis. The situation expected in the planning period (2021–2025) in terms of the risk profile and capitalisation of Munich Re is a core element of the ORSA.

The regular ORSA activities associated with the business planning process are conducted annually. The risk and solvency position is monitored on a quarterly basis. The required frequencies for the entirety of processes that contribute to the regular ORSA are defined individually.

As soon as the ORSA process has been conducted and the findings have been critically reviewed and approved, the Group CRO (or local head of risk management) ensures that the findings and conclusions are communicated.

Certain circumstances may require a non-regular ORSA (ad-hoc ORSA). Internal and/or external factors that lead to a fundamental change in the risk profile and/or own funds of Munich Re may necessitate a non-regular ORSA. The findings of the non-regular ORSA are communicated without delay to Group supervision outside the regular reporting dates. The ORSA results and conclusions of the business planning process are submitted to the Board of Management on an annual basis. Findings from regular risk and solvency monitoring activities that are relevant to the ORSA are included in the quarterly internal risk report.

The ORSA report is adopted by the full Board of Management and discussed with the Audit Committee of the Supervisory Board. The main findings and conclusions of the ORSA are presented to the Supervisory Board.

To conduct the ORSA, the results of the internal model are used and further capital requirements (such as rating capital) are taken into account.

Interaction between capital and risk management

We manage our business on the basis of a consolidated Group view, using a comprehensive internal model to determine the capital needed to ensure that the Group is able to meet its commitments even after extreme loss events. We use the model to determine the capital required under Solvency II (the solvency capital requirement, or SCR). The SCR is the amount of eligible own funds that Munich Re needs to have available, with a given risk tolerance, to cover unexpected losses in the following year.

Other Munich Re undertakings within the scope of application of Solvency II use either the internal model, where available, or the standard formula under Solvency II to calculate their solvency capital requirement.

The forward-looking assessment of capital adequacy is based on projections of own funds and of capital needs over the business planning time horizon. Where necessary, this information may be complemented by an assessment based on other capital requirements (e.g. rating capital). To this end, the respective models are calibrated to the best estimate exposures pursuant to the planning process.

The target capitalisation levels are set out in the risk strategy as part of the ORSA process of Munich Re. Capital adequacy is assessed on a quarterly basis. The ORSA identifies the potential capital needed to manage Munich Re according to its risk and business strategy. More specifically, the outcome of the ORSA feeds into the development of a capital management plan over the business planning time horizon.

To sum up, the risk strategy, business strategy and capital management of Munich Re are closely interlinked.

B4 Internal control system

Description of the internal control system

Our internal control system (ICS) is an integrated system for managing operational risks that covers all risk dimensions and areas of the Group. It addresses Group management requirements, while complying with local regulations.

The ORCS (Operational Risk Control System) is an essential part of the ICS. As part of the ORCS, the risk and control self-assessments are carried out at least once a year in all fields of business, and the most material operational risks are identified and assessed in the process. Controls and management measures to mitigate the most material operational risks (key controls) are analysed in detail and assessed. Significant control deficiencies are addressed by means of improvement measures, the transfer of underlying risks, and/or close monitoring. The main findings derived from the risk and control self-assessments are reported to the Board of Management.

The Audit Committee of the Supervisory Board regularly requests reports on the effectiveness of the ICS as a whole and on changes to the risk and control landscape compared with the previous year. The reports describe the controls applied and state whether all controls considered necessary have been carried out correctly.

The reports of our external auditors and Group Audit confirm the effectiveness of the ICS.

The identification, management and control of risks arising out of the accounting process is indispensable for the production of reliable annual financial statements at both consolidated and solo-undertaking level. Risks significant for financial reporting from a Group perspective are integrated into the ICS in accordance with uniform criteria. The risks are checked annually by the risk takers, and the controls are amended as necessary.

Implementation of the ICS

The standardised methodology has been implemented on the basis of a Group-wide ORCS policy and guidelines specific to the fields of business. The decision about whether to include a Group undertaking in the standardised ICS was taken on the basis of the principle of proportionality – with due consideration being given to the nature, scale and complexity of the risks inherent in the undertaking's operations, and to compliance with regulatory and legal requirements. The Group undertakings that have not been integrated into the Group standard process control their risks in compliance with the principles of good corporate governance, Group-wide principles of risk management and relevant national laws.

Description of the compliance function

The Board of Management of Munich Reinsurance Company has assigned the development, implementation, monitoring and ongoing improvement of the Group-wide compliance management system (CMS) to the compliance function. The Board of Management of Munich Reinsurance Company expects the legally independent undertakings of the Group to implement these requirements accordingly.

It is the responsibility of the compliance function to define the necessary organisational measures for compliant behaviour for top management, senior management and staff, and to monitor compliance with these measures. Where there is a reasonable suspicion of non-compliant behaviour or there are doubts about compliance with legal or regulatory requirements, the Group Chief Compliance Officer (GCCO) can initiate measures or an investigation. If the compliance requirements are not met, the GCCO reports the matter to the Board of Management or to the responsible member of the board of management of the undertaking in question.

To this end, the compliance function has set up an adequate Group-wide compliance organisation that takes into account the relevant structure, business, risks and special features of the business model, and performs the following tasks:

- The early-warning function comprises an assessment of the effects of emerging legal changes on Munich Re. In this context, the undertakings of Munich Re regularly report on changes in their legal environment and their effects (risk of legal change). These are captured by the compliance function at Group level. Where necessary, follow-up measures are taken.
- Risk control duties include the identification and assessment of compliance risks within Munich Re. There is a process that identifies risks and defines adequate measures for their clarification, solution and mitigation.
- Monitoring duties refer to compliance with the relevant legal, regulatory and internal rules and regulations within Munich Re. The compliance organisations of Munich Re develop suitable compliance controls and monitor risk-based compliance with these controls.
- The compliance function of the Munich Re Group and the Group-wide compliance organisation provide advice and training for top and senior management, managers and staff with regard to compliance risks.

Group Compliance and Legal manages the compliance activities of Munich Re by means of Group-wide terms of reference, and monitors their implementation on the basis of the CMS. The CMS is the methodological framework for the structured implementation of early warning, risk control, consulting and monitoring tasks.

The main CMS instruments are the pillars of prevention, disclosure and reaction, compliance culture, and the compliance organisation. Written compliance standards, the consulting function, and communication and training make up the prevention pillar. The management of compliance risks and legal changes, monitoring activities and internal reviews are elements of disclosure. The continual improvement of the CMS and compliance reporting pertain to reaction.

Each core area comprises different, undertaking-specific compliance activities. The scale and nature of implementation of these compliance activities focuses on the size of the respective undertaking, and the nature and scale of the business. Irrespective of its organisational set-up, each undertaking belonging to the Group must have appropriate organisational measures in place in order to ensure that external and internal requirements are complied with, including but not limited to the following compliance risks:

– Bribery/corruption
– Financial sanctions
– Antitrust law
– Data protection law

The compliance whistleblowing portal was set up as another channel to complement the independent external ombudsman, and thus strengthen compliance within Munich Re. Staff and third parties can use this portal to anonymously report suspected criminal behaviour such as bribery and corruption, contraventions of antitrust laws, insider trading rules and data protection laws, and other activities that may cause reputational damage.

B5 Internal audit function

Mandate of Group Audit

Group Audit supports the Board of Management in performing its management control and monitoring tasks. It audits in particular the appropriateness and effectiveness of the system of governance and internal control system of the Munich Re Group.

Organisational set-up

Group Audit is an independent central division of Munich Reinsurance Company. The Head of Group Audit reports directly to the Chairman of the Board of Management of Munich Reinsurance Company and has an indirect reporting line to the Audit Committee of the Supervisory Board of Munich Reinsurance Company.

Some undertakings of the Munich Re Group have their own audit units to carry out audits. Functionally, these are downstream audit units of Group Audit that usually have a direct administrative reporting line to the boards of management of the individual undertakings. These downstream audit units have a direct or indirect functional reporting line to Group Audit.

Main duties

A uniform management framework for all Munich Re audit units, including Group Audit itself, is based on the following binding requirements:

- Minimum requirements regarding the specific form of the audit function
- Uniform processes, procedures and methods, instruments, software and standards for planning and executing audits (audit reports, quarterly and annual reports), measures tracking and quality management
- Reporting duties of downstream audit units

The audit mandate of Group Audit, as the internal audit function of Munich Re, directly covers all fields of business and their subsidiaries. The audit mandate of Group Audit also encompasses topics concerning the Group as a whole, and topics that are relevant for the management and risk management of Munich Re.

Independence and objectivity

The audit activity of Group Audit is based on national and international regulatory requirements and standards for professional internal audit practice. This applies in particular to the principles and rules governing adequate independence and objectivity of the internal audit function. An appropriate position in the organisational structure, a strict segregation of duties, and comprehensive quality assurance for audits ensure that the independence and objectivity of the internal audit function is adequately maintained.

We are not aware of any undue influence on the audit function that might have compromised its independence and objectivity in carrying out its duties in the year under review.

Independence

Group Audit is not subject to any instructions in planning and performing audits, or in evaluating and reporting the audit results.

The right of the Board of Management or Chairman of the Board of Management to request additional audits does not compromise the independence of Group Audit. Group Audit has the right to carry out ad-hoc audits outside the annual planning schedule. Group Audit is obliged to follow instructions only from the Board of Management or Chairman of the Board of Management of Munich Reinsurance Company.

The Head of Group Audit has the opportunity to draw attention to situations in which the independence of the internal audit function could be endangered.

Objectivity

The staff working in Group Audit are not entrusted with non-audit work. In particular, they do not perform tasks that could be incompatible with the audit function. Staff from other departments of the undertaking may not be entrusted with internal audit tasks. However, this does not rule out the temporary engagement of staff that are not permanently employed in Group Audit by the latter on the grounds of their specialist knowledge or for personal development purposes.

When assigning audit staff to audits, care is taken to ensure that no conflicts of interest arise, so that auditors are able to perform their tasks with adequate impartiality and objectivity.

B6 Actuarial function

Since 1 April 2013, the actuarial function (AF) of Munich Re has been part of the Integrated Risk Management central division that is within the responsibility of the Chief Financial Officer of Munich Reinsurance Company. It defines standards and basic rules for the actuarial functions of all fields of business with regard to Solvency II. The AF of Munich Re is responsible for the following:

- Coordinating the calculations of technical provisions and their regular review
- Ensuring the appropriateness of the methodologies and underlying models used, as well as of the assumptions used in the calculation of the technical provisions
- Assessing the sufficiency and quality of the data used to calculate the technical provisions
- Expressing an opinion on the overall underwriting and acceptance policy
- Expressing an opinion on the adequacy of the reinsurance agreements of the Group
- Preparing a written report for the management and supervisory bodies

For the property-casualty reinsurance, life reinsurance, and ERGO segments, individual segment AFs have been put in place that implement the requirements of the AF in their respective areas and cooperate with the AF. The heads of the relevant central divisions have a direct functional reporting line to the Group AF.

The Group undertakings within the scope of application of Solvency II have their own AFs in place. The AFs of the undertakings allocated to the ERGO field of business have a direct functional reporting line to the segment AF; the AFs for the reinsurance field of business have a direct functional reporting line to the Group AF and also work together with the segment AFs.

The AF of Munich Re notifies the Board of Management of its main activities and their outcome in writing once a year in the Group Actuarial Function Report. Severe events regarding the aforementioned responsibilities are reported by the Group AF on an ad-hoc basis to the Group Committee of the Board of Management. The Group Actuarial Function Report is also submitted to the Audit Committee of the Supervisory Board.

B7 Outsourcing

Outsourcing policy

In accordance with the relevant Solvency II supervisory requirements, the Board of Management of Munich Reinsurance Company has adopted a policy defining the minimum requirements for outsourcing (re)insurance activities and functions to service providers. This outsourcing standard, which applies directly to Munich Reinsurance Company, has been communicated as a Group-wide standard throughout the Munich Re Group, and is monitored accordingly.

The outsourcing policy of Munich Reinsurance Company describes the principles, minimum requirements, responsibilities, processes and reporting requirements to be adhered to during all stages of the outsourcing process, i.e. planning, implementation and termination (including contingency planning) of the relevant organisational measures. In accordance with the principle of materiality, and depending on the risks identified in each case, Munich Reinsurance Company may set different requirements for the granularity of the measures and processes in order to adequately ensure the continuity and unimpaired quality of the outsourced services at all times.

Outsourcing of critical or important operational activities or functions

Munich Re outsources important (re)insurance activities and functions within the Group, and to external service providers. An indicator for important outsourcing is when a Group member outsources an essential part of its (re)insurance activities and functions to a service provider, and the respective Group member is no longer fully capable of delivering its services to policyholders without the outsourced activity or function. From the perspective of the Munich Re Group, on the other hand, the outsourcing is classified as important if it may also cause material risks for Munich Re.

The Munich Re Group has high expectations and standards regarding service provision, irrespective of whether the services are provided by internal service providers (intra-Group outsourcing) or by external service providers outside the Group. Nevertheless, different internal processes are applied for selecting and managing service providers in each case.

List of important outsourcing activities of Munich Re Group

Name of service provider	Scope of outsourcing
MEAG AMG	Outsourcing of asset management of Munich Re Group
ERGO Group AG	Outsourcing of important insurance activities and functions of the German insurance undertakings in the ERGO field of business
ERGO Beratung und Vertrieb AG	Outsourcing of the sales operations of the German insurance undertakings within the ERGO field of business to a central sales entity

B8 Any other information

Assessment of the adequacy of the system of governance

The Munich Re Group has a system of governance that is adequate for the nature, scale and complexity of the risks inherent in its business. Its organisational structure is transparent, and there is a clear allocation of tasks and responsibilities. The organisational structure of the entities within the Group is documented, and updated on a regular basis.

The entities of the Group comply with the organisational principle of an adequate segregation of responsibilities. An effective internal communication system is in place. Clear functional and disciplinary reporting lines ensure the prompt transfer of information to all persons who need it in a way that enables them to recognise its importance as regards their respective responsibilities. The adequacy of Munich Re's organisational structure is reviewed on a regular basis by the organisational function at Group and field-of-business level.

The RMF, compliance, internal audit, and AF key functions are in place at the Munich Re Group. At a minimum, they perform their tasks in accordance with supervisory requirements for the respective key function. The responsibilities of the key functions are defined at Group level, and at the level of the individual fields of business or entities of the Group. Outsourced key functions are monitored by the entities concerned in line with requirements.

The terms of reference regarding the operational structure of the Munich Re Group, and the responsibility for meeting these terms, are defined in a policy. Processes that are subject to material risks must fulfil the requirements regarding documentation and communication set out in the policy.

The Board of Management complies with its responsibility for checking the adequacy of the system of governance on a regular basis. All Group-wide key functions perform regular self-assessments.

Any other material information regarding the system of governance

For the reporting period, there is no other material information regarding the system of governance of the Munich Re Group.

Risk profile

C

C Risk profile

Significant risks

Our general definition of risk is possible future developments or events that could result in a negative prognosis or a negative deviation from the Group's targets. We classify risks as "significant" if they could have a long-term adverse effect on Munich Re's assets, financial situation or profitability. We have applied this definition consistently to each business unit and legal entity, taking account of its individual risk-bearing capacity. In doing so, we differentiate between risks depicted in our internal model and other significant risks.

Risks depicted in the internal model

Solvency capital requirement – Internal model

Munich Re has a comprehensive internal model that determines the capital needed to ensure that the Group is able to meet its commitments even after extreme loss events. We use the model to calculate the capital required under Solvency II (the solvency capital requirement, or SCR).

The SCR is the amount of eligible own funds that Munich Re needs to have available, with a given risk tolerance, to cover unexpected losses in the following year. It corresponds to the value at risk of the economic profit and loss distribution over a one-year time horizon with a confidence level of 99.5%, and thus equates to the economic loss for Munich Re that, given unchanged exposures, will be exceeded each year with a statistical probability of 0.5%. Our internal model is based on specially modelled distributions for the risk categories property-casualty, life and health, market, credit and operational risks. We use primarily historical data for the calibration of these distributions, complemented in some areas by expert judgement. Our historical data covers a long period to provide a stable and appropriate estimate of our risk parameters. We continue to take account of diversification effects we achieve through our broad spread across various risk categories and the combination of primary insurance and reinsurance business. We also take into account dependencies between the risks, which can result in higher capital requirements than would be the case if no dependency were assumed. We then determine the effect of the loss absorbency of deferred taxes.

The table shows the solvency capital requirement for Munich Re and its risk categories as at 31 December 2020.

Solvency capital requirements (SCR)

	Reinsurance		ERGO		Diversification	
	31.12.2020	Prev. year	31.12.2020	Prev. year	31.12.2020	Prev. year
	€m	€m	€m	€m	€m	€m
Property-casualty	9,306	8,774	559	434	-452	-375
Life and health	6,082	5,525	1,332	1,215	-418	-380
Market	5,617	6,257	6,635	5,975	-1,522	-2,152
Credit	2,762	2,500	2,614	1,867	-167	-161
Operational risk	796	706	648	565	-259	-220
Other[1]	466	435	313	235		
Subtotal	**25,029**	**24,197**	**12,102**	**10,291**		
Diversification effect	-9,283	-8,836	-1,235	-1,158		
Tax	-2,989	-2,793	-902	-787		
Total	**12,758**	**12,568**	**9,965**	**8,347**	**-3,543**	**-3,383**

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	Group			
	31.12.2020	Prev. year	Change	
	€m	€m	€m	%
Property-casualty	9,413	8,833	580	6.6
Life and health	6,996	6,359	637	10.0
Market	10,730	10,080	650	6.4
Credit	5,210	4,206	1,004	23.9
Operational risk	1,186	1,051	135	12.8
Other[1]	779	670	109	16.3
Subtotal	**34,314**	**31,199**	**3,115**	**10.0**
Diversification effect	-11,737	-10,681	-1,056	-9.9
Tax	-3,396	-2,987	-409	-13.7
Total	**19,180**	**17,531**	**1,649**	**9.4**

1 Capital requirements for other financial sectors, e.g. institutions for occupational retirement provision.

At Group level, the SCR increased by 9.4% to €19.2bn, compared with €17.5bn as at 31 December of the previous year. This rise is attributable to increases in all risk categories. The SCR increase in the property-casualty category is mainly a consequence of further growth in business with natural hazard exposure in line with our business strategy. The SCR in life and health increased, mainly due to the fall in interest rates worldwide and to business growth in life reinsurance. The market risk SCR at Group level increased owing to opposite effects in both fields of business and a lower diversification. The market risk for the reinsurance field of business decreased appreciably owing to the lower currency and equity risk, whereas the market risk in the ERGO field of business was up, mainly owing to lower interest rates. The credit risk SCR increased largely owing to the fall in interest rates, which led to a rise in the market values of fixed-interest securities on the one hand and, in the ERGO field of business, to a reduction in loss-absorbing funds, as a result of which there was an increase in the remaining credit risks. Other information about the changes in the different risk categories and details about risk concentrations can be found in the following sections.

C1 Underwriting risk

Property-casualty

The property-casualty risk category encompasses the underwriting risks in the property, motor, third-party liability, personal accident, marine, aviation and space, and credit classes of insurance, together with special lines also allocated to property-casualty.

Underwriting risk here is defined as the risk of insured losses being higher than our expectations. The premium and reserve risks are significant components of the underwriting risk. Premium risk is the risk of future claims payments relating to insured losses that have not yet occurred being higher than expected. Reserve risk is the risk of technical provisions established being insufficient to cover losses that have already been incurred. In measuring loss provisions, we follow a cautious reserving approach and assess uncertainties conservatively. In every quarter, we also compare notified losses with our loss expectancy, in order to sustain a high level of reserves.

We differentiate between large losses involving a cost exceeding €10m in one field of business, losses affecting more than one risk or more than one line of business (accumulation losses), and all other losses (basic losses). For basic losses, we calculate the risk of subsequent reserving being required for existing risks within a year (reserve risk) and the risk of under-rating (premium risk). To achieve this, we use actuarial methods that are based on standard reserving procedures, but take into account the one-year time horizon. The calibration for these methodologies is based on our own historical loss and run-off data. Appropriate homogeneous segments of our property-casualty portfolio are used for the calculation of the reserve and premium risks. To aggregate the risk to whole-portfolio level, we apply correlations that take account of our own historical loss experience.

We limit our risk exposure by setting coverage limits not only for natural catastrophe risks, for example, but also for potential man-made losses. Our experts develop scientifically sound scenarios for possible natural events that quantify the probability of occurrence and damage potential. In addition to natural catastrophes, we include other accumulation risks such as cyber and pandemics, using special models. Based on these scenarios, the potential effects on our portfolio are determined using stochastic models.

Our internal model considers the resulting accumulation-risk scenarios to be independent events. Munich Re's greatest natural hazard exposure lies in the scenarios "Atlantic Hurricane" and "Earthquake North America". Our estimates of exposure for the coming year to the peak scenarios for a return period of 200 years are €6.7bn (6.3bn) for Atlantic Hurricane and €6.0bn (5.9bn) for Earthquake North America (before tax, retained).

As part of our regular validation, we look in particular at the sensitivity of results produced by the risk model for large and accumulation losses to changes in the return periods or loss amounts for events, or a change in the business volumes written. We also consider the effect of changes of dependency assumptions on the results.

Another measure for controlling underwriting risks is the targeted cession of a portion of our risks to other carriers via reinsurance or retrocession. Most of our companies have intra-Group and/or external reinsurance and/or retrocession cover.

In addition to traditional retrocession, we use alternative risk transfer for natural catastrophe risks in particular. Under this process, underwriting risks are transferred to the capital markets via special purpose vehicles. The purpose of these vehicles is to securitise underwriting risks, mostly in the area of natural catastrophes, and to issue catastrophe bonds (insurance-linked securities).

Munich Re mainly uses special purpose vehicles registered in Ireland and Bermuda to transfer risk to the capital markets. All special purpose vehicles are properly licensed and registered by the respective supervisory authorities. Underwriting liabilities are always fully funded. In order to minimise potential credit risk, investors' collateral is regularly invested in securities with the highest credit rating – for example, in US treasuries or World Bank bonds. The value of the collateral is ensured regularly by a trustee and by means of regular reporting.

Solvency capital requirement – Property-casualty

The solvency capital requirement increased by 6.6% at Group level. This was mainly due to growth in business with natural hazard exposure – in line with our business strategy – in the reinsurance field of business. The SCR increase was dampened by the depreciation of the US dollar. The widespread global measures to curb the COVID-19 pandemic resulted in high losses in the property-casualty reinsurance segment. We will consider this in the validation of the underlying models.

