Capital position and risk profile

Incl. development of Property & Casualty claim reserves

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21st International Investors' Day
London, 18 October 2018

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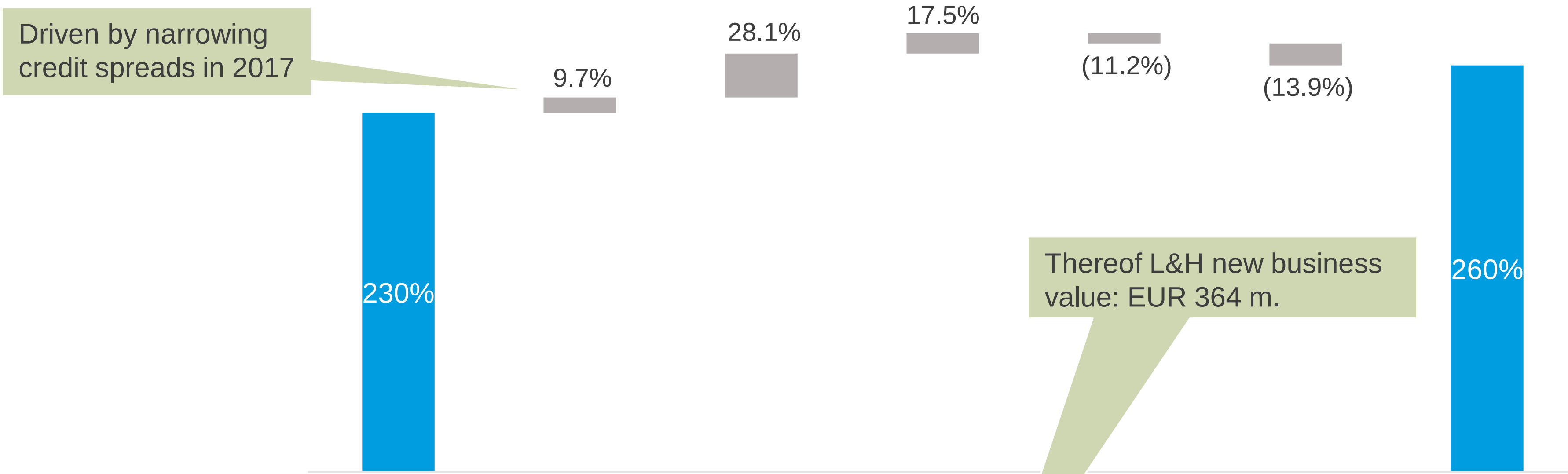
Agenda

- Solvency ratio and movement analysis
- Risk profile, stress tests and sensitivities
- Development of Property & Casualty claim reserves
- Recent regulatory developments

Solvency II capital generation: review 2017

Solvency II eligible own funds and SCR movement analysis



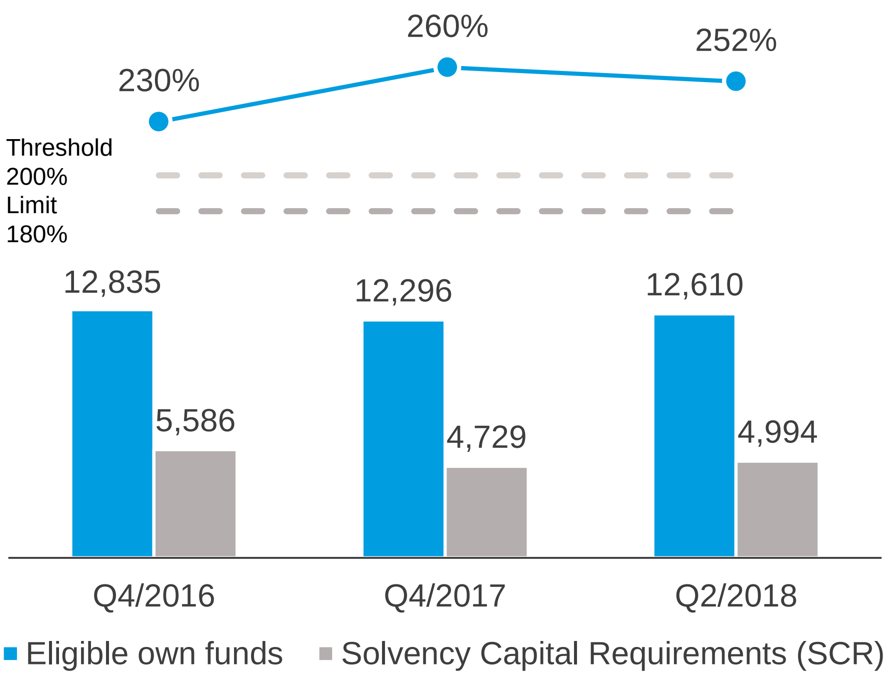
	Year end 2016	Market variances 1)	Model changes 2)	Operating impact 3)	Taxes 4)	Dividend payments 5)	Year end 2017
Eligible own funds	12,835	-823	186	987	-233	-656	12,296
SCR	5,586	-570	-457	67	103	0	4,729