Solvency capital requirements (SCR) – Property-casualty

	Reinsurance		ERGO		Diversification	
	31.12.2020	Prev. year	31.12.2020	Prev. year	31.12.2020	Prev. year
	€m	€m	€m	€m	€m	€m
Basic losses	3,948	3,895	507	393	-330	-243
Large and accumulation losses	8,892	8,282	240	153	-184	-108
Subtotal	**12,840**	**12,177**	**747**	**545**		
Diversification effect	-3,534	-3,403	-188	-111		
Total	**9,306**	**8,774**	**559**	**434**	**-452**	**-375**

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	Group			
	31.12.2020	Prev. year	Change	
	€m	€m	€m	%
Basic losses	4,124	4,044	80	2.0
Large and accumulation losses	8,949	8,327	622	7.5
Subtotal	**13,073**	**12,371**	**702**	**5.7**
Diversification effect	-3,660	-3,537	-123	-3.5
Total	**9,413**	**8,833**	**580**	**6.6**

Life and health

The underwriting risk is defined here as the risk of insured benefits payable in life or health insurance business being higher than expected. Of particular relevance are biometric risks and policyholder-behaviour risks, such as lapses and lump-sum options. We differentiate between risks that have a short-term or long-term effect on our portfolio. In addition to the simple risk of random fluctuations resulting in higher claims expenditure in a particular year, the adverse developments with a short-term impact that we model notably include rare – but costly – events such as pandemics.

Life primary insurance products in particular, and a large part of our health primary insurance business, are long-term in nature, and the results they produce are spread over the entire duration of the policies. This can mean that negative developments in risk drivers with long-term effects sustainably reduce the value of the insurance portfolio (trend risks). The risk drivers mortality and disability are dominated by the life and health reinsurance segment, particularly by exposure in North America and the Asia-Pacific region. We also underwrite longevity risk in the life and health reinsurance segment, especially in the United Kingdom. The longevity risk driver can additionally be found in the products marketed by ERGO in Germany, together with typical risks related to policyholder behaviour, such as the lapse risk. To a lesser extent, we write risks connected with the increase in treatment costs, which arise in the ERGO field of business in particular.

Risk modelling attributes probabilities to potential modified assumptions. We use primarily historical data extracted from our underlying portfolios to calibrate these probabilities, and additionally apply general mortality rates for the population to model the mortality trend risk. To enable us to define appropriate parameters for the modelling of the range of areas in which we operate, portfolios with a homogeneous risk structure are grouped together and individual comprehensive profit and loss distributions determined. We then aggregate these distributions, taking account of the dependency structure to obtain an overall distribution.

Our largest short-term accumulation risk in the life and health risk category is a severe pandemic. We counter this risk by examining our overall exposure in detail using scenario analysis, and by defining appropriate measures to manage the risks.

In reinsurance, we control the assumption of biometric risks by means of a risk-commensurate underwriting policy. Interest-rate and other market risks are frequently ruled out by depositing the provisions with the cedant, with a guaranteed rate of interest from the deposit. In individual cases, these risks are also hedged by means of suitable capital-market instruments. We also limit our exposure to individuals and groups of persons in life insurance.

For primary insurance, substantial risk minimisation is achieved through product design. In case of adverse developments, parts of the provision for premium refunds – which are recognised and reversed in profit or loss – are of great significance for risk-balancing. In health primary insurance, most long-term contracts include the possibility and/or obligation to adjust premiums. Practically, however, there are limits to the resilience of policyholders.

Limits are laid down for the pandemic scenarios, which affect the portfolio in the shorter term, and the longevity scenarios with their longer-term effect in conformity with the risk strategy. We continue to analyse the sensitivity of the internal model to the input parameters on a regular basis. This relates to the interest rate, the biometric risk drivers and customer behaviour.

Solvency capital requirement – Life and health

The solvency capital requirement increased by 10.0% at Group level. In the reinsurance field of business, the increase in the SCR was due primarily to lower interest rates worldwide and to business growth. The increase in the SCR in the ERGO field of business was triggered above all by lower euro interest rates.

The losses incurred thus far as a result of the coronavirus pandemic are in line with the solvency capital requirement for the life and health reinsurance segment. We will consider this in the validation of the underlying models.

Solvency capital requirements (SCR) – Life and health

	Reinsurance		ERGO		Diversification		Group	
	31.12.2020	Prev. year	31.12.2020	Prev. year	31.12.2020	Prev. year	31.12.2020	Prev. year
	€m	€m	€m	€m	€m	€m	€m	€m
Health	247	304	713	602	–61	–51	899	855
Mortality	4,544	4,025	223	247	–15	–16	4,753	4,255
Disability	3,362	2,970	445	418	–30	–22	3,777	3,366
Longevity	1,214	985	662	641	–30	–26	1,846	1,600
Other	524	484					524	484
Diversification	–3,809	–3,242	–710	–694			–4,802	–4,200
Total	**6,082**	**5,525**	**1,332**	**1,215**	**–418**	**–380**	**6,996**	**6,359**

C2 Market risk

We define market risk as the risk of economic losses resulting from price changes in the capital markets. It includes equity risk, general interest-rate risk, specific interest-rate risk, property-price risk and currency risk. The general interest-rate risk relates to changes in the basic yield curves, whereas the specific interest-rate risk arises from changes in credit risk spreads – for example, on euro government bonds from various issuers, or on corporate bonds. We also include in market risk the risk of changes in inflation rates and implicit volatilities (cost of options). Fluctuations in market prices affect not only our investments, but also the underwriting liabilities – especially in life primary insurance. Due to the long-term interest-rate guarantees given in some cases and the variety of options granted to policyholders in traditional life insurance, the amount of the liabilities can be highly dependent on conditions in the capital markets.

Market risks are modelled by means of Monte Carlo simulation of possible future market scenarios. We revalue our assets and liabilities for each simulated market scenario, thus showing the probability distribution for changes to basic own funds.

We use appropriate limit and early-warning systems in our asset-liability management to manage market risks. Derivatives such as equity futures, options and interest-rate swaps – which are used mainly for hedging purposes – also play a role in our management of the risks. The impact of derivatives is taken into account in the calculation of solvency capital requirements.

Solvency capital requirements (SCR) – Market

	Reinsurance		ERGO		Diversification	
	31.12.2020	Prev. year	31.12.2020	Prev. year	31.12.2020	Prev. year
	€m	€m	€m	€m	€m	€m
Equity risk	2,437	2,792	1,692	1,479	-55	-109
General interest-rate risk	1,515	1,549	2,500	2,800	-920	-1,338
Specific interest-rate risk	1,824	1,623	3,829	3,081	-617	-632
Property risk	1,591	1,540	845	758	-87	-55
Currency risk	3,364	4,457	177	232	-108	-59
Subtotal	**10,731**	**11,962**	**9,043**	**8,348**		
Diversification effect	-5,114	-5,705	-2,408	-2,373		
Total	**5,617**	**6,257**	**6,635**	**5,975**	**-1,522**	**-2,152**

→

	Group			
	31.12.2020	Prev. year	Change	
	€m	€m	€m	%
Equity risk	4,074	4,162	-88	-2.1
General interest-rate risk	3,094	3,012	82	2.7
Specific interest-rate risk	5,037	4,071	966	23.7
Property risk	2,350	2,243	107	4.8
Currency risk	3,433	4,630	-1,197	-25.9
Subtotal	**17,988**	**18,118**	**-130**	**-0.7**
Diversification effect	-7,257	-8,038	781	9.7
Total	**10,730**	**10,080**	**650**	**6.4**

Solvency capital requirement – Market

The solvency capital requirement increased by 6.4% at Group level. Detailed information on the changes in the individual subcategories is available in the following sections.

Equity risk

The year-on-year reduction in the equity-backing ratio from 6.4% to 6.0% (after derivatives) was reflected in a decrease in the equity risk in the reinsurance field of business.

The increased equity risk in the ERGO field of business was primarily a consequence of lower interest rates, which in turn led to a reduction in the risk buffer available to life insurance companies and thus could be seen in this risk category as well.

Interest-rate risk

In the reinsurance field of business, the general interest-rate risk remained nearly unchanged. The increase in the specific interest-rate risk was, on the one hand, attributable to the higher market values of these exposures and, on the other, to the fact that the highly volatile credit risk spreads observed in 2020 and caused by the coronavirus pandemic led to an increased risk assessment.

In the ERGO field of business, the overall increase in the interest-rate risks primarily resulted from the further drop in interest rates. As a consequence, the risk buffers available to our life insurance companies decreased, leaving more interest-rate risks with the shareholder.

In the reinsurance field of business, the market value of interest-sensitive investments as at 31 December 2020 was €73.5bn (€71.0bn). Measured in terms of modified duration, the interest-rate sensitivity of those investments was 6.6 (6.5), while that of the liabilities[1] was 6.7 (6.3). A decrease in interest rates of one basis point would increase available own funds by approximately €11.0m (11.8m).

In the ERGO field of business, the fair value of interest-sensitive investments was €139.6bn (134.4bn). The modified duration was 10.1 (9.4) for interest-sensitive investments and 10.3 (10.1) for liabilities. A decrease in interest rates of one basis point would decrease available own funds by approximately €5.6m (12.5m). This resulted in exposure to falling interest rates arising mainly out of the long-term options and guarantees in life insurance business.

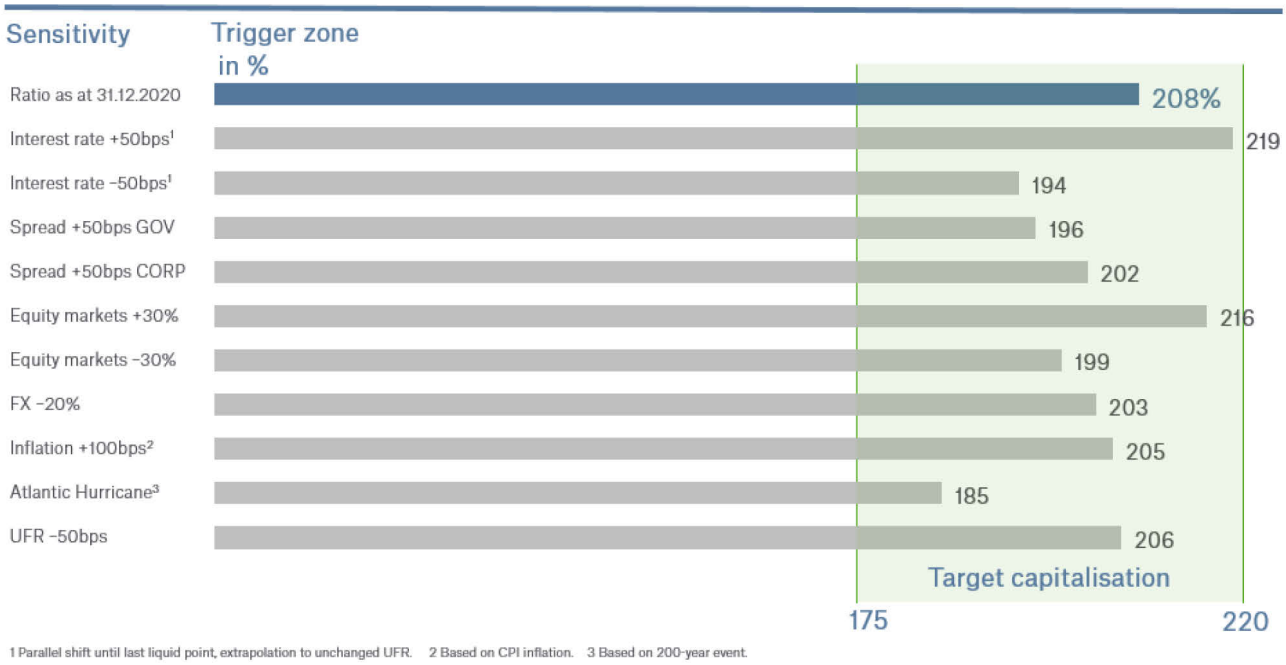
Property risk

The further expansion of the global property portfolio led to an increase in the property risk. This effect was partially offset by the depreciation of foreign currencies against the euro.

Currency risk

The currency risk is falling, primarily due to a decrease in US dollar positions.

Sensitivities of SII ratio



1 Parallel shift until last liquid point, extrapolation to unchanged UFR. 2 Based on CPI inflation. 3 Based on 200-year event.

We regularly determine how sensitively the basic own funds, the solvency capital requirement and ultimately also the solvency ratio react to strong changes in specific capital market parameters and in other defined stress scenarios. The impact of selected scenarios on the solvency ratio of the Munich Re Group are shown in the chart above.

While we take account of the volatility adjustment to the risk-free interest-rate curve both in the basic case and the scenarios depicted, transitional measures are not taken into account. The Atlantic Hurricane scenario corresponds to a 1-in-200-year event. The ultimate forward rate is not adjusted for the risk-free interest rate scenarios. In the UFR – 50bps scenario, the ultimate forward rate is reduced by 50 basis points given an unchanged term for the beginning of the extrapolation period.

For all evaluated sensitivities, Munich Re's capitalisation at Group level remains comfortably within the target corridor.

1 The liabilities mainly comprise the technical provisions in accordance with Solvency II (best estimate and risk margin).

In similar analyses for Munich Reinsurance Company, the solvency ratios for the individual scenarios are about 35 percentage points higher. This difference is mainly due to the transitional measures applied at individual related undertakings. In calculating own funds for Munich Reinsurance Company, the respective adjustments by related undertakings for long-term guarantees are taken into account in the valuation of shareholdings.

Prudent person principle

A number of guidelines and internal processes ensure that we invest in accordance with the prudent person principle.

- We invest only if defined security, quality, profitability and liquidity criteria are met, taking account of adequate mix and diversification requirements. In addition, we ensure that we receive early warning if we are in danger of not meeting our strict internal liquidity requirements.
- We invest in products only if we understand the risks they involve. To ensure compliance with this principle, every single new investment product is subject to the new-product process for investments.
- We invest for the purpose of covering our underwriting liabilities. For this purpose, we mirror important features of these liabilities – such as maturity patterns, currency structures and inflation sensitivities – on the assets side of the balance sheet (replication of liabilities). We apply our own risk criteria to define the maximum deviation between our investments and the expected underwriting cash flows.
- We use derivative financial instruments to reduce our risks and manage our investment portfolio efficiently. All financial derivatives are recorded in our systems and taken into account in our risk measurement.
- We make very few investments in assets which are not admitted to trading on a regulated financial market. Furthermore, the asset class mandates we give to our asset managers prescribe benchmarks and investment universes. Investments outside the prescribed universe are made only to a limited extent.
- We seek to avoid risk concentration where possible, using various risk criteria and early-warning indicators to avoid unwanted concentrations of risk on individual counterparties or sectors.

C3 Credit risk

We define credit risk as the financial loss that Munich Re could incur as a result of a change in the financial situation of a counterparty. In addition to credit risks arising out of investments in securities and payment transactions with clients, we actively assume credit risk through the writing of credit and financial reinsurance and in corresponding primary insurance business.

Munich Re determines credit risks using a portfolio model, which is calibrated over a longer period (at least one full credit cycle), and which takes account of changes in fair value caused by rating migrations and debtor default. The credit risk arising out of investments (including deposits retained on assumed reinsurance, government bonds and credit default swaps – CDSs) and reserves ceded is calculated by individual debtor. If the credit risk does not exclusively depend on the debtor's creditworthiness, but also on other factors (such as subordination, guarantees or collateralisation), these are also taken into account. We use historical capital-market data to determine the associated migration and default probabilities. Correlation effects between debtors are derived from the sectors and countries in which they operate, and sector and country correlations are based on the interdependencies between the relevant stock indices. The calculation of the credit risk in Other receivables is based on internal expert assessments. We also capitalise the credit risk for highly rated government bonds.

Risk concentrations are mainly in government bonds issued by countries inside and outside the European Union. In addition, pfandbriefe and similar covered bonds account for a large proportion of the investments. These partly result in issuer risk, and partly in risks related to the assets belonging to the cover pool.

We use a cross-balance-sheet counterparty limit system valid throughout the Group to monitor and control our Group-wide credit risks. The limits for each counterparty (a group of companies or country) are based on its financial situation as determined by the results of our fundamental analyses, ratings and market data, and the risk appetite defined by the Board of Management. The utilisation of limits is calculated on the basis of risk-weighted exposures. There are also volume limits for securities lending and repurchase transactions. Group-wide rules for collateral management – for example, for over-the-counter (OTC) derivatives and catastrophe bonds issued – enable the associated credit risk to be reduced.

In monitoring the country risks, we do not simply rely on the usual ratings, but perform independent analyses of the political, economic and fiscal situation in the most important of the countries issuing paper in which we might potentially invest. On this basis, and taking account of the investment requirements of the fields of business in the respective currency areas and countries, limits or action to be taken are approved. These are mandatory throughout the Group for investments and the insurance of political risks.

With the help of defined stress scenarios, our experts forecast potential consequences for the financial markets, the fair values of our investments, and the present values of our underwriting liabilities. At Group level, we counter any negative effects with the high degree of diversification in our investments and our liability structure, and with our active Group-wide asset-liability management.

The sensitivities in the credit risk model are regularly checked against the most important input parameters. This primarily concerns the recovery rates from insolvent debtors, the probabilities of debtor migration between rating classes, and the parameters for correlations between debtors. All validations demonstrated the appropriateness of the modelling approaches used.

We manage credit default risk in retrocession and external reinsurance with the assistance of limits determined by the Retro Security Committee. Our reserves ceded to reinsurers were assignable to the following rating categories as at 31 December:

Ceded share of technical provisions according to rating

%	31.12.2020	Prev. year
AAA	3.2	0.6
AA	24.5	21.9
A	41.3	36.6
BBB and lower	7.2	6.8
No rating available	23.7	34.1

Solvency capital requirement – Credit

The solvency capital requirement increased by 23.9% at Group level. The increase was mainly attributable to lower interest rates, as a result of which the market values of fixed-interest securities rose. Moreover, the risk buffers available to our life insurance companies decreased, leaving more credit risk with the shareholder. We also assessed the simultaneous occurrence of negative scenarios more conservatively on the basis of historical market data.

C4 Liquidity risk

Our objective in managing liquidity risk is to ensure that we are in a position to meet our payment obligations at all times. To guarantee this, the liquidity position is continuously monitored and subject to stringent requirements for the availability of liquidity. The short-term and medium-term liquidity planning is submitted to the Board of Management on a regular basis.

The medium-term strategic build-up of more illiquid investments (such as infrastructure investments) is leading to a gradual switch from liquid funds to illiquid assets, which has already been taken into account for the planned investments in the liquidity planning.

The liquidity risk is managed within the framework of our holistic risk strategy, with the Board of Management defining limits on which minimum liquidity requirements for our operations are based. These risk limits are reviewed annually, and compliance with the minimum requirements is continuously monitored. Using quantitative risk criteria, we ensure that Munich Re has sufficient liquidity available to meet its payment obligations even under adverse scenarios, with the liquidity position being assessed both for extreme insurance scenarios and for adverse situations in the capital markets.

We distinguish between the following four liquidity risk criteria:

Sub-criterion 1: Ability to meet known and expected liquidity requirements

At the relevant Munich Re solo undertaking level, coverage of the known and expected payments arising from the liquidity planning is required over a period of two years. Local liquidity planning is supplemented by central monitoring through Group Investment Management (GIM).

Sub-criterion 2: Very large underwriting losses (insurance claims shock)

In addition to the requirements under sub-criterion 1, Munich Reinsurance Company must ensure that for Munich Re as a whole sufficient fungible and liquid investments are available to meet claims payments following a very large underwriting loss event.

Sub-criteria 1 and 2 are deemed to be fulfilled if there is a minimum of 100% cover of the liquidity requirements for various time horizons.

Sub-criterion 3: Margin and collateral requirements for derivatives

The criterion defines for each investment fund a cushion of fungible, liquid investments to ensure that collateral requirements for outstanding derivative positions, measured as the daily VaR of 99.9%, can be met at all times.

Sub-criterion 4: Liquidity stress testing

This stress test is applied to all important solo undertakings of Munich Re. It depicts outflows of liquidity that may result from a combined stress event within a period of three months. The stress event comprises stresses in non-life business, life business and losses from investments, and it takes into account payments due and collateral requirements. In addition, liquidity requirements are monitored regarding a possible fall in Munich Re's ratings.

Expected profit included in future premiums (EPIFP)

For the Munich Re Group, the total amount of expected profit included in future premiums, calculated pursuant to Article 260(2) of Delegated Regulation (EU) 2015/35, amounts to €17,016m for life and health insurance and €1,485m for property-casualty insurance.

For Munich Reinsurance Company, the total amount of expected profit included in future premiums, calculated pursuant to Article 260(2) of Delegated Regulation (EU) 2015/35, amounts to €7,442m for life and health insurance and €518m for property-casualty insurance.

C5 Operational risk

We define operational risk as the risk of losses resulting from inadequate or failed internal processes, incidents caused by the actions of personnel or system malfunctions, or external events. This includes criminal acts committed by employees or third parties, insider trading, infringements of antitrust law, business interruptions, inaccurate processing of transactions, non-compliance with reporting obligations, and disagreements with business partners.

Operational risks are managed through our ICS. It addresses Group management requirements, while complying with local regulations. Appropriate measures – up to and including larger projects – are used to correct identified weaknesses or mistakes. The identification of risks that are significant from a Group perspective is covered by our ICS, and these risks are reviewed by the risk carriers and process owners on a regular basis. Furthermore, the design of the ICS and compliance with the system is regularly reviewed by Group Audit.

A key component of the ICS lies in ensuring the reliability of annual financial statements at both consolidated and solo-undertaking level, and the identification, management and control of risks arising out of the accounting process. The Group has established an accounting manual and a system providing information on changes to rules applied throughout the Group. Financial accounting and reporting are subject to materiality thresholds to ensure that the cost of the internal controls performed is proportionate to the benefits derived. The risks that are significant from a Group perspective for our financial reporting are covered by the ICS and are reviewed by the risk carriers on a regular basis.

We use scenario analyses to quantify operational risks. The results are fed into the modelling of the solvency capital requirement for operational risks and are validated using various sources of information, such as the ICS and internal and external loss data.

The sensitivity in the internal model is regularly checked against the most important input parameters. This mainly relates to the dependence of the result on frequency and loss amounts and the parameters for the correlations between scenarios. The analyses showed no anomalies in the year under review.

Solvency capital requirement – Operational risk

At Group level, the solvency capital requirement increased by 12.8% owing to a more conservative assessment in selected scenarios.

C6 Other material risks

We use appropriate procedures to specifically identify and analyse reputational risk, strategic risk and security risk. These risks are also assessed and managed in our risk management process.

Reputational risk

We define reputational risk as the risk of damage to Munich Re's reputation as a consequence of a negative public image, a deterioration in its credit rating, corporate value, etc. The reputational-risk aspect of relevant issues is assessed in the fields of business by reputational risk committees. Where a reputational risk could potentially have an impact on Munich Re, central divisions at Group level are involved in the assessment.

Strategic risk

We define strategic risk as the risk of making wrong business decisions, implementing decisions poorly, or being unable to adapt to changes in the operating environment. Existing and new potential for success in the Group and the fields of business in which it operates creates strategic risks, which we manage by carrying out risk analyses for significant strategic issues and regularly monitoring the implementation of measures deemed necessary. The Group Chief Risk Officer is involved in both the strategic and operational business planning as well as in significant company sales, mergers and acquisitions.

Security risk

We define security risks as risks resulting from threats to the security of our employees, data, information, and property. We are intensifying our analysis of cyber risks in particular in recognition of the increasing importance of information technology for Munich Re's core processes and the dynamic growth of cyber crime.

The Group CISO, a function that is assigned to risk management, is responsible for the central and Group-wide coordination and control of all activities involving information security risks. Security risk committees have also been set up in the fields of business to assess and manage security risks. The members of the security risk committees are managers from operational units (e.g. IT Security), the control functions (for example: risk management, information security, data protection) and representatives of the divisional units and central divisions.

To further improve cyber security, we are working on initiatives both specific to and across the fields of business to ensure a level of protection in line with our information security strategy. An additional expansion of human resources is also envisaged.

C7 Other risks

Economic and financial-market developments and regulatory risks

Munich Re is heavily invested in the eurozone, and in reinsurance in particular in the US dollar currency area. We attach importance to maintaining a correspondingly broad diversification of investments to cover our technical provisions and liabilities. However, low interest rates continue to pose major challenges, in particular for life insurance companies with guaranteed minimum interest rates in the eurozone. We take various risk management measures to counter fluctuations in the capital markets that can lead to volatilities in the Group's own funds.

The further development of the coronavirus pandemic constitutes the greatest risk factor by far for global economic development. If it is not possible to contain the virus with the help of the vaccines, there is also a chance that states will be unable to sustain their support measures. The resultant economic weakness would likely be driven to a greater extent by endogenous factors, such as growing unemployment and company insolvencies – which would have an adverse impact, at least temporarily, on markets for high-risk assets, as occurred last year. Moreover, prolonged restrictions on society and mobility could also contribute to greater political uncertainty.

In geopolitical terms, the focus remains on the large number of major conflicts and trouble spots which – if they escalate – could have perceptible consequences not only at a regional level, but also globally. These include the various crises in the Middle East, tensions between a number of Mediterranean neighbouring states and a possible intensification of the USA's confrontation with Iran, Russia or North Korea. With respect to global capital markets, each of these crises has the potential to dramatically increase uncertainty and volatility, at least in the short term.

In the medium term, there is also a risk of a split in the global technological and economic space driven by the geopolitical conflict between China and the USA. We constantly analyse the potential impact that developments of this sort may have on our risk profile.

A number of political risks persist in the eurozone. The economic damage caused by the pandemic could stoke political crises and, coupled with the disintegrative tendencies sparked by Brexit, lead to an EU crisis. The resultant uncertainty would put a strain on EU assets. Thanks to the cohesion signal sent by the introduction of the EU's recovery instrument, NextGenerationEU, this risk has faded into the background. Given the sharp increase in sovereign debt, however, risks related to a significant increase in refinancing costs exist – for example, in the event of an unexpectedly rapid rise in inflation or the flaring up of national political risks. Higher credit spreads and possible falls in ratings would lead to corresponding declines in market values for the bonds of the affected countries, among other things. Furthermore, the beginning "communitisation" of sovereign debt could lead to German government bonds losing their safe-haven status in the medium term, which would also involve falls in market values.

The exit negotiations between the EU and the United Kingdom have been concluded, and the United Kingdom officially left the EU and entered a transition period on 31 January 2020. With the EU-UK Trade and Cooperation Agreement, the rules were laid down for the future relationship starting on 1 January 2021. The Agreement is initially applied on a provisional basis; final ratification by the European Parliament is expected to take place by the end of April 2021. The United Kingdom has left the EU single market and the customs union. Duty-free and quota-free trade in goods remains possible, though the trade in services has been negatively affected. There will be no more "passporting rights" for financial services, for example.

A number of Munich Re insurance and reinsurance units conduct business in the United Kingdom, and the UK's departure from the EU has implications for that business. We have already adapted our local organisations to the direct effects of Brexit. These preparation measures enable Munich Re to continue to write business in the UK. As things stand at present, we do not expect the Trade and Cooperation Agreement to have any significant negative direct or indirect effects overall on Munich Re's assets, liabilities, financial position or results.

In Germany, government action with implications for private health insurance cannot be ruled out, especially if political parties advocating a "citizens' insurance scheme" influence the policies of a future German Federal Government. At the present time, however, it is not possible to predict what these implications might be.

It is also conceivable that greater emphasis will be placed on climate and environmental policy following the German federal election in 2021, which could also have an impact on the business model for investments or for primary insurance and reinsurance business. This is being monitored closely throughout the Group.

Global players such as Munich Re are subject to increased fiscal pressure nationally and internationally, as well as a higher audit intensity. Given the current political emphasis on an appropriate taxation of international companies and current work at OECD level as regards a global minimum tax rate, this trend is likely to continue and intensify.

Climate change

Climate change represents one of the greatest long-term risks of change for the insurance industry. We expect climate change to lead to a lasting increase in extreme weather events, affecting natural hazard risks. Our risk-management competence built up over many years, the consideration of findings from current climate research

and our highly developed risk models allow us to professionally assess these altered natural hazard risks and to adequately account for these risks in the solvency capital requirement as well as in contract wording and pricing. In addition to the physical risks arising out of climate change, our analyses increasingly look at how risks are changing as the transition to low-carbon economies proceeds, due to the replacement of carbon-based energy technologies, for example (transitional risks). We are also closely monitoring developments of direct and indirect climate liability risks. For example, claims for damages as a consequence of greenhouse gas emissions could be recognised in court – for instance, in connection with rising sea levels on coasts.

Legal risks

As part of the normal course of business, Munich Re companies are involved in court, regulatory and arbitration proceedings in various countries. The outcome of pending or impending proceedings is neither certain nor predictable. However, we believe that none of these proceedings will have a significant negative effect on the financial position of Munich Re. Legal risks are dealt with using combined legal expertise within the individual departments and units.

Emerging risks

We define emerging risks as trends or sudden events that are characterised by a high degree of uncertainty in terms of occurrence probability, expected loss amount, and potential impact on Munich Re.

Of course, such risks are difficult to identify. We have an established, centrally coordinated emerging risk process in place that draws upon the expertise and experience available across the Group. It provides us with diverse opinions and a solid basis of information that enable us to adequately assess the risks involved.

The result of this process is the Emerging Risk Heat Map, which classifies the risks most relevant to Munich Re according to their loss potential, occurrence probability, and urgency of risk-mitigating measures. Such measures may include making changes to underwriting guidelines or setting limits on our risk appetite. In addition, new trends and potential candidates for inclusion in the heat map are added to a trend radar covering different areas – society, technology, economy, environment and government – and monitored on an ongoing basis.

We monitor and assess potential trends by means of regular, structured discussions and exchanges with our international group of experts. In assessing the relevance of individual risks for Munich Re, we mainly examine potential accumulation risks at Group level. Cooperation agreements with external partners and peers – for example, the ER initiative of the CRO Forum – supplement our internal early-warning system.

Like in previous years, cyber risks and climate change continue to be the most significant risks on the heat map in terms of loss potential and occurrence probability. Although these risks have been known for some time, and risk management measures have been put in place to address them, the assessment of these risks continues to involve great uncertainty. Other relevant threat scenarios for Munich Re include a prolonged period of low interest rates, or a credit crisis in the most important industrialised countries.

In the area of political risks, third-party liability business in the USA is currently a focus of particular attention. The current waves of litigation related to opioids and glyphosate may be seen as part of a general trend called social inflation, i.e. the risk of change in claimant behaviour. In more and more instances, there is a disconnect between the amounts of damages awarded to claimants by the courts and the circumstances of the case. The jury system in the USA fosters this trend. The increased intake of sugar, the usage of neuro-enhancers and the rise in antibiotic-resistant bacteria could lead to more new mass litigation in the USA.

In the area of economic losses, we assess the trend towards insurance on demand as particularly relevant in terms of loss potential and occurrence probability. Insurance on demand enables consumers to purchase insurance cover any time and anywhere using their smart devices. Traditional insurance policies that provide cover for a period of one year are being replaced by policies that are only valid for an explicit period of time (which is generally shorter than one year). This may lead to material premium erosion in traditional insurance business or to a change in risk selection.

We consider the greatest societal risk to be chronic diseases; overall, these may lead to an increase in healthcare costs that are paid over long periods of time, for instance for diabetes and arthritis.

In the environmental area, we regard the trends “heat and drought” and “dangerous substances” to be especially relevant. “Heat and drought” mainly concerns agricultural and building insurance, but also third-party insurance for the operators of infrastructure, such as energy providers. “Dangerous substances” are primarily responsible for serious environmental damage and personal injuries; examples include asbestos substitute products, nitrate, glyphosate, chropyrifos, radon, bisphenol A, triclosan, diesel emissions and neonicotinoids.

In the technological sector, we are mainly seeing risks related to renewable energy and novel energy storage technologies, as well as risks with regard to digital privacy and dependencies in existing international supply chain networks. The main hazards here include: fire, explosion, business interruption, black-out, environmental risks, as well as deepfakes (deceptively realistic but actually fake media content), social monitoring and identity theft.

As part of the ER initiative of the CRO Forum, a joint position paper entitled “Demographics and social change from an insurance perspective” was published at the end of 2020. The purpose of this position paper is to provide an understanding of how insurers can address these changes. The paper takes account of the risks and opportunities of the main social and demographic trends, their impact on the insurance industry and the changes necessary in business and companies.

Valuation for solvency purposes

D

D Valuation for solvency purposes

D1 Assets

Valuation of assets

Pursuant to Article 75(1)(a) of Directive 2009/138/EC, all assets are valued at the amount for which they could be exchanged between knowledgeable and willing parties in an arm's length transaction – that means at their fair values. In contrast, IFRS uses a mixed measurement model. That means that some assets are measured at fair value, and others are measured at amortised cost or at par value. If the valuation basis for Solvency II and IFRS is the same, we use the same fair values for both purposes.

Assets

€m	Solvency II value	Statutory accounts value
Goodwill		2,782
Deferred acquisition costs		9,119
Intangible assets	0	1,223
Deferred tax assets	509	278
Pension benefit surplus	360	0
Property, plant & equipment held for own use	3,938	2,653
Investments (other than assets held for index-linked and unit-linked contracts)	229,962	228,461
Property (other than for own use)	9,322	6,539
Holdings in related undertakings, including participations	5,061	3,372
Equities	2,288	14,488
Equities – listed	1,470	14,488
Equities – unlisted	818	0
Bonds	156,141	184,068
Government bonds	91,220	184,068
Corporate bonds	56,742	0
Structured notes	4,897	0
Collateralised securities	3,282	0
Collective investments undertakings	50,043	2,758
Derivatives	2,265	12,435
Deposits other than cash equivalents	3,128	3,441
Other investments	1,713	1,359
Assets held for index-linked and unit-linked contracts	7,454	0
Loans and mortgages	10,470	7,543
Loans on policies	201	201
Loans and mortgages to individuals	3,113	0
Other loans and mortgages	7,156	7,342
Reinsurance recoverables from:	5,608	5,321
Non-life and health similar to non-life	2,474	3,019
Non-life excluding health	2,309	2,932
Health similar to non-life	166	87
Life and health similar to life, excluding health and index-linked and unit-linked	3,134	2,301
Health similar to life	1,428	89
Life excluding health and index-linked and unit-linked	1,707	2,212
Life index-linked and unit-linked	0	0
Deposits to cedants	19,616	7,980
Insurance and intermediaries receivables	3,782	3,098
Reinsurance receivables	172	8,558
Receivables (trade, not insurance)	3,389	14,539
Own shares (held directly)	0	0
Amounts due in respect of own fund items or initial fund called up but not yet paid in	0	0
Cash and cash equivalents	2,873	5,615
Any other assets, not elsewhere shown	541	777
Total assets	**288,676**	**297,946**

If the valuation basis for IFRS and Solvency II is different, we explain the differences in greater detail for the respective assets. If the differences between fair values according to Solvency II and IFRS values are immaterial, assets are measured at their IFRS values.

In addition to the differences in the valuation of individual items, the structure of the solvency balance sheet also differs from that of the IFRS balance sheet. Not all balance sheet items are therefore directly comparable. Even where the valuations are identical, the figures within items may not be the same due to differences in composition. The differences are particularly significant for assets shown under investments. There are also differences in the classification of receivables and other assets, which are described under the individual items. Where it was possible to reclassify assets as per the IFRS balance sheet in order to comply with the structure prescribed for the solvency balance sheet, we made this reclassification for comparison purposes.

Use of judgements and estimates in recognition and measurement

Where measurement has to be based on models because no market prices are available for the calculation of the fair values required, judgement must be exercised and estimates and assumptions used. These affect both the assets and the other liabilities shown in the solvency balance sheet.

Our internal processes are geared to determining amounts as accurately as possible, taking into account all the relevant information. The basis for determining amounts is management's best knowledge regarding the items concerned at the reporting date. Nevertheless, it is in the nature of these items that estimates may have to be adjusted in the course of time to take account of new knowledge.

In the sections below, we provide a separate description of the bases, methods and main assumptions used for the recognition, measurement and reporting of each material class of assets in the solvency balance sheet and in financial reporting under IFRS.

Goodwill

No goodwill is shown in the solvency balance sheet.

Under IFRS, goodwill resulting from the initial consolidation of subsidiaries is recognised, and tested for impairment at least annually. We additionally carry out ad-hoc impairment tests if there are indications of impairment.

Deferred acquisition costs

Deferred acquisition costs are not shown as an asset in the solvency balance sheet, but are taken into account in the valuation of the technical provisions.

Under IFRS, deferred acquisition costs comprise commissions and other variable costs directly connected with the acquisition or renewal of insurance contracts.

In life business and long-term health primary insurance, deferred acquisition costs are recognised and amortised over the period of cover in accordance with the anticipated recognition of income.

In property-casualty business, short-term health primary insurance and health reinsurance, the deferred acquisition costs are amortised on a straight-line basis over the average term of the policies of up to five years.

Deferred acquisition costs are regularly tested for impairment.

Intangible assets

Intangible assets are only shown in the solvency balance sheet if they are accounted for under IFRS and traded in an active market. The latter requirement is deemed to be met if an active market exists for similar assets. Since Munich Re's intangible assets currently do not meet this requirement, no amount is reported for this item in the solvency balance sheet.

Under IFRS, intangible assets mainly comprise acquired insurance portfolios and software. Acquired insurance portfolios are recognised at their present value on acquisition (PVFP – present value of future profits). This is determined as the present value of expected profits from the portfolio acquired, without consideration of new business and tax effects. The acquired insurance portfolios are amortised in accordance with the realisation of the profits from the insurance portfolios underlying the PVFP calculation. They are regularly tested for impairment. Software is recognised at cost and amortised on a straight-line basis over a period of use of three to five years. If necessary in the case of the software assets, impairment losses are recognised or reversed up to a maximum of the amortised acquisition cost or production cost.

Deferred tax assets

Under Solvency II, deferred taxes are determined pursuant to Article 15 in conjunction with Article 9 of Delegated Regulation (EU) 2015/35.

In accordance with Article 9(1) and (2) of the Delegated Regulation, assets and liabilities must be recognised and valued in accordance with IFRS requirements, provided that these are consistent with Article 75 of Directive 2009/138/EC. Therefore, under Solvency II, deferred tax assets are recognised and valued in accordance with IAS 12. In addition, the relevant interpretative decisions issued by BaFin are taken into account.

Deferred tax assets are calculated on the basis of the difference between the values ascribed to assets recognised and valued in accordance with Article 75 of

Directive 2009/138/EC, and the values ascribed to assets recognised and valued for tax purposes. Deferred taxes are determined on the basis of the tax rates of the countries concerned. Changes in tax rates and tax legislation that have already been adopted at the balance sheet date are taken into account.

Deferred tax assets are recognised in cases where asset items have to be valued lower, or liability items higher, in the solvency balance sheet than in the tax accounts of the Group company concerned, and these differences will be eliminated at a later date with a corresponding effect on taxable income (temporary differences). Also included are deferred tax assets deriving from tax loss carry-forwards and tax credits.

Deferred tax assets are recognised if there are sufficient taxable temporary differences which are expected to reverse in the same period as the deductible temporary differences. For any additional deductible temporary differences, deferred tax assets are recognised only to the extent that it is probable that future profits are available in the same period in which the deductible temporary differences are expected to reverse. A five-year result plan is used as a basis for this purpose.

Deferred tax assets and deferred tax liabilities are disclosed on a net basis in the Munich Re solvency balance sheet, provided that they refer to the same taxable entity and tax office. The offsetting is made to the extent possible with respect to the underlying tax assets and liabilities. In 2020, deferred tax assets and deferred tax liabilities amounting to €13,043m were offset against each other. After offsetting assets and liabilities, Munich Re's net deferred tax assets amounted to €509m as at 31 December 2020. Net deferred tax liabilities came to €7,070m.

For technical provisions, there was a net surplus of deferred tax assets of €5,391m, taking into account a reduction of deferred tax assets of €2,651m resulting from the application of transitional measures for technical provisions and €20m resulting from the application of volatility adjustments. Differences in recognition and measurement between the solvency balance sheet and the tax accounts resulted in a net surplus of deferred tax assets of €778m derived from provisions for post-employment benefits. Intangible assets are not recognised in the solvency balance sheet, while expenses incurred for internally developed IT products and acquired intangible assets are recognised as assets in the tax accounts. As a result, deferred tax assets amounted to €351m. Furthermore, deferred tax assets of €529m arose from loss carry-forwards and tax credits. Net deferred tax assets for other balance-sheet items amounted to €1,671m.

Investments tend to be valued higher (at fair value) in the solvency balance sheet than in the tax accounts where they are measured at amortised cost, resulting in a significant net surplus of deferred tax liabilities of €12,432m. Deferred tax liabilities of €2,849m arose from the claims equalisation provision, which is shown in the tax accounts but not in the solvency balance sheet.

As at 31 December 2020, deductible temporary differences not recognised as deferred tax assets in the solvency balance sheet amounted to €706m.

Loss carry-forwards and tax credits totalled €5,375m in 2020, resulting in deferred tax assets of €529m.

Tax loss carry-forwards and tax credits break down as shown in the table "Tax loss carry-forwards and tax credits".

Tax loss carry-forwards and tax credits

€m	For which deferred tax assets are recognised	For which deferred tax assets are not recognised	Total
Tax loss carry-forwards	**2,686**	**2,689**	**5,375**
Corporation tax loss carry-forwards	**1,190**	**2,366**	**3,556**
Expiring in up to three years	62	17	79
Expiring in over three years and up to ten years	66	60	126
Expiring in over ten years	160	3	163
Not expiring	903	2,286	3,189
Trade tax loss carry-forwards	**1,495**	**217**	**1,712**
Not expiring	1,495	217	1,712
Tax credits	**0**	**106**	**106**
Expiring in up to three years	0	26	26
Expiring in over three years and up to ten years	0	80	80
Expiring in over ten years	0	0	0
Not expiring	0	0	0

Pension benefit surplus

Details about how we recognise the pension benefit surplus are set out in connection with pension benefit obligations in section D 3.

Property, plant & equipment held for own use

Property held for own use

In the solvency balance sheet, owner-occupied property is recognised under "Property, plant & equipment held for own use". In the IFRS accounts, it is shown under other assets.

Under Solvency II, we measure land and buildings at fair value. Valuations for the directly held portfolio are performed by valuers within the Group, and those for the indirectly held portfolio are carried out by external valuers. Determining the sustainability of cash inflows and outflows, taking into account the market conditions at the property location, is material for valuation. The fair value is determined individually per item by discounting the future cash flow to the valuation date.

Under IFRS, land and buildings are measured at amortised cost. Buildings are depreciated on a straight-line basis. If the recoverable amount of land and buildings falls below their carrying amount, the carrying amount is written down to the recoverable amount.

Plant and equipment held for own use

For reasons of simplification, plant and equipment is recognised at its IFRS value in the solvency balance sheet, i.e. at amortised cost. Items are depreciated over their useful lives to reflect the decline in utility, unless they are written down to a lower value for impairment.

Our lease agreements are recognised in the solvency balance sheet and in accordance with IFRS. Right-of-use assets under lease agreements are comprised of lease liabilities, lease payments made at the time or before the asset is made available for use, initial direct costs, and restoration obligations. Short-term leases with terms shorter than 12 months (and with no option to buy), and lease agreements in which the asset underlying the agreement is of low value, are not recognised in the financial statements.

Munich Re as lessee: Leases relate primarily to land and buildings and the vehicle fleet. They include extension options as well as restrictions regarding the agreement of subleases. Right of use came to €369m as at the balance sheet date, counterbalanced by leasing liabilities of €375m.

Munich Re as lessor: Operating leases mainly involve leased property. At the balance sheet date, future minimum lease payments under non-cancellable leases totalled €2,090m.

Finance lease agreements – which are disclosed in our IFRS consolidated financial statements – are not material for our solvency position.

Investments (other than assets held for index-linked and unit-linked contracts)

Property (other than for own use)

For both solvency balance sheet and IFRS purposes, land and buildings not held for own use are measured in the same way as owner-occupied property, i.e. fair values are used for the solvency balance sheet, and amortised cost for IFRS.

Holdings in related undertakings, including participations

This item comprises the following holdings in related undertakings:

- Subsidiary undertakings not fully consolidated: These include certain collective investment undertakings having separate legal personality (investment companies), financial or credit institutions, investment firms, institutions for occupational retirement provision, alternative investment fund managers, UCITS management companies, non-regulated undertakings carrying out financial activities and ancillary services undertakings classified as immaterial from a Group perspective; and
- Jointly controlled entities not proportionally consolidated: These include certain collective investment undertakings having separate legal personality (investment companies), financial or credit institutions, investment firms, institutions for occupational retirement provision, alternative investment fund managers, UCITS management companies, non-regulated undertakings carrying out financial activities and ancillary services undertakings classified as immaterial from a Group perspective; and
- Any Munich Re participations.