Figures in m. EUR. SCR – Solvency Capital Requirements according to Solvency II internal model
1) Changes due to changes of foreign exchange rates, interest rates, credit spreads and other financial market indicators; pre-tax
2) Model changes, main effect from regulatory approval of operational risk model; pre-tax
3) Operating earnings and variances in assumptions; pre-tax
4) Incl. tax payments and changes in deferred taxes
5) Incl. minor changes in foreseeable dividends

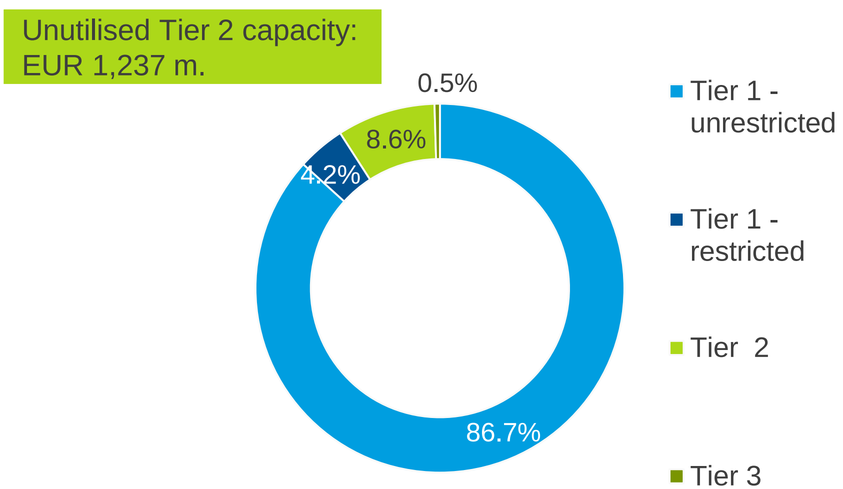
Stable buffer above Solvency II capital targets

Despite significant changes in economic environment

Development of Solvency II capital adequacy ratio



Composition of Solvency II eligible capital*



- **2018:** Decrease in Solvency II ratio driven by widening of credit spreads and increase of risk margin due to restructuring following the US tax reform

Figures in m. EUR
* As at Q2/2018

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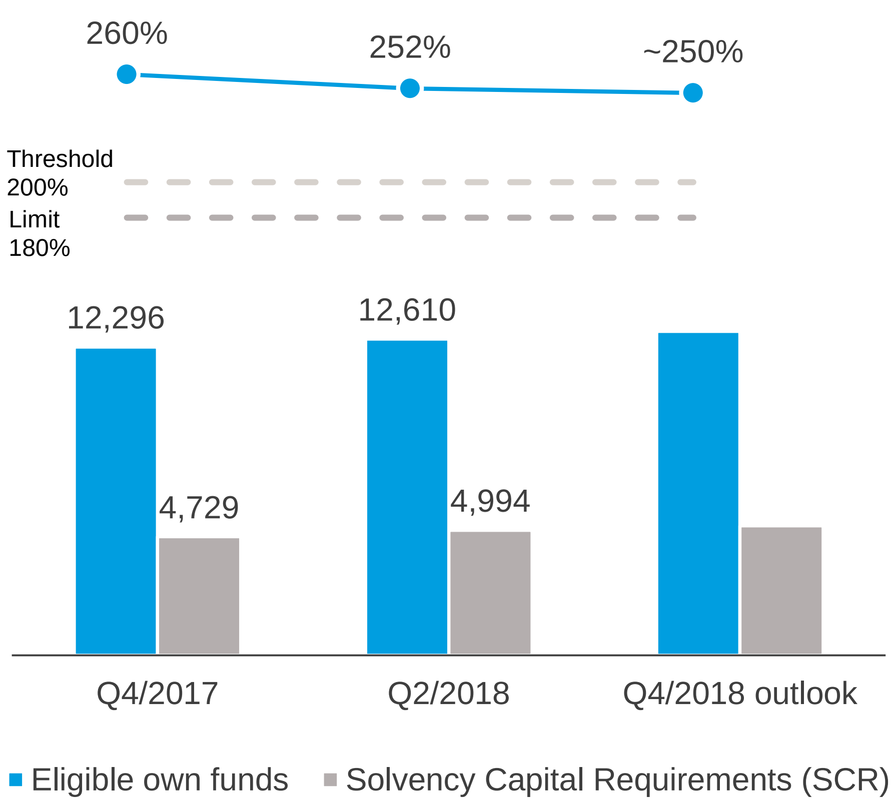
Stable outlook above Solvency II capital targets
Despite substantial business development