Not included in this item are related undertakings taken into account in the consolidated data for the calculation of Group solvency in accordance with Article 335(1)(a–c) of the Delegated Regulation. These include interests in special purpose vehicles as well as subsidiary undertakings and jointly controlled entities that are insurance or reinsurance undertakings (whether or not the latter are from the EEA), insurance holding companies, mixed financial holding companies or material ancillary services undertakings, as these interests must be fully or proportionally consolidated for the calculation of Group solvency. For holdings in jointly controlled entities not included through proportional consolidation, Munich Re uses the valuation hierarchy explained below.

Holdings in related undertakings that are financial or credit institutions, investment firms, institutions for occupational retirement provision, alternative investment fund managers, UCITS management companies or non-regulated undertakings carrying out financial activities are

valued on the basis of the proportional share of the undertaking's own funds calculated in accordance with the relevant sectoral rules.

For any other holdings in related undertakings included in this item, Munich Re applies the following valuation hierarchy for determining fair value as at the balance sheet date:

– The default valuation approach is the use of quoted market prices in active markets for the same assets.
– If the use of quoted market prices in active markets for the same assets is not possible because the relevant related undertaking is not listed on a stock exchange, Munich Re measures its holdings:
  - based on the share of the excess of assets over liabilities in accordance with the Solvency II valuation rules, if the relevant related undertaking is a collective investment undertaking having separate legal personality or an insurance or reinsurance undertaking from the EEA;
  - based on the equity method pursuant to IAS 28, Investments in Associates and Joint Ventures, if the relevant related undertaking is not a collective investment undertaking having separate legal personality and not an insurance or reinsurance undertaking from the EEA, but is valued based on the equity method in Munich Re's consolidated financial statements pursuant to IFRS as it is considered material. Contrary to IAS 28, goodwill and other intangible assets are deducted from the value determined under IFRS using the equity method;
  - based on an alternative valuation method if the relevant related undertaking is not a collective investment undertaking having separate legal personality and not an insurance or reinsurance undertaking, and in addition it is not valued based on the equity method in Munich Re's consolidated financial statements pursuant to IFRS as it is considered immaterial.

Taking into consideration the principles of materiality, Munich Re uses

– the equity method for related undertakings not listed on a stock exchange that are not subject to supervision at individual entity level, and where the share of the excess of assets over liabilities in accordance with Solvency II valuation rules would therefore have to be calculated for Group solvency purposes only;
– an alternative valuation method for related undertakings not listed on a stock exchange that are considered immaterial under IFRS and thus are not valued using the equity method in Munich Re's consolidated financial statements.

In contrast to IFRS, where any material subsidiary is fully consolidated (irrespective of the business activity or type of undertaking), for the calculation of the Group solvency balance sheet, subsidiary undertakings are subject to full consolidation only if they are insurance or reinsurance undertakings (whether or not the latter are from the EEA), insurance holding companies, mixed financial holding companies or material ancillary services undertakings.

Under IFRS, interests in material associates are always accounted for using the equity method, while interests in immaterial subsidiaries and associates are measured at quoted market prices if available. If quoted market prices are not available, the alternative valuation method outlined above is applied, i.e. the undertaking's net asset value or local equity value is normally used.

The complete list of holdings in related undertakings of Munich Re can be found in QRT S.32.01.22 (Undertakings in the scope of the Group).

Other financial assets

In the solvency balance sheet, we value all other financial assets at fair value. Where a price is quoted in active markets (i.e. at market value), that price should be used. If no market price is available, valuation models are used in which observable market inputs are applied as far as possible. The same valuation principles are followed as under IFRS.

Determining fair values

Since market values are not available for all assets and liabilities, IFRS has a valuation hierarchy with three levels. Though Solvency II does not explicitly name the levels, it does provide for equivalent differentiation in the assessment of the fair values used. The allocation reflects which of the fair values derive from transactions in the market and where valuation is based on models because market transactions are lacking.

In the case of Level 1, valuation is based on quoted prices in active markets for identical financial assets which Munich Re can refer to at the balance sheet date. The financial instruments we have allocated to this level mainly comprise equities, equity funds, exchange-traded derivatives, and exchange-traded subordinated liabilities.

Assets allocated to Level 2 are valued using models based on observable market data. If the instrument has a fixed contract period, the inputs used for valuation must be observable for the whole of this period. In addition, Level 2 includes financial assets for which valuation and the market data required for valuation are provided by price quoters, but for which it is not possible to completely determine to which extent the data used is observable in the market. The financial instruments we have allocated to this level mainly comprise bearer bonds and bond funds, borrowers' note loans, covered bonds, subordinated securities, specified credit structures, and derivatives not traded on the stock market.

For assets allocated to Level 3, we use valuation techniques that are also based on unobservable inputs – which influences valuation both immaterially and materially. The inputs used reflect Munich Re's assumptions regarding the factors which market players would consider in their pricing. To this end, we use the

best available market information, supplemented with internal company data. The assets allocated to this level of the fair value hierarchy largely comprise land and buildings and real estate funds. Funds that mainly invest in theoretically valued instruments, and investments in infrastructure and in private equity are also allocated to Level 3, along with investments in subsidiaries, associates and joint ventures measured at fair value, as well as insurance derivatives and derivative components of variable annuities.

In the case of loans, bank borrowing, liabilities from financial transactions, and bond and note liabilities not traded on an active market, we decide on a case-by-case basis to which level of the fair value hierarchy to allocate the respective fair values.

To the extent that a change in individual inputs significantly affects the fair value shown, we will disclose the change and the resulting impact. This is particularly applicable to instruments measured under Level 3, as their measurement is more dependent on unobservable inputs.

The following table provides an overview of the models used to measure the fair values of our investments when market prices are not available.

Valuation techniques for assets

Bonds	Pricing method	Parameters	Pricing model
Interest-rate risks			
Loans against borrower's note/ registered bonds	Theoretical price	Sector-, rating- or issuer-specific yield curve	Present-value method
Cat bond (host)	Theoretical price	Interest-rate curve	Present-value method
Mortgage loans	Theoretical price	Sector-specific yield curve considering the profit margin included in the nominal interest rate	Present-value method
Derivatives	**Pricing method**	**Parameters**	**Pricing model**
Equity and index risks			
OTC stock options	Theoretical price	Listing of underlying shares Effective volatilities Money-market interest-rate curve Dividend yield	Black-Scholes (European) Cox, Ross and Rubinstein (American)
Equity forwards	Theoretical price	Listing of underlying shares Money-market interest-rate curve Dividend yield	Present-value method
Interest-rate risks			
Interest-rate swaps	Theoretical price	Swap and CSA curve[1]	Present-value method
Swaptions/interest-rate guarantee	Theoretical price	At-the-money volatility matrix and skew OIS/swap curve	Bachelier/ Normal Black
Interest-rate currency swaps	Theoretical price	Swap and CSA curve[1] Currency spot rates	Present-value method
Inflation swaps	Theoretical price	Zero-coupon inflation swap rates OIS curve	Present-value method
Bond forwards (forward transactions)	Theoretical price	Listing of underlying OIS curve	Present-value method
Currency risks			
Currency options	Theoretical price	Volatility skew Currency spot rates Money-market interest-rate curve	Garman-Kohlhagen (European)
Currency forwards	Theoretical price	Currency spot rates Currency forward rates/ticks Money-market interest-rate curve	Present-value method
Other transactions			
Insurance derivatives (natural and weather risks)	Theoretical price	Fair values of cat bonds Historical event data Interest-rate curve	Present-value method
Insurance derivatives (variable annuities)	Theoretical price	Biometric rates and lapse rates Volatilities Interest-rate curve Currency spot rates	Present-value method
Credit default swaps	Theoretical price	Credit spreads Recovery rates CSA curve[1]	ISDA CDS Standard Model
Total return swaps on commodities	Theoretical price	Listing of underlying index	Index ratio calculation
Commodity options	Theoretical price	Listing of underlying Effective volatilities Money-market interest-rate curve Cost of carry	Black-Scholes (European) Cox, Ross and Rubinstein (American)

Bonds with embedded derivatives	Pricing method	Parameters	Pricing model
Callable bonds	Theoretical price	Swap curve Issuer-specific spreads Volatility matrix	Hull-White model
CMS floaters	Theoretical price	Swap curve Issuer-specific spreads Volatility matrix	Replication model (Hagan)
CMS floaters with variable cap	Theoretical price	Swap curve Issuer-specific spreads Volatility matrix and skews	Replication model (Hagan)
Inverse CMS floaters	Theoretical price	Swap curve Issuer-specific spreads Volatility matrix and skews	Hull-White model
CMS steepeners	Theoretical price	Swap curve Issuer-specific spreads Volatility matrix and skews Correlation matrix	Replication model (Hagan) Stochastic volatility model
Convergence bonds	Theoretical price	Swap curve Issuer-specific spreads Volatility matrix Correlation matrix	Replication model (Hagan) Stochastic volatility model
Multi-tranches	Theoretical price	At-the-money volatility matrix and skew Swap curve Sector-, rating- or issuer-specific yield curve	Bachelier/ Normal Black, Present-value method Hull-White model
FIS loans against borrower's note	Theoretical price	At-the-money volatility matrix and skew Swap curve Sector-, rating- or issuer-specific yield curve	Bachelier/ Normal Black, Present-value method
Swaption notes	Theoretical price	At-the-money volatility matrix and skew Swap curve Money-market interest-rate curve Sector-, rating- or issuer-specific yield curve	Bachelier/ Normal Black, Present-value method

Funds	Pricing method	Parameters	Pricing model
Real estate funds	–	–	Net asset value
Alternative investment funds (e.g. private equity, infrastructure forestry)	–	–	Net asset value

Other	Pricing method	Parameters	Pricing model
Real estate	Theoretical market price	Interest-rate curve Market rents	Present-value method or valuation
Alternative direct investments (e.g. infrastructure, forestry)	Theoretical market price	Interest-rate curve (among others) Electricity price forecast and inflation forecast	Present-value method or valuation
Insurance contracts with non-significant risk transfer	Theoretical market price	Biometric rates and lapse rates Historical event data Interest-rate curve Currency spot rates	Present-value method

1 The OIS curve is used if the quotation currency is the CSA currency.

Insurance-linked derivatives are mostly allocated to Level 3 of the fair value hierarchy, as observable market inputs are often not available. The decision is made on a case-by-case basis, taking into account the characteristics of the instrument concerned. If no observable inputs are available for customised insurance-linked derivatives, the present-value method on the basis of current interest-rate curves and historical event data is used. The derivative components of catastrophe bonds are measured based on the values supplied by brokers for the underlying bonds, which is why the extent to which inputs used were not based on observable market data cannot readily be assessed.

The inputs requiring consideration in measuring variable annuities are derived either directly from market data (in particular volatilities, interest-rate curves and currency spot rates) or from actuarial data (especially biometric and lapse rates). The lapse rates used are modelled dynamically, depending on the specific insurance product

and current situation of the capital markets. The assumptions with regard to mortality are based on client-specific data or published mortality tables, which are adjusted with a view to the target markets and the actuaries' expectations. The dependency between different capital market inputs is modelled by correlation matrices. Where the valuation of these products is not based on observable inputs, which is usually the case, we allocate them to Level 3 of the fair value hierarchy.

We allocate insurance contracts with non-significant risk transfer that are consequently recognised as financial instruments ato Level 3 of the fair value hierarchy, since the measurement is primarily based on biometric and lapse rates and historical event data.

The other investments allocated to Level 3 are mainly external fund units (in particular, private equity, real estate and funds that invest in a variety of assets that are subject to theoretical valuation). Since market quotes are not available for these on a regular basis, net asset values (NAVs) are provided by the asset managers. We thus do not perform our own valuations using inputs that are not based on observable market data. We regularly subject the valuations supplied to plausibility tests on the basis of comparable investments.

Measurement categories according to IFRS

Unlike in the solvency balance sheet, pursuant to IAS 39 we have four categories of financial instruments with differing measurement requirements. The classification depends on the type and purpose of the financial assets and is determined when the instrument is acquired or issued.

Under IFRS, all financial instruments are initially measured at fair value. If an instrument is not subsequently measured at fair value through profit or loss, transaction costs relating directly to the acquisition or issuance of the respective financial instrument are to be taken into account.

The categories for subsequent measurement of financial assets under IAS 39 are listed below:

Loans are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. They are measured at amortised cost in accordance with the effective interest method.

The loans consist of mortgage loans (€7,342m), loans on policies (€201m) and other loans (€44,401m). The other loans mainly comprise covered bonds and government bonds.

In the solvency balance sheet, loans and mortgages – including loans on policies – are not shown as part of the investments, but are recognised at fair value separately from the investments (see D 1 Loans and mortgages).

Fixed-interest or non-fixed-interest securities available for sale that are not designated as at fair value through profit or loss or recognised under loans are accounted for at fair value, with resulting changes in value recognised in equity with no effect on profit or loss. Unrealised gains or losses are calculated taking into account interest accrued and, after deduction of deferred taxes and the amounts apportionable to policyholders by the life and health insurers on realisation (provision for deferred premium refunds), are recognised directly in equity under "other reserves".

Securities at fair value through profit or loss comprise securities held for trading and securities classified as at fair value through profit or loss. Securities held for trading mainly include all derivative financial instruments with positive fair values which we have acquired to manage and hedge risks but which do not meet the requirements of IAS 39 for hedge accounting. The securities that are designated as at fair value through profit or loss include embedded derivatives that must be separated. In addition, loan portfolios are managed based on the fair value of the entire portfolio, which is why it was also designated as at fair value through profit or loss.

Insurance-related investments are disclosed separately in our IFRS consolidated financial statements. These include investments for unit-linked life insurance contracts (see section D 1 Assets held for index-linked and unit-linked contracts) and other insurance-related investments.

The other insurance-related investments are investments that are not utilised for asset-liability management. These include insurance-linked derivatives, derivative components of variable annuities, derivatives for hedging variable annuity contracts and, on a limited scale, loans. In the case of loans, contractual wording largely waives the right to reimbursement triggered by the occurrence of insurance events. Similar agreements also exist for quasi-equity instruments. Insurance-linked derivatives include retrocessions in the form of derivatives, the derivative components of natural catastrophe bonds and from securitisations of mortality and morbidity risks, individually structured insurance-linked derivatives, and derivative components which are separated from their host insurance contract in accounting. Other insurance-related investments are predominantly measured at fair value through profit or loss. In addition, we designate contracts containing embedded derivatives that would generally have to be separated as measured at fair value through profit or loss in order to achieve an appropriate accounting statement. Insurance risks are defined as risks which – in a modified form – can also be covered by an insurance contract within the meaning of IFRS 4.

Other investments, which are also accounted for separately in the IFRS financial statements, comprise deposits with banks totalling €3,441m, investments in renewable energies amounting to €605m, forestry investments of €345m, and physical gold of €409m. With the exception of forestry investments, these are measured

at amortised cost. Forestry investments fall into the category of biological assets and include standing wood. They are accounted for at fair value less costs of disposal, with impact on profit or loss.

Where financial assets are also to be valued at fair value under IFRS, the valuation is exactly the same as for the solvency balance sheet.

The classification of investments in the solvency balance sheet is fundamentally different from that under IFRS. For supervisory purposes, investments are classified into different types on the basis of the Complementary Identification Codes (CIC). In financial reporting under IFRS, investments are broken down on the basis of the measurement categories of IAS 39. Therefore, the differences in valuation (compared with IFRS values) are not directly evident from the solvency balance sheet structure. IFRS and the solvency balance sheet do not differ in the valuation of securities available for sale, securities measured at fair value through profit or loss and insurance-related investments. These are generally measured at fair value. Under IFRS, financial assets recognised under loans are measured at amortised cost. As at 31 December 2020, these came to €51,944m compared with a fair value of €64,772m recognised in the solvency balance sheet.

Impairment

Under IFRS, at each balance sheet date we assess whether there is any substantial objective evidence of impairment in a financial asset or group of financial assets. We determine acquisition cost on the basis of the average purchase price. In the case of an impairment, a write-down is made to the fair value at the balance sheet date and recognised in profit or loss.

As all assets in the solvency balance sheet are shown at fair value, no impairment rules are required.

For the same reason, no rules exist under Solvency II regarding the unbundling of embedded derivatives or hedge accounting.

Assets held for index-linked and unit-linked contracts

These are investments for policyholders under unit-linked life insurances. Both in the solvency balance sheet and under IFRS (investments for unit-linked life insurance contracts), we account for them at fair value. In our consolidated financial statements (IFRS), we show these investments under the item insurance-related investments.

Loans and mortgages

In the solvency balance sheet, loans and mortgages – including loans on policies - are shown as a separate line item outside the investments. They are measured at fair value.

Under IFRS, we recognise all loans as part of the investments, measuring them at amortised cost. We perform regular impairment tests to check whether their value has fallen and a write-down to fair value is required. If the reasons for the impairment cease to apply, the impairment loss is reversed in profit or loss. The resultant carrying amount may not exceed the original amortised cost.

Reinsurance recoverables

Reinsurance recoverables are dealt with in section D 2 Technical provisions.

Deposits to cedants

Deposits to cedants serve as collateral for technical provisions covering business assumed. The amount of and changes in these deposits derive from the values for the changes in the related technical provisions. Deposits to cedants thus do not have a fixed maturity date, their release generally being dependent on the run-off of the corresponding provisions.

In the solvency balance sheet, deposits to cedants are measured at fair value.

Under IFRS, deposits to cedants (“deposits retained on assumed reinsurance”) are measured at nominal value. If receivables become doubtful, they are written down for impairment.

Insurance and intermediaries receivables

In the solvency balance sheet, insurance and intermediaries receivables are measured at fair value, taking counterparty default risk into account.

Under IFRS, we recognise insurance and intermediaries receivables at face value. We perform regular impairment tests to check whether their value has fallen. The amount of the probable loss is measured as the difference between the amortised cost and the present value of estimated future cash flows. If, in a subsequent period, the reasons for the impairment cease to apply, the impairment loss is reversed in profit or loss. The resultant carrying amount may not exceed the original amortised cost.

Reinsurance receivables

In the solvency balance sheet, reinsurance receivables are measured at fair value, taking counterparty default risk into account.

Under IFRS, we recognise reinsurance receivables at face value. We perform regular impairment tests to check whether their value has fallen. The amount of the probable loss is measured as the difference between the amortised cost and the present value of estimated future cash flows. If, in a subsequent period, the reasons for the impairment cease to apply, the impairment loss is reversed in profit or

loss. The resultant carrying amount may not exceed the original amortised cost.

In the solvency balance sheet (unlike in IFRS), receivables from brokerage and from reinsurance business assumed are not recognised under reinsurance receivables, but under insurance and intermediaries receivables.

Receivables (trade, not insurance)

In the solvency balance sheet, the receivables (trade, not insurance) include in particular receivables from dividends, receivables from profit pooling or transfer agreements, receivables from taxes, and other receivables. These receivables must be measured at fair value. However, for reasons of simplification, receivables from dividends and receivables from profit pooling or transfer agreements are recognised at their IFRS carrying amount, i.e. at amortised cost. Doubtful receivables are written down to the estimated recoverable amount.

Receivables from taxes and other receivables are discounted, taking into account the actual risk-free interest rates and relevant interest-rate spreads. The individual business partner's credit risk is also taken into consideration.

In the solvency balance sheet, all insurance contracts are recognised under technical provisions irrespective of the level of insurance risk involved in the individual contracts. Therefore, receivables resulting from reinsurance contracts with non-significant risk transfer, which do not fall within the scope of IFRS 4, are – notwithstanding IFRS – not reported as receivables, but as part of the technical provisions.

Under IFRS, we recognise receivables at amortised cost. Doubtful receivables are written down to the estimated recoverable amount, and an impairment loss is recognised in profit or loss.

Both reinsurance receivables and insurance and intermediaries receivables are included in other receivables under IFRS, but shown as separate items in the solvency balance sheet.

Own shares (held directly)

This item includes own shares held by Munich Re. Under Solvency II, own shares are measured at fair value. When determining own funds, this amount has to be deducted from basic own funds.

Under IFRS, own shares are not shown separately as an asset in the balance sheet, but have to be deducted from shareholders' equity.

Amounts due in respect of own fund items or initial funds called up but not yet paid in

This item is currently not relevant for Munich Re.

Cash and cash equivalents

Under Solvency II, the face value of cash is considered to be the fair value. Transferable deposits (including cheques) are valued at amortised cost (usually this is the par value). Credit risk is taken into account by write-downs of doubtful deposits and doubtful cheques to the estimated recoverable amount.

Under IFRS, cash held is accounted for at face value.

Any other assets, not elsewhere shown

"Any other assets, not elsewhere shown" covers all assets that cannot be allocated to any other class of assets. In contrast to our IFRS financial reporting, in the solvency balance sheet hedging derivatives (€27m) are reclassified as derivatives.

As a basic principle, in the solvency balance sheet all other assets are to be measured at fair value. Similar to IFRS, prepayments are calculated pro rata temporis and cover the period between the reporting date and the date the corresponding benefit is earned or becomes due. In contrast to IFRS, prepayments are discounted under Solvency II taking into account the actual relevant risk-free interest rate and relevant interest-rate spreads, unless the effect from discounting is immaterial.

In the solvency balance sheet, inventories are measured using the relevant IFRS carrying amounts, i.e. the estimated realisable value. If, in the normal course of business, the value falls below the value of the acquisition costs, inventories are to be written down to this value.

D2 Technical provisions

Description of the valuation methodologies used for solvency purposes

Overall requirements for technical provisions

Insurance and reinsurance undertakings have to establish technical provisions with respect to all of their insurance and reinsurance obligations towards policyholders, cedants and beneficiaries. The value of the technical provisions corresponds to the current amount the undertakings would have to pay if they were to transfer their insurance and reinsurance liabilities immediately to another insurance or reinsurance undertaking. The calculation of technical provisions must make use of and be consistent with information provided by the financial markets and generally available data on underwriting risks (market consistency). Technical provisions must be calculated in a prudent, reliable and objective manner. Following the principles set out above, the calculation of technical provisions is carried out as described below.

Calculation of technical provisions

Technical provisions are calculated using established principles for actuarial valuation. Manuals of methods for Solvency II – and for the calculation of technical provisions in particular – ensure consistent valuation approaches throughout Munich Re. In this context, we set out requirements regarding segmentation of business, data used, economic and operational (e.g. biometric) assumptions, and methods and models.

In general, the value of technical provisions is equal to the sum of a best estimate and a risk margin as explained below.

Technical provisions

€m	Solvency II value
Technical provisions – non-life	63,050
Technical provisions – non-life (excluding health)	59,722
TP calculated as a whole	0
Best estimate	57,938
Risk margin	1,784
Technical provisions – health (similar to non-life)	3,329
TP calculated as a whole	0
Best estimate	3,186
Risk margin	142
Technical provisions – life (excluding index-linked and unit-linked)	143,873
Technical provisions – health (similar to life)	67,882
TP calculated as a whole	0
Best estimate	61,951
Risk margin	5,931
Technical provisions – life (excluding health and index-linked and unit-linked)	75,992
TP calculated as a whole	0
Best estimate	69,543
Risk margin	6,448
Technical provisions – index-linked and unit-linked	8,358
TP calculated as a whole	57
Best estimate	8,186
Risk margin	115
Technical provisions total	**215,281**

The best estimate corresponds to the probability-weighted average of future cash-flows, taking account of future developments and uncertainties. It also takes discount effects into account and uses the relevant risk-free interest-rate term structure. As at the reporting date, we do not make use of any transitional measures regarding the relevant risk-free interest rate term structure. The volatility adjustment (pursuant to Article 77(d) of Directive 2009/138/EC) is used in the models of the portfolios of six primary insurance companies: two undertakings in Germany (ERGO Lebensversicherung AG and Victoria Lebensversicherung AG), two Belgian undertakings (ERGO Insurance N.V. and DKV Belgium S.A.), one undertaking in Austria (ERGO Versicherung AG) and one in Greece (ERGO Insurance Company S.A.). Matching adjustments are not used. Three life primary insurance companies (ERGO Lebensversicherungs AG, Victoria Lebensversicherung AG and ERGO Versicherung AG, Vienna) apply a transitional deduction to their technical provisions (Article 308(d) of Directive 2009/138/EC).

The calculation of the best estimate is based upon up-to-date and credible information and realistic assumptions, and is performed using adequate, applicable and relevant actuarial and statistical methods. To ensure consistency where possible, most of the economic assumptions are

derived at Group level. Non-economic assumptions are mostly based on the characteristics of the insurance portfolio. Expenses are assessed on a going-concern basis. The cash-flow projection used in the calculation of the best estimate takes account of all the cash inflows and outflows required to settle the insurance and reinsurance obligations over their lifetime. The best estimate is calculated gross, without deduction of the amounts recoverable from reinsurance contracts and special purpose vehicles (e.g. retrocession to the capital market via a cat bond). Those amounts are calculated and reported separately.

For property-casualty (re)insurance, the best estimate is calculated separately for the premium provision and the provision for claims outstanding. Premium provisions are established for future claim events covered by insurance and reinsurance obligations falling within the contract boundary. Provisions for claims outstanding are established for claim events that have already occurred, regardless of whether the claims arising from those events have been reported or not.

The risk margin is set at such a level as to ensure that the value of the technical provisions as a whole (best estimate plus risk margin) is equivalent to the amount that insurance and reinsurance undertakings would be expected to require in order to take over and meet the insurance and reinsurance obligations.

The general principle for the calculation of the risk margin assumes that the whole portfolio of insurance and reinsurance obligations of the entity that calculates the risk margin (the [re]insurance undertaking) is taken over by another undertaking (the reference undertaking). The risk margin covers the following risk categories: underwriting risk, credit risk with respect to reinsurance contracts, arrangements with special purpose vehicles, intermediaries, policyholders and any other material exposures which are closely related to the insurance and reinsurance obligations, and operational risk. The risk margin is calculated by projecting the SCR; the risk categories above are covered and suitable risk drivers are used for the projection. The present value of the projected solvency capital requirements is then multiplied by the cost-of-capital rate of 6% prescribed under Solvency II.

The risk margin is allocated to the lines of business on a proportional basis, taking into account both the risk and the best estimate of the technical provisions in the line of business concerned. The best estimate and the risk margin are valued separately. However, where future cash flows associated with insurance or reinsurance obligations can be reliably replicated using financial instruments for which a reliable market value is observable, the value of technical provisions associated with those future cash flows is determined on the basis of the market value of those financial instruments. In this case, separate calculations of the best estimate and the risk margin are not required.

Under Solvency II, we segment our insurance and reinsurance obligations into homogeneous risk groups, and as a minimum by line of business, when calculating technical provisions.

Compared with the previous year, there were two greater changes to the model and its underlying assumptions used to calculate the technical provisions. One change concerned the Canadian life reinsurance portfolio. The mortality rates for higher ages in combination with long contract periods were increased, which led to a rise in the mid three-digit million euro range in the technical provisions. Another change related to DKV Belgium S.A. in the life and health segment. The option to annually adjust the insured's retention pursuant to the medical inflation calculated by government agencies is now being utilised for the underlying products. As a result, the technical provisions were reduced by a mid-three-digit million euro amount.

Valuation of financial guarantees and contractual options

When calculating technical provisions, we take account of the value of financial guarantees and contractual options included in insurance and reinsurance policies. Any assumptions made with respect to the likelihood that policyholders will exercise contractual options, including lapses and surrenders, are based on current and credible information. The assumptions take account, either explicitly or implicitly, of the impact that future changes in financial and non-financial conditions may have on the exercise of those options.

Simplifications used in the calculation of technical provisions

Munich Re does not make use of the simplifications described in Title I, Chapter III, Section 6 of the Delegated Regulation with the exception of the application of Article 57, Article 58(a) and Article 59. Article 57 of the Delegated Regulation permits the use of simplified calculations in the valuation of amounts recoverable from non-proportional reinsurance contracts for non-life primary insurance companies. These simplified calculations account for less than 5.0% of our total amounts recoverable from reinsurance contracts. The simplified calculation of the risk margin pursuant to Article 58(a) of the Delegated Regulation is applied for standard-model entities in primary insurance and a small number of non-EEA reinsurance subsidiaries only. These simplified calculations account for less than 2.0% of our total technical provisions.

Article 59 of the Delegated Regulation allows the risk margin to be fully recalculated only at the end of the year and to be updated to scale for the quarterly closings. In the property-casualty reinsurance segment, we scale the risk margin according to the best estimates of net technical provisions, as illustrated in the Guidelines on valuation of technical provisions (EIOPA-BoS-14/166, Technical Annex VI).

In addition to these simplifications, Munich Re applies the proportionality principle as set out in Article 29(4) of Directive 2009/138/EC.

Impact of the transitional deduction on technical provisions and of the volatility adjustment

In line with the requirements defined in Directive 2009/138/EC, at the end of every year, the transitional deduction described in Article 308(d) (i.e. the impact of the transitional measure on technical provisions) will decrease on a straight-line basis from 100% during the year beginning on 1 January 2016 to 0% on 1 January 2032. The use of the transitional deduction on the technical provisions of the three above-mentioned life primary insurance undertakings has no impact on the SCR at Group level.

Six life and health primary insurance companies already mentioned apply a (static) volatility adjustment to the risk-free interest-rate term structure in accordance with Article 77(d) of Directive 2009/138/EC. The volatility adjustment decreases the technical provisions and increases the eligible own funds of the relevant individual undertakings, which has an effect at Group level.

The adjustment also has an effect on the SCR of the relevant undertakings, which is calculated using the standard formula, but also on the Group's SCR, which is calculated using the internal model.

The quantitative effects of the transitional deduction on technical provisions and the volatility adjustment on eligible own funds and the SCR are illustrated in QRT S.22.01.22 (impact of long-term guarantees and transitional measures) in the annex to this report.

The use of the transitional measures and volatility adjustment results in an immaterial reduction of the minimum capital requirement (MCR).

Uncertainty associated with the amount of technical provisions

The assessment of the best estimate of technical provisions is largely based on available data and actuarial models in conjunction with expert judgement. In view of the uncertainties involved, different experts will arrive at different assumptions based on their individual background, professional experience, or field of discipline. As a result, a certain degree of uncertainty in the models and parameters used is inevitable. Such uncertainty is taken into account in the validation of the technical provisions by identifying sensitivities and developing and examining scenarios.

Compared with the uncertainty involved in determining best estimates, the determination of the risk margin as part of the technical provisions is not characterised by a high degree of freedom when selecting assumptions. The risk margin is based on the present value of risk capital projections, and is largely prescribed by regulatory requirements. Some uncertainty is involved – for example, in selecting the specific projection patterns or the degree of diversification.

Description of methods used for IFRS valuation and main differences compared with Solvency II

In accordance with the provisions of IFRS 4, Insurance contracts, underwriting items are recognised and measured on the basis of US GAAP (United States Generally Accepted Accounting Principles).

Recognition and measurement of gross technical provisions under IFRS

Technical provisions are shown as gross figures in the balance sheet, i.e. before deduction of the ceded share. The ceded share is calculated and accounted for on the basis of the individual reinsurance agreements. Acquisition costs for insurance contracts are recognised and amortised over the terms of the contracts. The measurement of technical provisions is based on FAS 60 (life primary insurance without performance-related participation in surplus, health primary insurance and the bulk of reinsurance treaties), FAS 97 (life primary insurance based on the universal life model, unit-linked life insurance and life reinsurance for assumed business based on FAS 97) and FAS 120 (life primary insurance with performance-related participation in surplus). Credit insurance contracts are accounted for in accordance with the rules of IFRS 4.

Unearned premiums are accrued premiums already written for future risk periods. For primary insurance, these premiums are calculated separately for each insurance policy pro rata temporis; for reinsurance, nominal percentages are used in some cases where the data for a calculation pro rata temporis is not available. The posting of unearned premiums is restricted to short-term underwriting business; i.e. property-casualty business and parts of accident and health business. In the case of long-term business, a provision for future policy benefits is established.

The **provision for future policy benefits** in long-term underwriting business is posted for the actuarially calculated value of obligations arising from policyholders' guaranteed entitlements. As well as life insurance, this concerns portions of health and personal accident insurance, insofar as the business is conducted like life insurance. Measurement is usually based on the prospective method, by determining the difference between the present values of future benefits and future premiums. The biometric actuarial assumptions used for their calculation include, in particular, assumptions relating to mortality, disability and morbidity, as well as assumptions regarding interest-rate development, lapses and costs. These are estimated on a realistic basis at the time the insurance contracts are concluded, and they include adequate provision for adverse deviation to make

allowance for the risks of change, error and random fluctuations.

In reinsurance, measurement is carried out partly individually for each risk and partly collectively for reinsured portfolios, using biometric actuarial assumptions based on the tables of the national actuarial associations. These are adjusted for the respective reinsured portfolio, in line with the probabilities observed for the occurrence of an insured event. Discount rates are chosen that reflect the best estimate of expected investment income, less a safety margin. For the major part of the portfolio, these assumptions are fixed at the beginning of the contract and not changed over its duration.

In primary insurance, measurement is generally carried out individually for each risk. In German life primary insurance, biometric actuarial assumptions based on the tables of the German Association of Actuaries (Deutsche Aktuarvereinigung e.V.) are used. We mostly use the tables of the national actuarial associations for the rest of primary insurance business. The actuarial interest rate employed for discounting in life primary insurance is limited by the respective maximum actuarial interest rate prescribed by the supervisory authorities. In health primary insurance, discount rates are chosen that reflect the best estimate of expected investment income, less a safety margin.

The **provision for outstanding claims** is for payment obligations arising from insurance contracts in primary insurance and reinsurance where the size of the claim or the timing of the payment is still uncertain. Part of the provision is for known claims for which individually calculated provisions are posted. Another part is for expenses for claims whose occurrence is not yet known. There are also provisions for claims that are known, but whose extent has turned out to be greater than originally foreseen. All these provisions include expenses for internal and external loss adjustments. The provision for outstanding claims is based on estimates: the actual payments may be higher or lower. The amounts posted are the realistically estimated future amounts to be paid; they are calculated on the basis of past experience and assumptions about future developments (e.g. social, economic or technological factors). The insurance claims payments also include estimated adjustments to accounts payable recognised in the previous year with a corresponding impact on the provision; these adjustments are the result of an altered assessment of payment behaviour. Future payment obligations are generally not discounted; exceptions are some provisions for occupational disability pensions and annuities in workers' compensation and other lines of property-casualty business. For determining the provision for outstanding claims, Munich Re uses a range of actuarial projection methods. Where ranges have been calculated, a realistic estimated value for the ultimate loss is determined within these. In applying the statistical methods, we regard large exposures separately.

Other technical provisions mainly include the provision for premium refunds in primary insurance and the provision for profit commission in reinsurance. The former is posted in life and health primary insurance for obligations involving policyholder bonuses and rebates that have not yet been irrevocably allocated to individual contracts at the end of the reporting period. These provisions are posted on the basis of national regulations only for German primary insurance business; a retrospective approach is usually taken based on supervisory or individual contractual rules.

Besides this, there are provisions for deferred premium refunds, which are posted for the amounts apportionable to policyholders from the measurement differences between IFRS and local GAAP on the basis of the expected future participation quotas. For unrealised gains and losses on investments available for sale, which are recognised directly in equity (see Assets – B Investments – Fixed-interest or non-fixed-interest securities available for sale), the resultant provision for deferred premium refunds is also posted without impact on profit or loss; otherwise, changes in this provision are recognised in the income statement.

Liability adequacy test

All technical provisions are regularly subjected to a **liability adequacy test in accordance with IFRS 4**. If current experience shows that the provisions posted on the basis of the original assumptions – less the related deferred acquisition costs and the present value of the related premiums – are inadequate to cover the expected future benefits, we adjust the relevant technical provisions with recognition in profit or loss and disclose this under impairment losses in the Notes to the consolidated balance sheet; see Notes to the consolidated balance sheet – Assets (2) Other intangible assets, Assets (13) Deferred acquisition costs, and Equity and liabilities (21) Provision for future policy benefits. The appropriateness of unearned premiums and of the provision for outstanding claims is assessed in relation to the realistically estimated future amount to be paid. The appropriateness of the provision for future policy benefits is assessed on the basis of realistic estimates of the actuarial assumptions, the proportional investment result and – for contracts with participation in surplus – future profit sharing.

IFRS recognition and measurement of gross technical provisions for life insurance policies where the investment risk is borne by the policyholders

This item encompasses the provision for future policy benefits for life primary insurance where policyholders bear the investment risk themselves (unit-linked life insurance). The value of the provision for future policy benefits essentially corresponds to the market value of the relevant investments shown under assets.

Recognition and measurement of deferred acquisition costs under IFRS

Deferred acquisition costs comprise commissions and other variable costs directly connected with the acquisition

or renewal of insurance contracts. In accordance with IFRS 4, we do not use shadow accounting for deferred acquisition costs in life primary insurance. In life business and long-term health primary insurance, deferred acquisition costs are amortised over the duration of the contracts.

Recognition and measurement of ceded share of technical provisions

The share of technical provisions for business ceded by us is determined from the respective technical provisions in accordance with the terms of the reinsurance agreements (see above). Appropriate allowance is made for the counterparty default risk.

Explanation of the differences between valuation methods under Solvency II and IFRS

Definition of insurance contract and scope

In line with Solvency II, technical provisions (and reinsurance recoverables, respectively) are established for all (re)insurance contracts independent of the level of insurance risk underlying a particular contract. This means that Solvency II covers all insurance business, including products or contracts which do not meet the definition of an insurance contract under IFRS 4 or US GAAP.

In cases where it can be verified that the basis risk is not material, technical provisions (and reinsurance recoverables, respectively) may be established for insurance-related non-indemnity contracts (e.g. cat bonds and client-specific insurance derivatives) under Solvency II.

Separating components from an insurance contract

In some cases, it may be required or permitted to separate certain components from insurance contracts. Such contracts may fall partially within the scope of IFRS 4 and partially within the scope of other standards. Under Solvency II, components may not be separated.

Recognition

In line with FAS 60, under IFRS a liability for unpaid claims costs, including estimates of incurred but not reported claims and claims adjustment expenses, is accrued when insured events occur. For long-term contracts, a liability for future policy benefits is accrued when premium income is recognised. Premiums for long-term contracts are recognised when due from policyholders. Usually, the liability for future policy benefits is established when the insurance contract begins, as this is the point in time when the first premium is due.

In contrast, Solvency II requires initial recognition at the date the (re)insurer becomes a party to the contract or the date the (re)insurance contract begins, whichever date occurs earlier.

Measurement

Cash flows

In accordance with IFRS, for obligations to policyholders that have not yet been irrevocably allocated to individual contracts at the balance sheet date, provisions for premium refunds are posted in life and health primary insurance. Besides this, there are provisions for deferred premium refunds, which are posted for the amounts apportionable to policyholders from the measurement differences between IFRS and local GAAP on the basis of the expected future participation quotas. For unrealised gains and losses on investments available for sale, which are recognised directly in equity, the resultant provision for deferred premium refunds is also posted without impact on profit or loss.

By contrast, Solvency II requirements explicitly prescribe that “all payments to policyholders and beneficiaries, including future discretionary bonuses, which insurance and reinsurance undertakings expect to make, whether or not those payments are contractually guaranteed” are to be taken into account in the calculation of technical provisions, unless those payments represent surplus funds. Consequently, expected future discretionary bonuses are taken into consideration in the cash flows used for the calculation of technical provisions in line with Solvency II.

Additional differences may occur, e.g. resulting from the inclusion of general overhead expenses in Solvency II technical provisions.

Contract boundary

In line with FAS 60, a liability for future policy benefits is established for long-term contracts under IFRS. The liability is the present value of estimated future policy benefits to be paid, less the present value of future premiums to be collected from policyholders. There are no specific provisions with respect to the boundary for the determination of future premiums and future policy benefits.

On the other hand, actuarial practice has evolved depending on the type of product. There might be cases where this leads to a differing contract boundary than under Solvency II requirements.

Discounting

Under Solvency II, we use the basic risk-free interest rates, depending on currency and maturity, when discounting technical provisions. As at the reporting date, we do not make use of any transitional measures regarding the relevant risk-free interest-rate term structure. Six life and health primary insurance companies make use of a volatility adjustment pursuant to Article 77(d) of Directive 2009/138/EC.

Explanations regarding the discounting of technical provisions under IFRS can be found in the section “Recognition and measurement of gross technical provisions under IFRS”.

Risk margin

Under Solvency II, the cost of capital for assuming risk has to be explicitly taken into account. It is referred to as the

risk margin, and is calculated using a cost-of-capital approach.

By contrast, actuarial assumptions in line with IFRS include adequate provision for adverse deviation to make allowance for the risks of change, error and random fluctuations. No explicit risk margin is calculated.

Non-performance risk

Appropriate allowance for credit risk is made in line with both IFRS and Solvency II when calculating the ceded share of technical provisions (i.e. reinsurance recoverables under Solvency II). The methodology for determining the allowance for credit risk is not prescribed under IFRS. Under Solvency II, we comply with the relevant requirements for the determination of the counterparty default adjustment.

Acquisition costs

Under IFRS, acquisition costs for insurance contracts are capitalised and amortised over the terms of the contracts. They are regularly tested for impairment using a liability adequacy test.

Under Solvency II, acquisition costs are taken into consideration as part of the cash flows when calculating technical provisions.

Short-term contracts

For IFRS, a distinction is made between short-term and long-term (re)insurance business (see above). There is no equivalent concept under Solvency II.

Transitional deduction on technical provisions and volatility adjustment

Three life primary insurance undertakings apply a transitional deduction on technical provisions. Six life and health primary insurance undertakings make use of a volatility adjustment pursuant to Article 77(d) of Directive 2009/138/EC. Under IFRS, there is no corresponding deduction or volatility adjustment.

Quantification of differences between IFRS and Solvency II technical provisions

In addition to the qualitative assessment of differences in the valuation of technical provisions between IFRS and Solvency II, the following table provides a quantitative overview. The starting point is IFRS technical provisions allocated to Solvency II lines of business.

The item “Reclassification of balance sheet items”, for example, includes deferred acquisition costs recognised under IFRS, accounts receivable and payable not yet due, and contracts not accounted for as insurance under IFRS. These are added to the technical provisions under IFRS to obtain a basis which is comparable to the technical provisions under Solvency II.

Subsequently, an adjustment is made for the underlying economic assumptions. It mainly comprises the effects of discounting based on the EIOPA interest rate in line with Solvency II requirements, offset by discount effects that may also already be included in the IFRS technical provisions.

The adjustment for quantified differences in methodology is derived from individual assessments of major methodological differences between IFRS and Solvency II. They allow for a detailed consideration of business-specific differences in the models and assumptions for technical provisions under IFRS and Solvency II.

For the remaining differences, no further quantitative attribution to specific drivers is carried out. They largely stem from methodological differences involving a variety of minor drivers.

In a last step, the risk margin is added to the Solvency II technical provisions, as it is not determined in the IFRS balance sheet.

Reconciliation of technical provisions, IFRS vs. Solvency II

						31.12.2020
€m	Non-life	Health (similar to non-life)	Health (similar to life)	Life	Unit- and index-linked	Total
IFRS technical provisions	**65,777**	**3,124**	**61,267**	**88,679**	**7,955**	**226,801**
Reclassification of balance sheet items	–6,562	–209	–2,877	–2,867	1,485	–11,030
Adjustment of economic assumptions	–583	254	2,360	–3,386	0	–1,354
Quantified methodological differences	–399	–5	–2,552	–1,701	0	–4,656
Other differences	–294	23	3,836	–2,537	–795	234
SII technical provisions – best estimate[1]	57,939	3,186	62,035	78,190	8,645	209,995
Risk margin	1,784	142	5,931	6,448	115	14,420
SII technical provisions without LTG guarantees and transitionals	59,723	3,329	67,966	84,638	8,760	224,415
Impact of transitionals	0	0	–57	–8,376	–392	–8,825
Impact of volatility adjustment	–1	0	–27	–270	–10	–309
SII technical provisions with LTG guarantees and transitionals	**59,722**	**3,329**	**67,882**	**75,992**	**8,358**	**215,281**

[1] Including technical provisions calculated as a whole.

Reinsurance recoverables under Solvency II

General requirements for calculation

The calculation of amounts recoverable from reinsurance contracts and special purpose vehicles by insurance and reinsurance undertakings complies with the rules relating to technical provisions. The amounts recoverable from reinsurance contracts and special purpose vehicles are calculated consistently with the boundaries of the insurance or reinsurance contracts to which they relate.

Under Solvency II, separate calculations are carried out for

– the amounts recoverable from special purpose vehicles,
– the amounts recoverable from finite reinsurance contracts, and
– the amounts recoverable from other reinsurance contracts.

Furthermore, a separate calculation is carried out for the amounts recoverable from reinsurance contracts and special purpose vehicles for non-life insurance obligations regarding premium provisions and provisions for claims outstanding.

When calculating amounts recoverable from reinsurance contracts and special purpose vehicles, the time difference between recoverables and direct payments is taken into account.

Where cash flows from the special purpose vehicles to the insurance or reinsurance undertaking do not directly depend on the claims against the insurance or reinsurance undertaking ceding risks, the amounts recoverable from those special purpose vehicles for future claims are only taken into account to the extent that it can be verified in a prudent, reliable and objective manner that the structural mismatch between claims and amounts recoverable is not material.