Development of Solvency II capital adequacy ratio



Figures in m. EUR

▶ Outlook:

- Restructuring of direct insurance (Inter Hannover) with very limited impact on solvency ratio (<1%p).
- The solvency ratio is not particularly sensitive to the level of recaptures of US mortality business in 2018.
- Capital growth in line with business growth.
- Outlook based on the assumption of a stable economic environment and expected results / large losses.

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Volatility adjustment as a crisis management tool

Application for use starting year end 2018

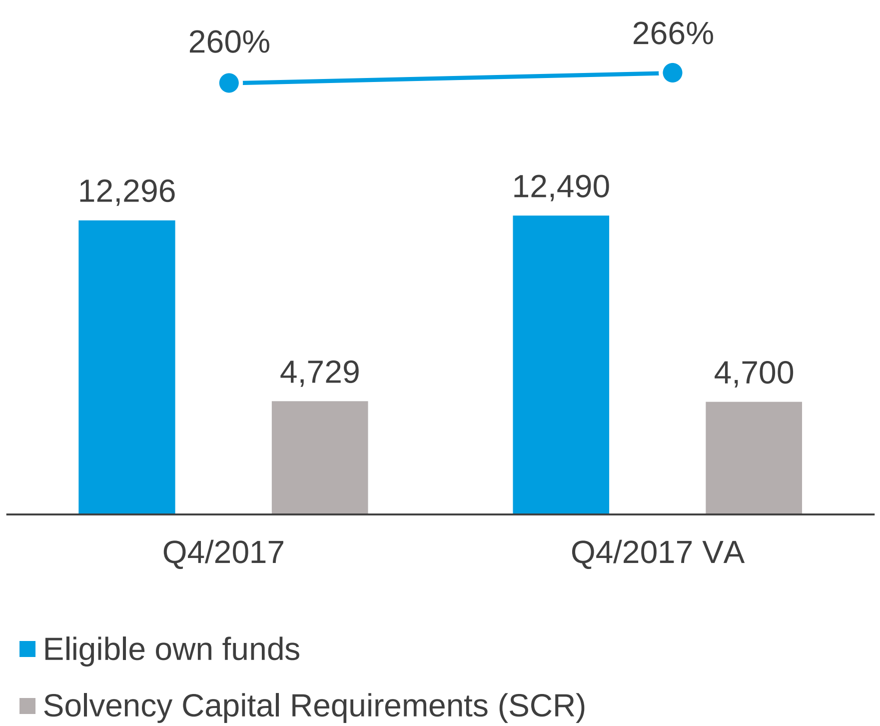
Reason for application:

- Hannover Re has applied for the use of the volatility adjustment starting year end 2018 in order to mitigate the volatility of the own funds in case of significant market stresses
- Reflects Hannover Re hold-to-maturity asset mgmt. strategy and stable cash flow profile

Impact of application:

- Moderate impact when spreads are moderate
- Impact on SII ratio in a 2008-like scenario approx. 45%p
- However, significant basis risk exists due to differences between Hannover Re asset portfolio and reference portfolio for the calculation of the Volatility Adjuster (VA)
- Transparency: continue to report Solvency II ratio incl. and excl. VA