For the purpose of calculating the amounts recoverable from reinsurance contracts and special purpose vehicles, cash flows only include payments in relation to compensation of insurance events and unsettled insurance claims. Payments in relation to other events or settled insurance claims are accounted for outside the amounts recoverable from reinsurance contracts and special purpose vehicles and other elements of the technical provisions. Where a deposit has been made for the cash flows, the amounts recoverable are adjusted accordingly to avoid a double counting of the assets and liabilities relating to the deposit.

The cash flows relating to provisions for claims outstanding include the compensation payments relating to the claims accounted for in the gross provisions for claims outstanding of the insurance or reinsurance undertaking ceding risks. The cash flows relating to premium provisions include all other payments.

Counterparty default adjustment

The result from the calculation of the best estimate is adjusted to take account of expected losses due to default of the counterparty. That adjustment is based on an assessment of the probability of default of the counterparty and the average loss resulting therefrom.

The adjustment to take account of expected losses due to default of a counterparty is calculated as the expected present value of the change in cash flows underlying the amounts recoverable from that counterparty that would arise if the counterparty defaults, including as a result of insolvency or dispute, at a certain point in time. For that purpose, the change in cash flows does not take into account the effect of any risk-mitigating technique that reduces the credit risk of the counterparty, other than risk-mitigating techniques based on collateral holdings. The risk-mitigating techniques that are not taken into account are recognised separately, without increasing the amount

recoverable from reinsurance contracts and special purpose vehicles.

The calculation takes into account possible default events over the lifetime of the reinsurance contract or arrangement with the special purpose vehicle, and whether and how the probability of default varies over time. It is carried out separately by each counterparty and for each line of business. In non-life insurance, it is also carried out separately for premium provisions and provisions for claims outstanding.

D3 Other liabilities

According to Article 75(1)(b) of Directive 2009/138/EC, all other liabilities are to be valued at fair value in the solvency balance sheet. When valuing liabilities, no adjustment is made to take account of the own credit standing of the insurance or reinsurance undertaking. Under IFRS, we generally measure other liabilities at amortised cost or at par value; only derivatives with negative market values are measured at fair value. As the valuation basis for Solvency II and IFRS is different, we explain the differences in greater detail for each of the liability items mentioned below. Where the differences between the fair values in the solvency balance sheet and the IFRS values are immaterial, we use the latter to measure other liabilities, as explained in more detail below.

In addition to the differences in valuation, the structure of the solvency balance sheet also differs from that of the IFRS balance sheet. Therefore, the balance sheet items are not directly comparable. Where such differences in allocation exist, they are explained for the individual items. Where it was possible to reclassify liabilities as per IFRS in order to comply with the structure prescribed for the solvency balance sheet, we made this reclassification.

Contingent liabilities

In the solvency balance sheet, contingent liabilities are to be recognised as a liability if they are material, i.e. if information about the current or potential amount or nature of the liability could influence the decision-making or judgement of the intended user of that information. As a further precondition for recognition, an outflow of resources must be more than a remote possibility.

We measure such contingent liabilities based on the expected present value of future cash flows required to settle the contingent liability over its lifetime, using the relevant risk-free interest-rate term structure. At Munich Re, valuation is made on a market-consistent basis in accordance with CDS spreads observable in the capital markets. It is assumed that the (present) value of a contingent liability is the same as the present value of the (probability-weighted) CDS premium payable in order to hedge against the financial risks arising from the contingent liability. Contingent liabilities that cannot be reliably measured and do not meet the recognition criteria are not recognised.

Under IFRS, contingent liabilities are generally not recognised. However, disclosure in the notes to the financial statements is required if there is more than a remote possibility that such a liability will result in an obligation to make a payment.

Other liabilities

€m	Solvency II value	Statutory accounts value
Contingent liabilities	35	0
Provisions other than technical provisions	1,243	1,317
Pension benefit obligations	4,037	4,121
Deposits from reinsurers	2,000	1,261
Deferred tax liabilities	7,070	2,293
Derivatives	1,271	3,328
Debts owed to credit institutions	601	1,022
Financial liabilities other than debts owed to credit institutions	1,918	272
Insurance & intermediaries payables	3,036	2,965
Reinsurance payables	151	5,001
Payables (trade, not insurance)	3,738	8,396
Subordinated liabilities	5,392	5,047
Subordinated liabilities not in BOF	119	0
Subordinated liabilities in BOF	5,272	5,047
Any other liabilities, not elsewhere shown	83	6,129
Other liabilities total	**30,572**	**41,152**

Provisions other than technical provisions

Both in the solvency balance sheet and under IFRS, our valuation of other provisions is based on a best estimate of the amount that would be required to settle the liabilities as at the balance sheet date, i.e. the amount we would reasonably have to pay to satisfy the liabilities or transfer them to a third party as at the balance sheet date. If there is a range of possible estimates having an equal degree of probability, the midpoint of the range is used. If the interest-rate effect is material, we value the provision at the present value of the expected expenditure. If it is immaterial, we disregard it.

Pension benefit obligations

The following explanations do not relate exclusively to pension benefit obligations, but also take into account other material employee benefits.

Under Solvency II, we measure obligations for employee benefits in accordance with IAS 19. According to IAS 19, there are two different types of pension obligations: defined contribution plans and defined benefit plans.

Under defined contribution plans, the undertakings pay fixed contributions to an insurer or a pension fund. This covers the undertakings' obligations in full. Therefore, under both IFRS and Solvency II, a defined contribution plan is not recognised as an obligation in the balance sheet. In 2020, the contributions paid to defined contribution plans totalled €65m.

Under defined benefit plans, the staff member is promised a particular level of retirement benefit either by the undertakings or by a pension fund. The undertakings' contributions needed to finance this are not fixed in advance. If pension obligations are covered by assets held by a legally separate entity (e.g. a fund or a contractual trust agreement in the form of a two-way trust) – assets that may only be used to cover the pension commitments given and are not accessible to creditors – the pension obligations are shown less the amount of these plan assets. If the fair value of the assets exceeds the related outsourced pension benefit obligations, this asset is recognised as a "pension benefit surplus".

Actuarial gains or losses from obligations for employee benefits and plan assets result from the deviation of actual risk experience from estimated risk experience. Since under IFRS, Munich Re recognises actuarial gains and losses directly in the period in which they occur, there is no difference to Solvency II.

In accordance with the definitions in IAS 19, the obligations for employee benefits recognised in the balance sheet break down as follows:

Major benefits for employees

€m	Solvency II value
Short-term obligations (provisions for holidays and overtime, bonuses)[1]	186
Defined benefit plans (including medical cover)[2]	4,121
Other long-term benefits (semi-retirement and early retirement, provisions for anniversary benefits, multi-year performance)[3]	325
Benefits on termination of employment contract (semi-retirement, severance payments)	19

[1] Part of SII balance sheet item "Payables (trade, not insurance)".
[2] Net amount of pension obligations.
[3] Part of SII balance sheet item "Provisions other than technical provisions".

Munich Re undertakings generally give commitments to their staff in the form of defined contribution plans or defined benefit plans (within the meaning of IAS 19). The type and the amount of the pension obligation are determined by the conditions of the respective pension plan.

The most important plans are the following:

The pension obligations of Munich Reinsurance Company include disability and old-age pensions, and pensions for surviving dependants. The amount of the pensions generally depends on salary and length of service. The defined benefits granted up to 31 December 2007 are financed through a fund. New members on or after 1 January 2008 receive pension commitments in the form of defined contribution plans financed by means of insurance contracts securing the obligations under pension schemes. The fund and insurance contracts have been grouped in a contractual trust agreement (CTA).

The pension obligations of the ERGO Group include disability and old-age pensions, and pensions for surviving dependants. The amount of the pensions generally depends on salary and length of service. The commitments are generally funded through pension provisions. New members receive pension commitments in the form of defined contribution plans financed by means of intra-Group insurance contracts securing the obligations under pension schemes. There are also medical-care benefit obligations.

The pension obligations of Munich Reinsurance America, Inc. include pensions for employees and surviving dependants. The amount of the pensions generally depends on includable compensation and length of service. The plan is financed through a trust and pension provisions. The plan was closed to new members effective 1 January 2006, and to all remaining members effective 31 December 2011. With effect from 1 January 2012, all members now receive pension commitments in the form of defined contribution plans. There are also retiree medical-care benefit obligations.

Under Solvency II, pension obligations are recognised in accordance with IAS 19, using the projected unit credit method. The calculation includes not only the pension entitlements and current pensions known at the balance sheet date, but also their expected future development.

The discount rate applied to these obligations is based on the yields for long-term, high-quality corporate bonds. The currency and term of the bonds correspond to the currency and estimated term of the obligations.

The mortality and disability assumptions are based on local tables used for the valuation of pension benefit obligations; these may be adapted to reflect the experience of the respective undertaking. Rates of employee turnover and early retirement are based on the individual experience of the Munich Re undertakings.

Actuarial assumptions

%	2020	Prev. year
Discount rate	0.6	1.2
Future increases in entitlement/salary	1.8	1.8
Future pension increases	1.3	1.5
Medical cost trend rate	3.3	3.5

Munich Re uses generally recognised biometric actuarial assumptions, adjusted as a rule to take account of company-specific circumstances.

Breakdown of the fair value of plan assets for defined benefit plans

%	31.12.2020	Prev. year
Quoted market price in an active market		
Fixed-interest securities	40	40
Non-fixed-interest securities	21	23
Equities	4	5
Investment funds	17	18
Other	0	0
Other	1	0

Breakdown of the fair value of plan assets for defined benefit plans

%	31.12.2020	Prev. year
No quoted market price in an active market		
Cash or cash equivalents	1	0
Real estate	0	1
Fixed-interest securities	0	0
Non-fixed-interest securities	2	3
Equities	0	0
Investment funds	2	3
Other	0	0
Insurance contracts	34	32
Other	1	1

Deposits from reinsurers

Deposits from reinsurers are collateral for technical provisions covering business ceded to reinsurers and retrocessionaires. As a rule, the changes in these deposits derive from the changes in the relevant technical provisions covering ceded business. Deposits from reinsurers thus do not have a fixed maturity date, their release generally being dependent on run-off of the corresponding provisions.

In the solvency balance sheet, we measure deposits from reinsurers at fair value. Under IFRS, we recognise these liabilities at nominal value.

Deferred tax liabilities

Under Solvency II, deferred taxes are determined pursuant to Article 15 in conjunction with Article 9 of Delegated Regulation (EU) 2015/35.

In accordance with Article 9(1) and (2) of the Delegated Regulation, assets and liabilities must be recognised and valued in accordance with IFRS requirements, provided that these are consistent with Article 75 of Directive 2009/138/EC. Therefore, under Solvency II, deferred tax liabilities are recognised and valued in accordance with IAS 12.

Deferred taxes are calculated on the basis of the difference between the values ascribed to liabilities recognised and valued in accordance with Article 75 of Directive 2009/138/EC, and the values ascribed to liabilities recognised and valued for tax purposes. Deferred tax liabilities are recognised in cases where asset items have to be valued higher, or liability items lower, in the solvency balance sheet than in the tax accounts of the Group company concerned, and these differences will be eliminated at a later date with a corresponding effect on taxable income (temporary differences).

Further information on the recognition of deferred taxes can be found in section D 1 Deferred tax assets.

Financial liabilities including derivatives and debts owed to credit institutions

In the solvency balance sheet, financial liabilities including derivatives and debts owed to credit institutions are to be measured at fair value. After initial recognition, no adjustments are made to take account of the own credit standing of the insurance or reinsurance undertaking. Thus, financial liabilities are measured at fair value at the reporting date without taking account of any improvement or deterioration in Munich Re's own credit risk. If the impact of such an improvement or deterioration is immaterial, we do not adjust the fair values accordingly.

For Munich Re bonds and derivatives traded on a stock exchange, the fair values are the stock-market prices, if available. For the other financial liabilities, we determine the fair values using net present-value methods with observable market inputs. Further details are set out below:

- With regard to the valuation models used for determining the fair value of derivatives, reference is made to the table "Valuation techniques for financial instruments" and the explanations given in section D 1 Determining fair values.
- For the bond we have issued, we use the market prices provided by price quoters for the corresponding assets to determine fair value.

– The fair values of our debts owed to credit institutions are determined using the present-value method, in part exclusively using observable market inputs, and partly also taking into account non-observable inputs.
– The fair value of insurance contracts without significant risk transfer, which are consequently recognised as financial instruments, is primarily based on biometric and lapse rates, and on historical event data.

Under IFRS, we measure our financial liabilities at amortised cost using the effective interest method – except for derivatives with a negative market value, which are recognised at fair value.

More details on fair value measurement, the measurement hierarchy levels and the models used for determining fair values can be found in section D 1 under Determining fair values.

Insurance and intermediaries payables

In the solvency balance sheet, insurance and intermediaries payables must be recognised at fair value; under IFRS, these payables must be recognised at the amount actually required to redeem or settle them. In contrast to the solvency balance sheet, under IFRS we also recognise interest-bearing accumulated participation in life insurance surplus under this item.

Reinsurance payables

In the solvency balance sheet, reinsurance payables must be recognised at fair value; under IFRS, these payables are recognised at the amount actually required to redeem or settle those payables.

Unlike in financial reporting under IFRS, under Solvency II payables from brokerage and from reinsurance business assumed are not recognised under reinsurance payables, but under insurance and intermediaries payables.

Payables (trade, not insurance)

In the solvency balance sheet, the item "Payables (trade, not insurance)" covers in particular payables from dividends, payables from profit pooling or transfer agreements, payables from taxes, and other payables. These payables are measured at fair value at the reporting date without taking account of any improvement or deterioration in the undertaking's own credit risk. However, for reasons of simplification, we measure payables from dividends and payables from profit pooling or transfer agreements at their IFRS carrying amount, i.e. at amortised cost.

Payables from taxes and other payables are discounted, taking into account the actual risk-free interest rates and relevant interest-rate spreads.

Both reinsurance payables and insurance and intermediaries payables are included in other payables under IFRS, but shown as separate items in the solvency balance sheet.

Under Solvency II, all insurance contracts are recognised under technical provisions irrespective of the level of insurance risk involved in the individual contracts. Therefore, payables resulting from insurance or reinsurance contracts with non-significant risk transfer are – notwithstanding IFRS – not reported as payables, but as part of the technical provisions.

Subordinated liabilities

Subordinated liabilities are liabilities which, in the event of liquidation or insolvency, are only satisfied after the claims of other creditors.

They are recognised at fair value in the solvency balance sheet. For Munich Re subordinated bonds, we take the stock market prices as fair values. Credit spreads relevant for Munich Re are obtained from an external provider and are based on CDS. For valuation purposes, the quoted stock-market prices are adjusted taking into account the change in credit spread from the date of issuance until the valuation date, multiplied by the modified duration for the stock-market price at the valuation date.

For the other subordinated liabilities, we determine the fair values using net present-value methods with observable market inputs. Whether or not subordinated liabilities are eligible for inclusion in own funds is of no importance for valuation purposes.

Under IFRS, we value all subordinated liabilities at amortised cost using the effective interest method.

Any other liabilities, not elsewhere shown

This item includes liabilities from prepayments received prior to the reporting date that are not earned or due until after the balance sheet date. Liabilities for these prepayments are recognised at the reporting date to take into account that the prepayments received relate to outstanding obligations of the undertaking. Thus, recognition is mandatory to represent the correct amount of own funds as at the reporting date.

In contrast to our financial reporting, in the solvency balance sheet we do not recognise derivatives (€1,271m) in other liabilities but reclassify them as derivatives.

Any other liabilities generally have to be measured at fair value in the solvency balance sheet. Where the discounting effect is immaterial, we do not discount the liabilities concerned.

D4 Alternative methods for valuation

Detailed information on determining the fair values of the individual assets and other liabilities can be found in section D 1 under Determining fair values. The valuation techniques described therein are regularly tested by our asset managers as regards their suitability for valuation of the assets and liabilities concerned, and adapted if necessary.

D5 Any other information

We do not know of any other material information not already covered in the other sections of Part D.

Capital management

E

E Capital management

E1 Own funds

Aims, policies and processes to manage own funds

Through active capital management, we strive to ensure that Munich Re's capital satisfies all applicable standards. In addition to the capital requirements determined using our internal risk model, more far-reaching requirements by regulatory authorities, rating agencies and our key insurance markets must be met.

We aim to ensure that our financial strength is such that it enables us to take advantage of profitable opportunities for growth, is not significantly affected by normal fluctuations in capital market conditions, and remains at a reasonable level even in the wake of major loss events or substantial falls in the stock markets. At the same time, we also define an appropriate level of Group own funds as one which does not lastingly exceed that which is required. Excess capital is returned to our shareholders via dividends and share buy-backs. In practice, capital repatriation comes up against limits because German commercial law (the German Commercial Code; HGB) forces our parent, Munich Reinsurance Company, to maintain the claims equalisation provision in local GAAP accounting at a level that exceeds the economic requirements. This restricts the revenue reserves and profit distribution possibilities, but stabilises results in years with high claims expenditure.

Capital management planning takes place as part of our annual medium-range business planning. Relevant capital management key performance indicators are regularly checked as part of the risk management system. There were no significant changes during the reporting period. Munich Re will pay an unchanged dividend of €9.80 per share for the past financial year, provided that the Annual General Meeting approves. Munich Re's shares thus remain a high-return investment.

Differences between IFRS equity and Solvency II excess of assets over liabilities

The main differences between the IFRS equity of Munich Re and the excess of assets over liabilities in the solvency balance sheet are due to the differing rules for recognition and valuation.

The Solvency II methodology makes more extensive use of market values in the balance sheet than IFRS. For example, investments are recognised in the solvency balance sheet at market value, whereas under IFRS this applies only to securities available for sale. By contrast, goodwill and other intangible assets are valued at zero. The valuation methodology for underwriting items in accordance with Solvency II differs significantly from the valuation in our IFRS consolidated financial statements. The value of the technical provisions in accordance with Solvency II corresponds to the current amount that insurance and reinsurance undertakings would have to pay if they were to transfer their insurance and reinsurance liabilities immediately to another insurance or reinsurance undertaking.

The quantitative statement of the differences can be seen in the table below.

Excess of assets over liabilities (Solvency II) in comparison with IFRS equity

€m	Solvency II	IFRS[1]	Difference
a) Goodwill and other intangible assets	0	3,714	–3,714
b) Surplus funds	0	–2,754	2,754
c) Investments, including deposits retained on assumed reinsurance and cash	270,375	249,761	20,615
d) Subordinated liabilities	–5,392	–5,047	–344
e) Deferred tax (net)	–6,560	–2,015	–4,546
f) Other assets and liabilities	–6,695	–10,762	4,067
g) Underwriting assets and liabilities	–208,906	–202,903	–6,004
Excess of assets over liabilities	**42,822**	**29,994**	**12,828**

1 Some IFRS figures have been reclassified to ensure comparability with Solvency II.

Consolidation methods for own funds

Group solvency is calculated on the basis of the consolidated accounts (Method 1; namely as set out in Article 230 of Directive 2009/138/EC). The table "Consolidation method for Group own funds" shows how consolidated data is calculated for the respective related undertakings in the Group.

Consolidation method for Group own funds

Type of undertaking	SII DR (EU) 2015/35/ Article	Determination of consolidated data (method 1)
Dominant influence		
Insurance and reinsurance undertakings, insurance holding companies and mixed financial holding companies	335 (1) (a)	Full consolidation
Ancillary services undertakings	335 (1) (a)	Full consolidation
Institutions for occupational retirement provision	335 (1) (e)	Proportional share of the own funds calculated in accordance with the relevant sectoral rules
Credit institutions, investment firms and financial institutions	335 (1) (e)	Proportional share of the own funds calculated in accordance with the relevant sectoral rules
Alternative investment fund managers	335 (1) (e)	Proportional share of the own funds calculated in accordance with the relevant sectoral rules
UCITS management companies	335 (1) (e)	Proportional share of the own funds calculated in accordance with the relevant sectoral rules
Special purpose vehicles meeting the requirements of Article 211	335 (1) (b) 329 (3)	Not taken into account
Other special purpose vehicles	335 (1) (b)	Full consolidation
Non-regulated undertakings that conduct financial transactions	335 (1) (e)	Proportional share of the own funds calculated in accordance with the relevant sectoral rules
Other undertakings	335 (1) (f) 13	Other methods*
Undertakings for collective investment in transferable securities (UCITS/AIF)	335 (1) (f) 13	Other methods*
Significant influence/joint venture		
Insurance and reinsurance undertakings, insurance holding companies and mixed financial holding companies	335 (1) (c), (d)	Proportional share of the own funds calculated in accordance with the relevant sectorial rules
Ancillary services undertakings	335 (1) (c), (f)	Proportional consolidation and/or other methods*
Institutions for occupational retirement provision	335 (1) (e)	Proportional share of the own funds calculated in accordance with the relevant sectoral rules
Credit institutions, investment firms and financial institutions	335 (1) (e)	Proportional share of the own funds calculated in accordance with the relevant sectoral rules
Alternative investment fund managers	335 (1) (e)	Proportional share of the own funds calculated in accordance with the relevant sectoral rules
UCITS management companies	335 (1) (e)	Proportional share of the own funds calculated in accordance with the relevant sectoral rules
Non-regulated undertakings that conduct financial transactions	335 (1) (e)	Proportional share of the own funds calculated in accordance with the relevant sectoral rules
Other undertakings	335 (1) (f) 13	Other methods*
Undertakings for collective investment in transferable securities (UCITS/AIF)	335 (1) (f) 13	Other methods*

* Other methods – valuation hierarchy in accordance with Article 13 of Delegated Regulation (EU) 2015/35

Composition of own funds

Eligible own funds

The starting point for the calculation of the eligible own funds is the excess of assets over liabilities.

Then the basic own funds are calculated by adjusting the excess of assets over liabilities according to Solvency II for the factors relevant to Munich Re.

Subordinated liabilities should be added provided that they are available at all times to cover losses on a going-concern basis. Munich Re's subordinated liabilities meet this requirement. Share buy-backs that have been announced but not completed as at the reporting date, own shares and foreseeable dividends must be deducted from own funds. Certain own-fund items belonging to Munich Re subsidiaries are subject to further restrictions with regard to their transferability and fungibility at Group level. These own-fund items must also be deducted.

In addition, the carrying amounts of shareholdings in companies in other financial sectors such as credit institutions and investment firms must be deducted. Finally, capital calculated in accordance with sectoral regulations that is allocated to other financial sectors is included to obtain the Group's eligible own funds.

For Solvency II, own funds are divided into four levels of quality – known as tiers – depending on their ability to absorb losses. Tier 1 unrestricted is the highest quality, and Tier 3 is the lowest.

The division into tiers meets the requirements of the Solvency II Directive (Articles 93 to 96), the Delegated Regulation (Articles 69 to 78) and EIOPA-BoS-14/168 – Guidelines on classification of own funds. The following own-fund items are classified as Tier 1 unrestricted: Share capital, share premium account related to ordinary share capital, surplus funds and the reconciliation reserve. Classification of the surplus funds as Tier 1 unrestricted takes into consideration the national legal provisions of the respective units. We have classified the subordinated liabilities essentially as Tier 2 owing to the underlying contractual terms and conditions.

An amount equal to the value of net deferred tax assets is classified as Tier 3 own funds.

The tables "Own funds" contain information about the structure, amount and tier allocation of eligible own funds as at 31 December 2020 and as at 31 December 2019. They also show the deductions of non-available own funds as a result of restrictions on transferability and fungibility. At Munich Re, these are essentially surplus funds, subordinated liabilities, minority interests and net deferred tax assets.

As can be seen in the first table, there are no significant restrictions on the fungibility and transferability of eligible own funds to meet the Group's solvency capital requirement. Restrictions are considered significant if an omission or misstatement of related information could influence the decision-making process or judgement of the users. Furthermore, it is clear that there is no effect due to limits in respect of eligible own funds classified as Tier 2, Tier 3, or Tier 1 unrestricted. Allocation of the own-fund items to the individual tiers has remained unchanged compared with the previous year.

Own funds

31.12.2020

€m	Total	Tier 1 unrestricted	Tier 1 restricted	Tier 2	Tier 3
Basic own funds before deduction for participations in other financial sectors					
Ordinary share capital (gross of own shares)	588	588		0	
Share premium account related to ordinary share capital	6,845	6,845		0	
Surplus funds	2,754	2,754			
Non-available surplus funds at group level	216	216			
Reconciliation reserve	30,355	30,355			
Subordinated liabilities	5,272		13	5,214	46
Non-available subordinated liabilities at group level	46		0	0	46
An amount equal to the value of net deferred tax assets	666	0			666
The amount equal to the value of net deferred tax assets not available at the group level	123				123
Minority interests (if not reported as part of a specific own fund item)	229	229	0	0	0
Non-available minority interests at group level	220	220	0	0	0
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 should not be represented by the reconciliation reserve and do not meet the criteria to be classified as Solvency II own funds	11				
Deductions					
Deductions for participations in other financial undertakings, including non-regulated undertakings carrying out financial activities	249	249	0	0	0
Total of non-available own fund items	605	436	0	0	169
Total deductions	**853**	**685**	**0**	**0**	**169**
Total basic own funds after deductions	**45,845**	**40,075**	**13**	**5,214**	**543**
Own funds of other financial sectors					
Credit institutions, investment firms, financial institutions, alternative investment fund managers, UCITS management companies	54	54	0	0	
Institutions for occupational retirement provision	195	195	0	0	0
Non-regulated entities carrying out financial activities	0	0	0	0	0
Total own funds of other financial sectors	**249**	**249**	**0**	**0**	**0**
Total available own funds to meet the consolidated group SCR (excluding own funds from other financial sectors and from the undertakings included via D&A)	45,845	40,075	13	5,214	543
Total available own funds to meet the minimum consolidated group SCR	45,301	40,075	13	5,214	
Total available own funds to meet the consolidated group SCR (excluding own funds from other financial sectors and from the undertakings included via D&A)	45,845	40,075	13	5,214	543
Total eligible own funds to meet the minimum consolidated group SCR	43,059	40,075	13	2,972	
Minimum consolidated Group SCR (Article 230)	**14,858**				
Ratio of eligible own funds to minimum consolidated Group SCR	**290%**				
Total eligible own funds to meet the group SCR (including own funds from other financial sectors and from the undertakings included via D&A)	**46,093**	**40,323**	**13**	**5,214**	**543**
Group SCR	**19,180**				
Ratio of eligible own funds to group SCR including other financial sectors and the undertakings included via D&A	**240%**				

Own funds

31.12.2019

€m	Total	Tier 1 unrestricted	Tier 1 restricted	Tier 2	Tier 3
Basic own funds before deduction for participations in other financial sectors					
Ordinary share capital (gross of own shares)	588	588		0	
Share premium account related to ordinary share capital	6,845	6,845		0	
Surplus funds	2,863	2,863			
Non-available surplus funds at group level	213	213			
Reconciliation reserve	33,816	33,816			
Subordinated liabilities	4,118		13	4,057	48
Non-available subordinated liabilities at group level	48		0	0	48
An amount equal to the value of net deferred tax assets	184				184
The amount equal to the value of net deferred tax assets not available at the group level	78				78
Minority interests (if not reported as part of a specific own fund item)	204	204	0	0	0
Non-available minority interests at group level	194	194	0	0	0
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 should not be represented by the reconciliation reserve and do not meet the criteria to be classified as Solvency II own funds	0				
Deductions					
Deductions for participations in other financial undertakings, including non-regulated undertakings carrying out financial activities	274	274	0	0	0
Total of non-available own fund items	534	407	0	0	127
Total deductions	**808**	**681**	**0**	**0**	**127**
Total basic own funds after deductions	**47,811**	**43,634**	**13**	**4,057**	**106**
Own funds of other financial sectors					
Credit institutions, investment firms, financial institutions, alternative investment fund managers, UCITS management companies	76	76	0	0	
Institutions for occupational retirement provision	195	195	0	0	0
Non-regulated entities carrying out financial activities	3	3	0	0	0
Total own funds of other financial sectors	**274**	**274**	**0**	**0**	**0**
Total available own funds to meet the consolidated group SCR (excluding own funds from other financial sectors and from the undertakings included via D&A)	47,811	43,634	13	4,057	106
Total available own funds to meet the minimum consolidated group SCR	47,704	43,634	13	4,057	
Total available own funds to meet the consolidated group SCR (excluding own funds from other financial sectors and from the undertakings included via D&A)	47,811	43,634	13	4,057	106
Total eligible own funds to meet the minimum consolidated group SCR	46,363	43,634	13	2,716	
Minimum consolidated Group SCR (Article 230)	**13,582**				
Ratio of eligible own funds to Minimum consolidated Group SCR	**341%**				
Total eligible own funds to meet the group SCR (including own funds from other financial sectors and from the undertakings included via D&A)	**48,085**	**43,909**	**13**	**4,057**	**106**
Group SCR	**17,531**				
Ratio of eligible own funds to group SCR including other financial sectors and the undertakings included via D&A	**274%**				

The solvency ratio shown of 240% (274%) includes transitional measures under Solvency II. Without transitional measures, the solvency ratio would have been 208% (237%) as at 31 December 2020. The dividend of €1.4bn proposed by the Board of Management for the 2020 financial year was taken into account.

The table "Composition of reconciliation reserve and EPIFP" shows the calculation of the Group's reconciliation reserve as at 31 December 2020 and the previous year. The EPIFP are also given. It also shows the expected profit included in future premiums (EPIFP) for life and non-life insurance.

The reconciliation reserve is subject to fluctuation during the year, mainly on account of the development of economic earnings and capital measures (share buy-back programmes, capital increases, dividends, etc.). These fluctuations in own funds are addressed by means of asset-liability management. ALM reflects the influence of the capital market environment on the valuation of asset and liability items in the solvency balance sheet, and hence especially the volatility of the reconciliation reserve.

Composition of reconciliation reserve and EPIFP

€m	31.12.2020	31.12.2019
Excess of assets over liabilities	42,822	47,977
Own shares (held directly and indirectly)	0	751
Foreseeable dividends, distributions and charges	1,385	2,725
Other basic own fund items	11,082	10,685
Reconciliation reserve before deduction for participations in other financial sectors	**30,355**	**33,816**
Expected profits		
Expected profits included in future premiums (EPIFP) – Life business	17,016	15,659
Expected profits included in future premiums (EPIFP) – Non-life business	1,485	1,530
Total EPIFP	**18,502**	**17,189**

Composition of subordinated liabilities

€ m	Total	Tier 1 total	Tier 1, counted under transitionals	Tier 2 total	Tier 2, counted under transitionals	Tier 3
Dated subordinated liabilities	5,260	0	0	5,214	0	46
Undated subordinated liabilities with a contractual opportunity to redeem	13	13	13	0	0	0
Total subordinated liabilities	**5,272**	**13**	**13**	**5,214**	**0**	**46**

Subordinated liabilities

Munich Re's subordinated liabilities came to €5.3bn (4.1bn) as at the reporting date. In addition to Munich Reinsurance Company, both ERGO Versicherung Aktiengesellschaft, Vienna, and HSB Group, Inc., Dover, also recognised subordinated liabilities totalling €58m (61m) as at the reporting date.

The increase in subordinated liabilities stems from the issuance of a green bond amounting to €1.25bn by Munich Reinsurance Company in the third quarter of 2020.

Subordinated liabilities subject to transitional measures[4] can be seen in the table "Composition of subordinated liabilities". Overall, two subordinated bonds of ERGO Versicherung Aktiengesellschaft, Vienna, totalling €13m are subject to transitional measures. They were issued before Solvency II came into force, and could be used as at 31 December 2015 to at least 50% to meet the available solvency margin requirements under Solvency I. They are thus classified as Tier 1 restricted.

The five (four) Munich Reinsurance Company subordinated bonds totalling €5.2bn (4.0bn) meet the criteria for Tier 2 classification under Solvency II. In particular, the following requirements are met; that the original maturity is at least ten years and that the earliest, first contractual opportunity to redeem is five years after the date of issuance.

We refer to sections D 1, Deferred tax assets, and D 2, Deferred tax liabilities, in this report for information on deferred taxes in connection with own funds.

[4] Transitional measures for own funds pursuant to Article 308b(9) and (10) of Directive 2014/51/EU dated 16 April 2014 amending Directive 2009/138/EC

Change in own funds

Eligible own funds decreased by €1,801m in the reporting period (after adjusting the opening balance). The main drivers are presented in the table "Change in own funds". The economic earnings led to a reduction of €2,230m in eligible own funds in the reporting period. In addition, the change in eligibility restrictions amounting to €71m, other changes totalling €11m and changes in value of €366m owing to transitional measures impacted the eligible own funds. At the same time, capital measures totalling €878m had an increasing effect on the eligible own funds.

Change in own funds

€m	
Eligible own funds as at 31 December 2019	**48,085**
Opening adjustments[1]	-191
Economic earnings	**-2,230**
Operating impact	2,061
Market variances	-2,856
Other incl. tax	-1,435
Capital management	878
Change in eligibility restrictions	-71
Other changes	-11
Value change due to transitionals	-366
Eligible own funds as at 31 December 2020	**46,093**

1 Changes to eligible own funds that do not represent economic value added in the period – such as mergers and acquisitions, model changes and subsequent corrections.

E2 Solvency capital requirement and minimum capital requirement

Solvency capital requirement (SCR)

The SCR is the amount of eligible own funds that Munich Re needs to have available, with a given risk tolerance, to cover unexpected losses in the following year. It corresponds to the value at risk of the economic profit and loss distribution over a one-year time horizon with a confidence level of 99.5%, and thus equates to the economic loss for Munich Re that, given unchanged exposures, will be exceeded each year with a statistical probability of 0.5%.

The SCR of Munich Re amounted to €19.2bn as at 31 December 2020. The year-on-year increase of 9.4% in the SCR was caused by increases in all risk categories. In the property-casualty reinsurance segment, the increase in capital requirements was a consequence of the further increase in business exposed to natural hazards. In life and health reinsurance, the SCR increased mainly on account of lower interest rates and new business in life reinsurance.

The solvency capital requirement is reduced by €3.4bn owing to the loss absorbency of deferred taxes. A considerable portion of this figure comprises deferred tax liabilities that are directly attributable to Munich Reinsurance Company. Irrespective of the fact that – in the event of losses – no taxes must be paid for the current financial year in question, we state deferred tax assets resulting from a loss only if they are not greater than the deferred tax liabilities.

In the 2020 financial year, the static volatility adjustment (VA) was applied to the German life insurance undertakings ERGO Lebensversicherung AG, Victoria Lebensversicherung AG and for the Belgian companies that provide insurances of the person, DKV Belgium S.A. and ERGO Insurance N.V. The static VA was applied for the first time to the Austrian life insurance undertaking ERGO Versicherung AG and the Greek life insurer ERGO Insurance Company S.A. For the aforementioned six undertakings, the static VA was also taken into account in the calculation of the solvency capital requirement of the Group.

We apply transitionals for a limited period of time in a number of subsidiary undertakings; these allow temporary deductions from the technical provisions. These transitional measures have no effect on the solvency capital requirement of the Munich Re Group.

Within the Munich Re Group, the following companies also use an internal model to calculate their solvency capital requirement at solo undertaking level:

- Munich Reinsurance Company, Munich, Germany;
- Munich Re of Malta p.l.c., Ta' Xbiex, Malta;
- DKV Deutsche Krankenversicherung AG, Cologne, Germany;
- ERGO Versicherung AG, Düsseldorf, Germany;
- ERGO DIREKT Versicherung AG, Nuremberg, Germany; and
- Great Lakes Insurance SE, Munich, Germany.

Munich Re underwrites risks as a member of the association of underwriters known as Lloyd's via the company Munich Re Syndicate Ltd., London. The risks of these companies are taken into account in the Munich Re internal model; at the same time, they are also taken into account in the Lloyd's internal model.

Further details about the SCR broken down by risk category can be found in Part C Risk profile. An SCR breakdown by risk category can be found in the annex to this report, QRT S.25.03.22 "Solvency capital requirements – for Groups on full internal models".

Minimum capital requirement (MCR)

The minimum consolidated Group SCR is calculated from the total minimum capital requirements for the solo undertakings in the Group. The MCR of the solo undertakings is calculated by means of a factor approach, primarily on the basis of premiums and technical provisions. At the same time, the MCR must constitute at least 25% but no more than 45% of the SCR. For solo undertakings outside the European Economic Area, the local minimum capital requirements are applied. The minimum consolidated Group SCR was €14.9bn as at 31 December 2020.

E3 Use of the duration-based equity risk sub-module in the calculation of the solvency capital requirement

Munich Re does not use a duration-based equity risk sub-module to calculate the solvency capital requirement at the consolidated Group level.

Germany did not exercise the option to permit the use of a duration-based equity risk sub-module to calculate the solvency capital requirement.

E4 Differences between the standard formula and any internal model used

Scope of the internal model

Our internal model is based on specially modelled distributions for the risk categories property-casualty, life and health, market, credit and operational risks. We use primarily historical data for the calibration of these distributions, complemented in some areas by expert judgement. Our historical data covers a long period to provide a stable and appropriate estimate of our risk parameters.

The dependencies between the risk categories are calibrated by means of scenarios that affect more than one risk category simultaneously, and comparisons with relevant standards. We also take account in our risk model of the risk-mitigating effect of technical provisions in life and health primary insurance.

We then determine the effect of the loss absorbency of deferred taxes.

The internal model adequately covers material quantifiable risks arising from underwriting (property-casualty, life and health), market risk, credit risk, and operational risk. It also covers biometric risks from pension liabilities in all of Munich Re's areas of operation.

Details about the stated categories and about non-quantified risks can be found in Part C Risk profile.

Methods of the internal model

The core principles used in modelling the individual risk categories are set out below:

Property-casualty underwriting risk

In property-casualty reinsurance, we apply appropriate methodology in our modelling for basic losses, large losses and accumulation losses – especially those resulting from natural catastrophes, pandemics and cyber risks. Basic losses are modelled using stochastic simulation methods, which are used to calculate the difference in the ultimate loss status. For the modelling of large and accumulation losses, we use collective models, determining the frequency and loss amount using historical loss experience and based on physical models.

The methodology used for modelling property-casualty risks at our primary insurance undertakings is generally the same as that applied in reinsurance. Where the risk profiles of these undertakings display particular features, the methodology is adapted accordingly.

Life and health underwriting risk

Mortality, longevity, disability, customer behaviour, administration expenses and the costs of benefits paid in health insurance are modelled as separate risk drivers in the internal model.

In life reinsurance, possible future scenarios are determined by Monte Carlo simulations of those risk drivers.

The modelling in life primary insurance and German health primary insurance is based on stress scenarios; their effect on the stochastic valuation models is analysed.

Market risk

Market risks are modelled in the internal model by means of a Monte Carlo simulation of possible future capital-market scenarios, taking account of risk drivers relevant to the Munich Re Group at a granular level. We revalue our assets and liabilities for each simulated market scenario, thus showing the probability distribution for changes to basic own funds.

Credit risk

A Monte Carlo simulation is used to model credit risk in the internal model, and we take particular account of the creditworthiness of each counterparty.

Operational risk

We use scenarios based on expert estimates to quantify operational risk in the internal model.

Diversification

The main sources of diversification in the internal model are our worldwide spread across the different risk categories (underwriting, market, credit) and our combination of primary insurance and reinsurance business. We also take into account dependencies between the risks that generally result in higher capital requirements than would be the case if no dependency were assumed.

Material differences to standard formula

The most relevant differences between the assumptions of the standard formula and the risk profile of the Munich Re Group are:

- The standard formula does not take sufficient account of the effects of Munich Re's diversified portfolio structure. This applies to both underlying exposures and markets, and to the broad geographic diversification.
- The standard formula oversimplifies risks that are not material for most European insurance undertakings. The most important examples of solvency capital requirements with respect to Munich Re that are insufficiently recognised in the standard formula are the requirements for
  - non-proportional property insurance,
  - our global portfolio of natural catastrophe covers,
  - life reinsurance, and
  - assets in foreign currencies that are required for the operation of non-European subsidiaries.
- By applying the standard formula to Munich Reinsurance Company, subsidiaries are depicted on the basis of equity stress and are therefore treated differently to the Munich Re Group as regards the corresponding calculation of the standard formula. In contrast, our internal model takes account of the actual risk drivers for Munich Reinsurance Company and the Munich Re Group in the same transparent way.

As a result of these limitations in the standard formula, Munich Re decided to use an internal model to calculate its solvency capital requirements. Below, we compare the assumptions of the internal model with those of the standard formula, and explain why the approach taken in the internal model is more appropriate.

The quantitative impact of the differences between the standard formula and the internal model on the resulting SCR is typically much larger in the reinsurance segment than in the primary insurance segment. This is mainly due to the fact that the standard formula was designed for an average-sized European insurance undertaking, and not for a global reinsurance portfolio as in our reinsurance segment. Consequently, the solvency capital requirements based on the standard formula are to a large extent inappropriate for most lines of business or geographical areas in reinsurance. For primary insurance in the European Economic Area (EEA), our business profile matches the assumptions of the standard formula better than in the reinsurance segment. Nevertheless, the internal model also provides a more appropriate view of our risks in this segment.

Life underwriting risk

The life reinsurance model simulates the deviations of projected net cash flows from the best estimate on the basis of stochastically varying biometric and lapse risk drivers. The value at risk of 99.5% over a one-year period is derived using the linear regression finance approach (LRFA). Each risk driver comprises a process, basis, trend and calamity risk component. The standard formula is less sophisticated, with each biometric risk driver being represented by only one deterministic scenario, which is generated by level stress on the best-estimate assumptions.

Where possible, the parameters of the Life Re module of the internal model are estimated from historical data. The mortality trend risk parameters are estimated based on historical population mortality rates. Basis risk is calibrated such that the model reproduces the standard deviation of historical operating assumption change rates. The stress parameters used for life primary insurance SCR calculations are derived from application of the Life Re model to ERGO portfolio data sets. This is carried out by means of stress scenarios on the basis of stochastic corporate models.

The pandemic model in the internal model explicitly contains an allowance for the portfolio's age distribution covered and its underlying base mortality.

Health underwriting risk

For NSLT (not similar to life techniques) health business, premium and reserve risk is calculated similar to the non-life underwriting risk in the standard formula (loading factors). Overall, reinsurance business is NSLT. Therefore, non-life insurance techniques are used to calculate the economic risk capital.

In primary insurance, health insurance using similar to life techniques (SLT health business) is handled similarly to life primary insurance business. Account is taken of the fact that in the health insurance segment, premiums or benefits may be adjusted after a certain period of time.

Non-life underwriting risk

In the standard formula, the premium and reserve risk is determined using loading factors applied to premium measures and technical provisions. In the internal model, premium and reserve risk is measured incorporating historical loss experience and loss development patterns, at the level of a Munich Re risk-specific segmentation.

For catastrophe risk, the standard formula distinguishes between EEA exposures (higher granularity of input data) and non-EEA exposures (more simplistic approach). In the internal model, the risk from natural catastrophes – one of the biggest risks on Munich Re's balance sheet – is modelled using a stochastic and risk-sensitive approach which captures key accumulation risks in all geographical locations. The same holds true for man-made catastrophe accumulations.

For both catastrophe and non-catastrophe risks, the geographical diversification inherent in Munich Re's global portfolio is only partially recognised in the standard formula.

Market risk

The calculation of market risk figures is based on risk drivers that describe the change in value of financial instruments. The calibration of the scenarios describing the possible future realisation of these risk drivers is based on long-term historical data (over-the-cycle calibration). A comparison of the risk drivers used within the internal model with the standard formula approach shows that the granularity of the internal model (with more than 500 distinct risk drivers) is far more elaborate than the standard formula approach. In addition, the internal model captures specific risk drivers that are not accounted for in the standard formula, namely spreads on sovereign bonds, inflation expectations, and implied volatilities on equities and interest rates.

In most relevant cases in this risk category, there is no significant difference between the corresponding quantiles of the scenarios and the shocks of the standard formula.

Credit risk

The counterparty default risk in the standard formula only captures the risk of default for specific assets (namely those that are not covered by the spread risk module in the market risk calculation). By contrast, the credit risk SCR under the internal model takes account of all items involving credit risk. Besides fixed-interest investments, this includes deposits with ceding institutions, reinsurance recoverables, receivables, counterparty risk on derivatives, cash, and guarantees. In addition to losses from defaults, the internal model covers potential losses from rating downgrades.

Operational risk

Under the standard formula, the operational risk (OpRisk) SCR is determined using a simplistic factor-based approach as a function of premiums, technical provisions and the basic SCR. Under the internal model, by contrast, individual OpRisk scenarios are examined, and the SCR is determined by considering both estimates from relevant experts and insights from the internal control system.

Risk measures and time period used in the internal model

The risk measures and time period used in the internal model for purposes of calculating the SCR are compliant with the requirements of Article 101(3) of Directive 2009/138/EC. The confidence level used for the SCR is the value-at-risk (VAR) measure on the 99.5% quantile.