Impact of volatility adjustment on solvency ratio*



Figures in m. EUR
* As at Q4/2017

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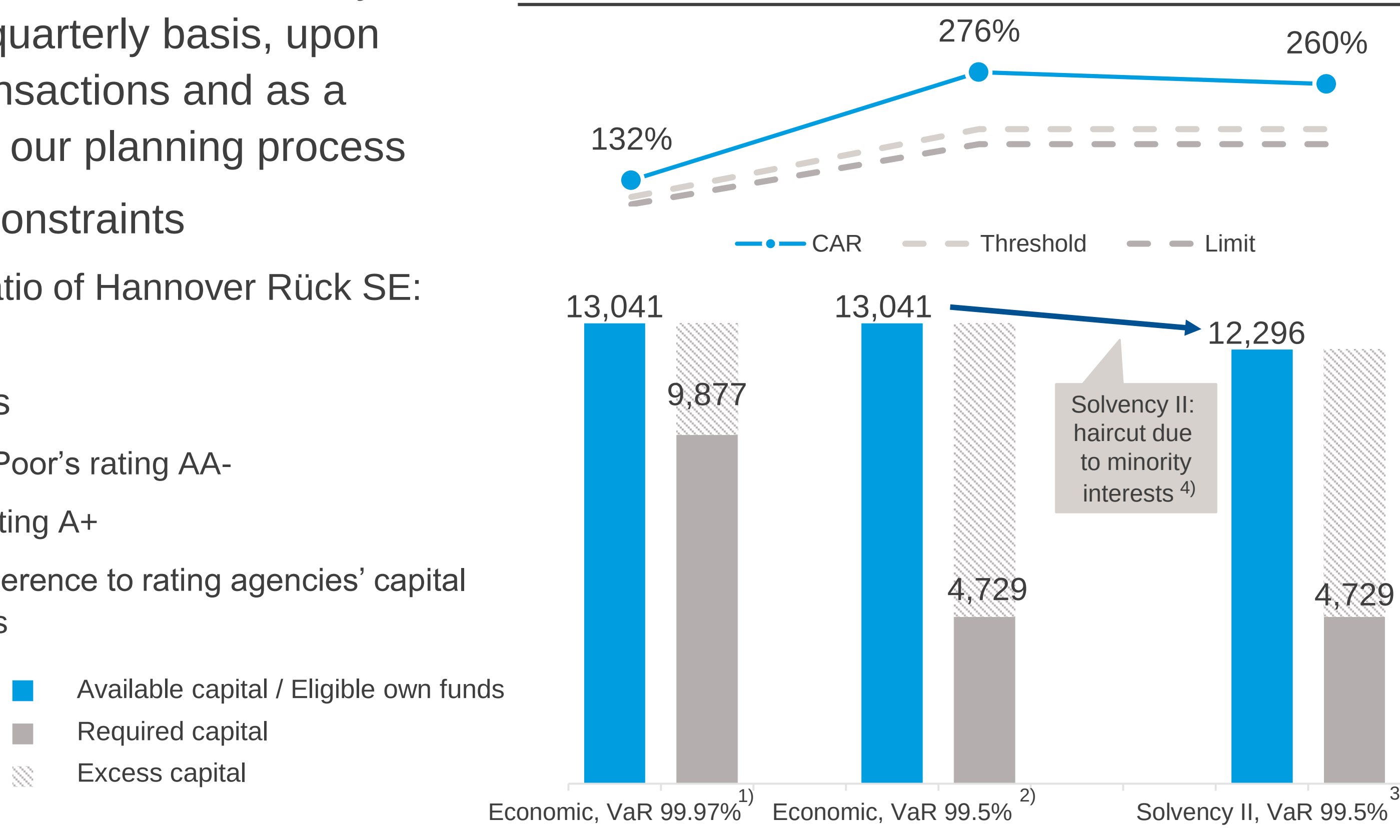
Substantial excess capital to withstand shocks

Comfortable capital position above targets

- We monitor internal and Solvency II metrics on a quarterly basis, upon significant transactions and as a component of our planning process
- Further side constraints
  - Solvency II ratio of Hannover Rück SE: 267%
  - Rating targets
    - Standard & Poor's rating AA-
    - A.M. Best rating A+
    - includes adherence to rating agencies' capital requirements

Capital adequacy ratios, internal and Solvency II metrics



All figures as at 31 December 2017 and in m. EUR

1) Available capital vs. Value-at-Risk (VaR) at confidence level 99.97%, minimum capital ratio 100%