Data used in the internal model

A common data policy has been established for Munich Re that sets Group-wide data quality standards. An individual data directory is compiled for each solo undertaking in the Group. This provides justification that the calculation of the regulatory capital according to the internal model is based on data of sufficient quality.

When using the term data, we refer to the numerical, statistical or classification information, but not qualitative information. This also applies to information used to develop model assumptions. The assumptions themselves are not regarded as data.

A specific Solvency II requirement is the compilation of a data directory. It comprises all data used in the internal model, specifying its source, characteristics and usage. Responsibility for the data directory's input and maintenance lies with the respective process owners.

In accordance with Solvency II requirements, the quality of data has to meet the criteria of accuracy, completeness and appropriateness. The interpretation of the three data quality criteria is defined at a high level, and is applicable to all areas where the assessment of the data quality is required. The data used in the respective areas is highly complex and diverse, and so the principle of proportionality is naturally important with the principles-based approach. Applying the principle of proportionality when considering data quality means that the requirements should be seen in relation to the intended purpose of the analysis or assessment. For portfolios where underlying risks are considered simple in terms of nature, scale and complexity, "appropriate" is interpreted differently than in a situation where the risks are complex. This means that we proceed on the assumption that less detailed data is required for the assessment of more simple risks.

While the assessment of the last two criteria (completeness and appropriateness) should be considered at a higher level, accuracy is assessed at a more granular level.

E5 Non-compliance with the minimum capital requirement and non-compliance with the solvency capital requirement

Munich Re had adequate own funds at all times during the reporting period to cover MCR and SCR.

E6 Any other information

We do not have any other material information about Munich Re's capital management.

Annex

Z

Z Annex

Templates in accordance with Commission Implementing Regulation (EU) 2017/2190 of 24 November 2017

S.02.01.02

Balance sheet assets

€m	Solvency II value
Goodwill	
Deferred acquisition costs	
Intangible assets	0
Deferred tax assets	509
Pension benefit surplus	360
Property, plant & equipment held for own use	3,938
Investments (other than assets held for index-linked and unit-linked contracts)	229,962
Property (other than for own use)	9,322
Holdings in related undertakings, including participations	5,061
Equities	2,288
Equities – listed	1,470
Equities – unlisted	818
Bonds	156,141
Government bonds	91,220
Corporate bonds	56,742
Structured notes	4,897
Collateralised securities	3,282
Collective investments undertakings	50,043
Derivatives	2,265
Deposits other than cash equivalents	3,128
Other investments	1,713
Assets held for index-linked and unit-linked contracts	7,454
Loans and mortgages	10,470
Loans on policies	201
Loans and mortgages to individuals	3,113
Other loans and mortgages	7,156
Reinsurance recoverables from:	5,608
Non-life and health similar to non-life	2,474
Non-life excluding health	2,309
Health similar to non-life	166
Life and health similar to life, excluding health and index-linked and unit-linked	3,134
Health similar to life	1,428
Life excluding health and index-linked and unit-linked	1,707
Life index-linked and unit-linked	0
Deposits to cedants	19,616
Insurance and intermediaries receivables	3,782
Reinsurance receivables	172
Receivables (trade, not insurance)	3,389
Own shares (held directly)	0
Amounts due in respect of own fund items or initial fund called up but not yet paid in	0
Cash and cash equivalents	2,873
Any other assets, not elsewhere shown	541
Total assets	**288,676**

Balance sheet - liabilities

€m	Solvency II value
Technical provisions – non-life	63,050
Technical provisions – non-life (excluding health)	59,722
TP calculated as a whole	0
Best estimate	57,938
Risk margin	1,784
Technical provisions – health (similar to non-life)	3,329
TP calculated as a whole	0
Best estimate	3,186
Risk margin	142
Technical provisions – life (excluding index-linked and unit-linked)	143,873
Technical provisions – health (similar to life)	67,882
TP calculated as a whole	0
Best estimate	61,951
Risk margin	5,931
Technical provisions – life (excluding health and index-linked and unit-linked)	75,992
TP calculated as a whole	0
Best estimate	69,543
Risk margin	6,448
Technical provisions – index-linked and unit-linked	8,358
TP calculated as a whole	57
Best estimate	8,186
Risk margin	115
Contingent liabilities	35
Provisions other than technical provisions	1,243
Pension benefit obligations	4,037
Deposits from reinsurers	2,000
Deferred tax liabilities	7,070
Derivatives	1,271
Debts owed to credit institutions	601
Financial liabilities other than debts owed to credit institutions	1,918
Insurance & intermediaries payables	3,036
Reinsurance payables	151
Payables (trade, not insurance)	3,738
Subordinated liabilities	5,392
Subordinated liabilities not in BOF	119
Subordinated liabilities in BOF	5,272
Any other liabilities, not elsewhere shown	83
Total liabilities	**245,854**
Excess of assets over liabilities	**42,822**

S.05.01.02

Premiums, claims and expenses by line of business

€m	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
Premiums written							
Gross – Direct Business	1,240	780	19	2,050	1,081	1,007	4,142
Gross – Proportional reinsurance accepted	80	201	101	2,089	1,406	863	5,779
Gross – Non-proportional reinsurance accepted							
Reinsurers' share	2	11	2	136	26	124	514
Net	1,318	970	118	4,003	2,461	1,746	9,407
Premiums earned							
Gross – Direct Business	1,292	786	19	2,040	1,067	954	3,894
Gross – Proportional reinsurance accepted	84	212	113	1,956	1,429	800	5,516
Gross – Non-proportional reinsurance accepted							
Reinsurers' share	1	11	2	141	43	116	509
Net	1,374	987	130	3,855	2,453	1,638	8,902
Claims incurred							
Gross – Direct Business	806	248	3	1,284	686	379	2,406
Gross – Proportional reinsurance accepted	23	145	75	753	883	667	3,493
Gross – Non-proportional reinsurance accepted							
Reinsurers' share	0	6	-1	74	61	49	351
Net	829	387	80	1,963	1,508	998	5,547
Changes in other technical provisions							
Gross - Direct Business	2	0	0	-3	2	-4	-12
Gross – Proportional reinsurance accepted	0	0	0	0	0	0	0
Gross - Non-proportional reinsurance accepted							
Reinsurers' share	0	0	0	0	0	1	8
Net	2	0	0	-3	2	-4	-20
Expenses incurred	**476**	**398**	**44**	**1,194**	**840**	**515**	**3,376**
Other expenses							
Total expenses							

I

	Line of business for: non-life insurance and reinsurance obligations (direct business and accepted proportional reinsurance)						Line of business for: accepted non-proportional reinsurance			Total
	General liability insurance	Credit and suretyship insurance	Legal expenses insurance	Assistance	Miscel-laneous financial loss	Health	Casualty	Marine, aviation, transport	Property	
	1,586	195	1,056	80	178					13,415
	2,865	628	51	1	398					14,462
						80	892	148	3,064	4,184
	57	56	115	14	44	8	5	7	254	1,376
	4,393	767	992	67	532	72	887	140	2,811	30,685
	1,524	175	1,058	79	202					13,091
	2,714	615	52	1	390					13,883
						82	873	143	2,961	4,059
	88	53	127	16	39	8	6	8	254	1,420
	4,150	737	983	64	554	74	867	136	2,708	29,613
	1,083	166	396	31	808					8,296
	2,076	224	24	1	529					8,893
						80	1,507	70	2,052	3,710
	15	27	66	4	56	8	30	8	-1	754
	3,144	362	355	28	1,280	72	1,477	63	2,053	20,144
	-14	0	-1	0	1					-30
	1	0	0	0	0					1
						0	0	0	1	1
	0	0	0	0	0	0	0	0	0	8
	-13	0	-1	0	1	0	0	0	1	-36
	1,533	**272**	**529**	**34**	**279**	**36**	**220**	**38**	**445**	**10,229**
										50
										10,279

Premiums, claims and expenses by line of business

	Line of business for: life insurance obligations					
					Annuities stemming from non-life insurance contracts and relating to	
€m	Health insurance	Insurance with profit participation	Index-linked and unit-linked insurance	Other life insurance	Health insurance obligations	Other insurance obligations*
Premiums written						
Gross	6,249	2,788	414	153	0	0
Reinsurers' share	0	103	0	7	0	0
Net	6,249	2,684	414	146	0	0
Premiums earned						
Gross	6,247	2,788	413	153	0	0
Reinsurers' share	1	104	0	8	0	0
Net	6,247	2,685	413	145	0	0
Claims incurred						
Gross	4,623	4,467	524	102	41	40
Reinsurers' share	0	107	0	3	0	9
Net	4,623	4,360	524	99	41	31
Changes in other technical provisions						
Gross	-790	1,030	184	66	0	0
Reinsurers' share	0	-4	0	0	0	0
Net	-790	1,034	184	66	0	0
Expenses incurred	**923**	**624**	**106**	**58**	**0**	**0**
Other expenses						
Total expenses						

* With the exception of health insurance obligations.

	Life reinsurance obligations		
€m	Health reinsurance	Life reinsurance	Total
Premiums written			
Gross	4,724	7,871	22,199
Reinsurers' share	475	763	1,350
Net	4,249	7,107	20,849
Premiums earned			
Gross	4,665	5,529	19,795
Reinsurers' share	452	669	1,232
Net	4,213	4,860	18,563
Claims incurred			
Gross	3,624	6,913	20,334
Reinsurers' share	134	205	457
Net	3,490	6,709	19,877
Changes in other technical provisions			
Gross	289	64	843
Reinsurers' share	212	303	511
Net	78	-239	332
Expenses incurred	**803**	**1,156**	**3,669**
Other expenses			**24**
Total expenses			**3,694**

S.05.02.01

Premiums, claims and expenses by country

		Top 5 countries (by amount of gross premiums written) – non-life obligations					
€m	Home country	USA	United Kingdom	Poland	Spain	Australia	Total - Top 5 and home country
Premiums written							
Gross - Direct Business	3,654	2,574	2,776	1,317	718	79	11,118
Gross – Proportional reinsurance accepted	575	5,428	1,370	110	543	709	8,735
Gross – Non-proportional reinsurance accepted	160	1,344	386	19	90	277	2,276
Reinsurers' share	142	135	274	92	17	2	662
Net	4,247	9,211	4,259	1,353	1,333	1,063	21,466
Premiums earned							
Gross - Direct Business	3,640	2,493	2,745	1,257	706	63	10,905
Gross – Proportional reinsurance accepted	567	5,264	1,320	109	522	707	8,489
Gross – Non-proportional reinsurance accepted	159	1,316	381	19	82	259	2,216
Reinsurers' share	141	235	262	79	17	2	737
Net	4,225	8,838	4,184	1,306	1,292	1,027	20,873
Cliams incurred							
Gross - Direct Business	2,083	1,601	2,249	675	502	36	7,146
Gross – Proportional reinsurance accepted	-580	3,920	1,100	27	395	492	5,354
Gross – Non-proportional reinsurance accepted	1,761	892	222	9	98	110	3,092
Reinsurers' share	102	154	186	50	10	-5	496
Net	3,163	6,260	3,384	662	985	643	15,097
Changes in other technical provisions							
Gross - Direct Business	-18	0	-6	0	0	0	-24
Gross – Proportional reinsurance accepted	1	0	0	0	0	0	1
Gross – Non-proportional reinsurance accepted	0	0	0	0	0	0	0
Reinsurers' share	8	0	0	0	0	0	8
Net	-26	0	-6	0	0	0	-32
Expenses incurred	**2,289**	**3,197**	**1,304**	**515**	**319**	**196**	**7,820**
Other expenses							**30**
Total expenses							**7,850**

Premiums, claims and expenses by country

€m	Home country	Top 5 countries (by amount of gross premiums written) – life obligations					Total - Top 5 and home country
		USA	Canada	United Kingdom	Japan	Australia	
Premiums written							
Gross	9,046	2,777	1,775	1,175	1,137	829	16,739
Reinsurers' share	1	166	13	1	4	0	184
Net	9,045	2,612	1,762	1,174	1,133	829	16,555
Premiums earned							
Gross	9,049	432	1,775	1,175	1,137	829	14,396
Reinsurers' share	1	127	13	1	4	0	145
Net	9,048	304	1,762	1,174	1,133	829	14,250
Claims incurred							
Gross	9,075	3,082	1,256	1,157	221	634	15,425
Reinsurers' share	0	74	10	1	2	1	89
Net	9,074	3,008	1,246	1,156	219	633	15,336
Changes in other technical provisions							
Gross	244	20	53	-55	494	-45	710
Reinsurers' share	0	39	0	1	2	0	42
Net	244	-19	53	-56	492	-45	669
Expenses incurred	**1,817**	**222**	**336**	**50**	**305**	**273**	**3,001**
Other expenses							**-4**
Total expenses							**2,998**

S.22.01.22

Impact of long term guarantees and transitional measures

€m	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
Technical provisions	215,281	8,825	0	309	0
Basic own funds	45,845	-6,175	0	-289	0
Eligible own funds to meet Solvency Capital Requirement	46,093	-6,175	0	-289	0
Solvency Capital Requirement	19,180	0	0	93	0

S.23.01.22

Own funds

€m	Total	Tier 1 unrestricted	Tier 1 restricted	Tier 2	Tier 3
Basic own funds before deduction for participations in other financial sectors					
Ordinary share capital (gross of own shares)	588	588		0	
Non-available called but not paid in ordinary share capital at group level	0	0		0	
Share premium account related to ordinary share capital	6,845	6,845		0	
Initial funds, members' contributions or the equivalent basic own – fund item for mutual and mutual-type undertakings	0	0		0	
Subordinated mutual member accounts	0		0	0	0
Non-available subordinated mutual member accounts at group level	0		0	0	0
Surplus funds	2,754	2,754			
Non-available surplus funds at group level	216	216			
Preference shares	0		0	0	0
Non-available surplus funds at group level	0		0	0	0
Share premium account related to preference shares	0		0	0	0
Non-available share premium account related to preference shares at group level	0		0	0	0
Reconciliation reserve	30,355	30,355			
Subordinated liabilities	5,272		13	5,214	46
Non-available subordinated liabilities at group level	46		0	0	46
An amount equal to the value of net deferred tax assets	666				666
The amount equal to the value of net deferred tax assets not available at the group level	123				123
Other items approved by supervisory authority as basic own funds not specified above	0	0	0	0	0
Non available own funds related to other own funds items approved by supervisory authority	0	0	0	0	0
Minority interests (if not reported as part of a specific own fund item)	229	229	0	0	0
Non-available minority interests at group level	220	220	0	0	0
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 should not be represented by the reconciliation reserve and do not meet the criteria to be classified as Solvency II own funds	11	0			
Deductions					
Deductions for participations in other financial undertakings, including non-regulated undertakings carrying out financial activities	249	249	0	0	0
Whereof deducted according to art 228 of the Directive 2009/138/EC	0	0	0	0	0
Deductions for participations where there is non-availability of information (Article 229)	0	0	0	0	0
Deduction for participations included by using D&A when a combination of methods is used	0	0	0	0	0
Total of non-available own fund items	605	436	0	0	169
Total deductions	**853**	**685**	**0**	**0**	**169**
Total basic own funds after deductions	**45,845**	**40,075**	**13**	**5,214**	**543**

Own funds

€m	Total	Tier 1 - unrestricted	Tier 1 - restricted	Tier 2	Tier 3
Ancillary own funds					
Unpaid and uncalled ordinary share capital callable on demand	0			0	
Unpaid and uncalled initial funds, members' contributions or the equivalent basic own fund item for mutual and mutual – type undertakings, callable on demand	0			0	
Unpaid and uncalled preference shares callable on demand	0			0	0
A legally binding commitment to subscribe and pay for subordinated liabilities on demand	0			0	0
Letters of credit and guarantees under Article 96(2) of the Directive 2009/138/EC	0			0	
Letters of credit and guarantees other than under Article 96(2) of the Directive 2009/138/EC	0			0	
Supplementary members calls under first subparagraph of Article 96(3) of the Directive 2009/138/EC	0			0	
Supplementary members calls – other than under first subparagraph of Article 96(3) of the Directive 2009/138/EC	0			0	0
Non available ancillary own funds at group level	0			0	0
Other ancillary own funds	0			0	0
Total ancillary own funds	**0**			**0**	**0**
Own funds of other financial sectors					
Credit institutions, investment firms, financial institutions, alternative investment fund managers, UCITS management companies	54	54	0	0	
Institutions for occupational retirement provision	195	195	0	0	0
Non regulated entities carrying out financial activities	0	0	0	0	0
Total own funds of other financial sectors	**249**	**249**	**0**	**0**	
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	0	0	0	0	0
Own funds aggregated when using the D&A and a combination of method net of IGT	0	0	0	0	0
Total available own funds to meet the consolidated group SCR (excluding own funds from other financial sectors and from the undertakings included via D&A)	45,845	40,075	13	5,214	543
Total available own funds to meet the minimum consolidated group SCR	45,301	40,075	13	5,214	
Total eligible own funds to meet the consolidated group SCR (excluding own funds from other financial sectors and from the undertakings included via D&A)	45,845	40,075	13	5,214	543
Total eligible own funds to meet the minimum consolidated group SCR	43,059	40,075	13	2,972	

Own funds

€m	Total	Tier 1 - unrestricted	Tier 1 - restricted	Tier 2	Tier 3
Minimum consolidated Group SCR (Article 230)	**14,858**				
Ratio of eligible own funds to minimum consolidated Group SCR	**290%**				
Total eligible own funds to meet the group SCR (including own funds from other financial sector and from the undertakings included via D&A)	**46,093**	**40,323**	**13**	**5,214**	**543**
Group SCR	**19,180**				
Ratio of eligible own funds to group SCR including other financial sectors and the undertakings included via D&A	**240%**				

Reconciliation reserve

€m	31.12.2020
Excess of assets over liabilities	42,822
Own shares (held directly and indirectly)	0
Forseeable dividends, distributions and charges	1,385
Other basic own fund items	11,082
Adjustment for restricted own fund items in respect of matching adjustment portfolios and ring fenced funds	0
Other non available own funds	0
Reconciliation reserve before deduction for participations in other financial sectors	**30,355**
Excpected profits	
Expected profits included in future premiums (EPIFP) – Life business	17,016
Expected profits included in future premiums (EPIFP) – Non-life business	1,485
Total EPIFP	**18,502**

S.25.03.22

Solvency capital requirement – for groups on full internal models

€m	Calculation of solvency capital requirement
Unique number of component	
201 – Property-casualty	9,413
202 – Life and health	6,996
203 – Market	10,730
204 – Credit	5,210
205 – Operational risk	1,186
207 – Loss-absorbing capacity of deferred taxes	-3,396
208 – Other risk	779
Calculation of solvency capital requirement	
Total undiversified components	30,918
Diversification	-11,737
Capital requirement for business operated in accordance with Art. 4 of Directive 2003/41/EC	0
Solvency capital requirement excluding capital add-on	**19,180**
Capital add-ons already set	0
Solvency capital requirement	**19,180**
Other information on SCR	
Amount/estimate of the overall loss-absorbing capacity of technical provisions	-3,653
Amount/estimate of the overall loss-absorbing capacity of deferred taxes	-3,396
Total amount of notional solvency capital requirements for remaining part	0
Total amount of notional solvency capital requirements for ring-fenced funds	0
Total amount of notional solvency capital requirement for matching adjustment portfolios	0
Diversification effects due to RFF nSCR aggregation for Article 304	0
Minimum consolidated Group solvency capital requirement	14,858
Information on other entities	
Capital requirement for other financial sectors (non-insurance capital requirements)	228
Capital requirement for other financial sectors (non-insurance capital requirements) – Credit institutions, investment firms and financial institutions, alternative investment fund managers, UCITS management companies	58
Capital requirement for other financial sectors (non-insurance capital requirements) – Institutions for occupational retirement provisions	168
Capital requirement for other financial sectors (non-insurance capital requirements) – Capital requirement for non-regulated entities carrying out financial activities	2
Capital requirement for non-controlled participation requirements	551
Capital requirement for residual undertakings	0

List of abbreviations

AF	Actuarial Function
AG	Aktiengesellschaft (German joint-stock company)
AIF	Alternative investment fund
ALM	Asset-Liability management
AMG	Asset management company
BaFin	German Federal Financial Supervisory Authority
Bps	Basis point
BPA	Bisphenol A
CDS	Credit default Swap
CEE	Credit Equivalent Exposures
CIC	Complementary Identification Code
CISO	Chief Information Security Officer
CMS	Compliance Management System
COVID-19	Corona Virus Disease 2019
CRO	Chief Risk Officer
CTA	Contractual trust agreement
DA	Delegated Acts
DCGK	Deutscher Corporate Governance Kodex
DKV	Deutsche Krankenversicherung
EC	European Community
EE	Economic Earnings
EEA	European Economic Area
EIOPA	E uropean Insurance and Occupational Pensions Authority
EOF	Anrechnungsfähige Eigenmittel
EPIFP	Expected Profit included in future Premiums
ER	Emerging Risks
EU	European Union
FAS	Financial Accounting Standard
F&P	Fit and Proper
GCCO	Group Chief Compliance Officer
GCL	Group Compliance and Legal
GIM	Group Investment Management
GmbH	Gesellschaft mit beschränkter Haftung (German limited liability company)
HGB	German Commercial Code
HSB	Hartford Steam Boiler
IAS	International Accounting Standard
ICS	Internal control system
IFRS	International Financial Reporting Standard
Inc.	Incorporated
IRM	Integrated Risk Management
ISDA	International Swaps and Derivates Association
IT	Information Technology
LLC	Limited liability company
LRFA	Linear regression finance approach
Ltd.	Limited
MBS	Mortgage-backed Securities
MCR	Minimum capital requirement
MEAG	MUNICH ERGO Asset Management GmbH
MENA	Middle East North Africa
MR GCP	Munich Re Group Compensation Policy
NAVs	Net asset values
OIS	Overnight index swap
OECD	Organisation for Economic Co-operation and Development
OpRisk	Operational risk
ORCS	Operational Risk Control System
ORSA	Own risk and solvency Assessment
OTC	Over the counter
p.l.c.	Public limited company
Pty. Ltd.	Proprietary Limited
PVFP	Present value of future profits
QRT	Quantitative reporting templates
RI	Reinsurance
RMF	Risk management function
RORAC	Return on risk-adjusted capital
SCR	Solvency capital requirement
SFCR	Solvency and Financial Condition Report
SII	Solvency II
UCITS	Undertakings for collective investment in Transferable securities
US GAAP	United States Generally Accepted Accounting Principles
VAG	German Insurance Supervision Act
VaR	Value at risk
WTO	World Trade Organization

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