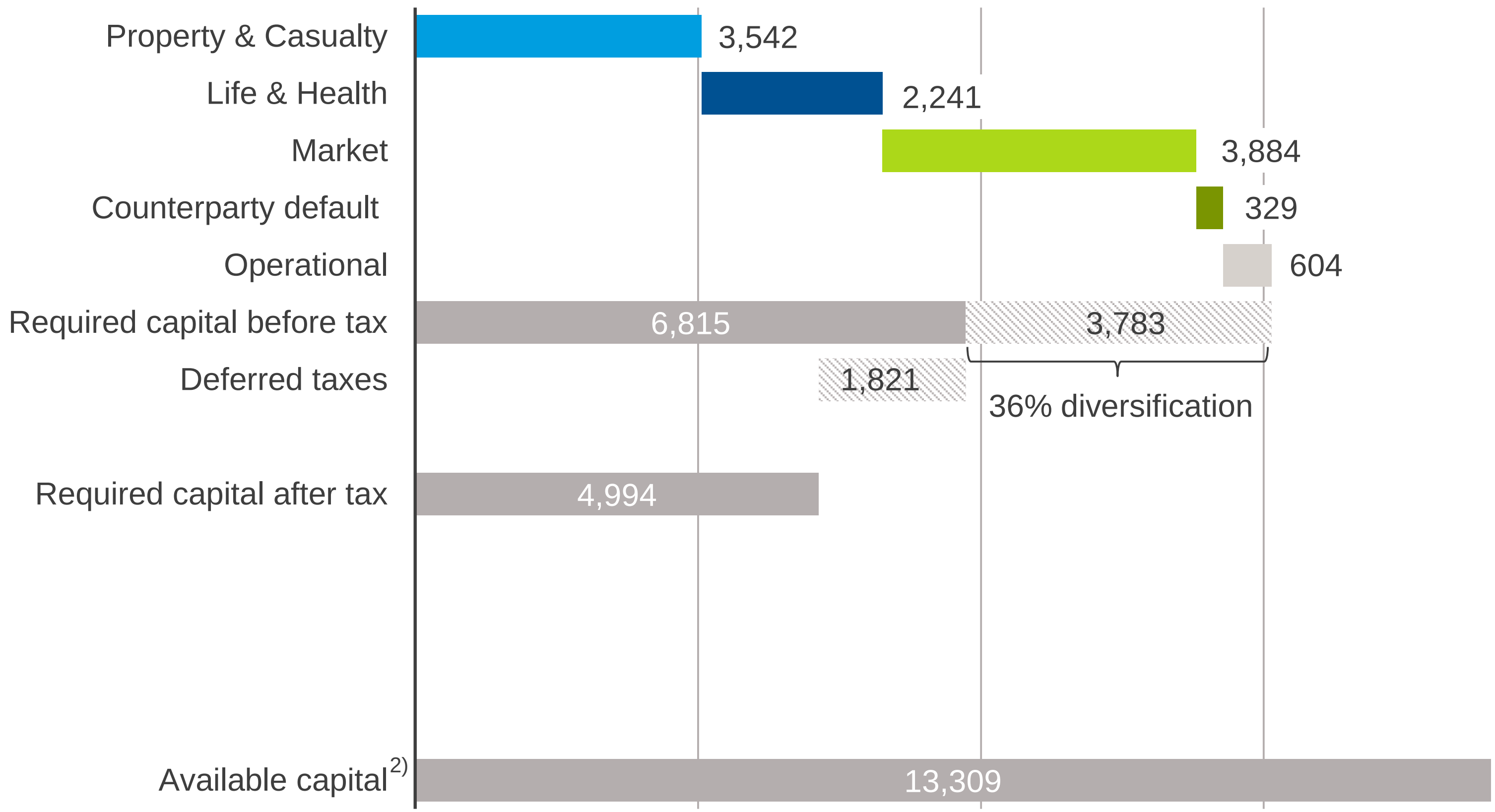
2) Available capital vs. VaR at confidence level 99.5%, minimum capital ratio 180%

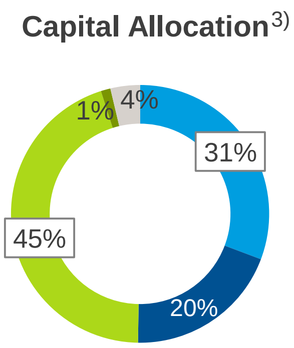
3) Solvency II eligible own funds vs. VaR at confidence level 99.5%

4) Non-available minority interests mainly consist of non-controlling interests in E+S Rückversicherung AG

Capital efficiency supported by high diversification
Breakdown of Solvency II capital requirements

Required capital at confidence level 99.5% (SCR[1]) in m. EUR





As at 30 June 2018
1) SCR - Solvency Capital Requirements according to Solvency II internal model
2) Including minority interest
3) Allocation based on Euler principle and Tail-Value-at-Risk at confidence level 99%

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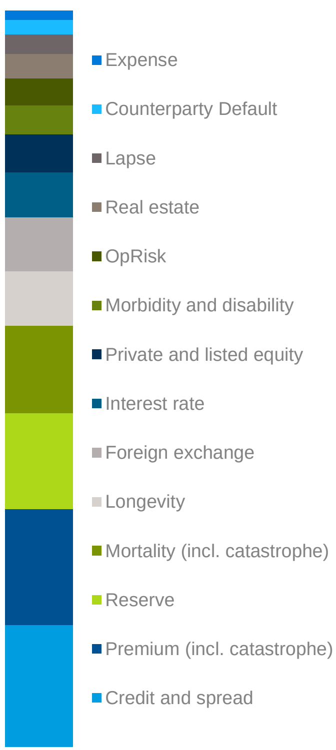
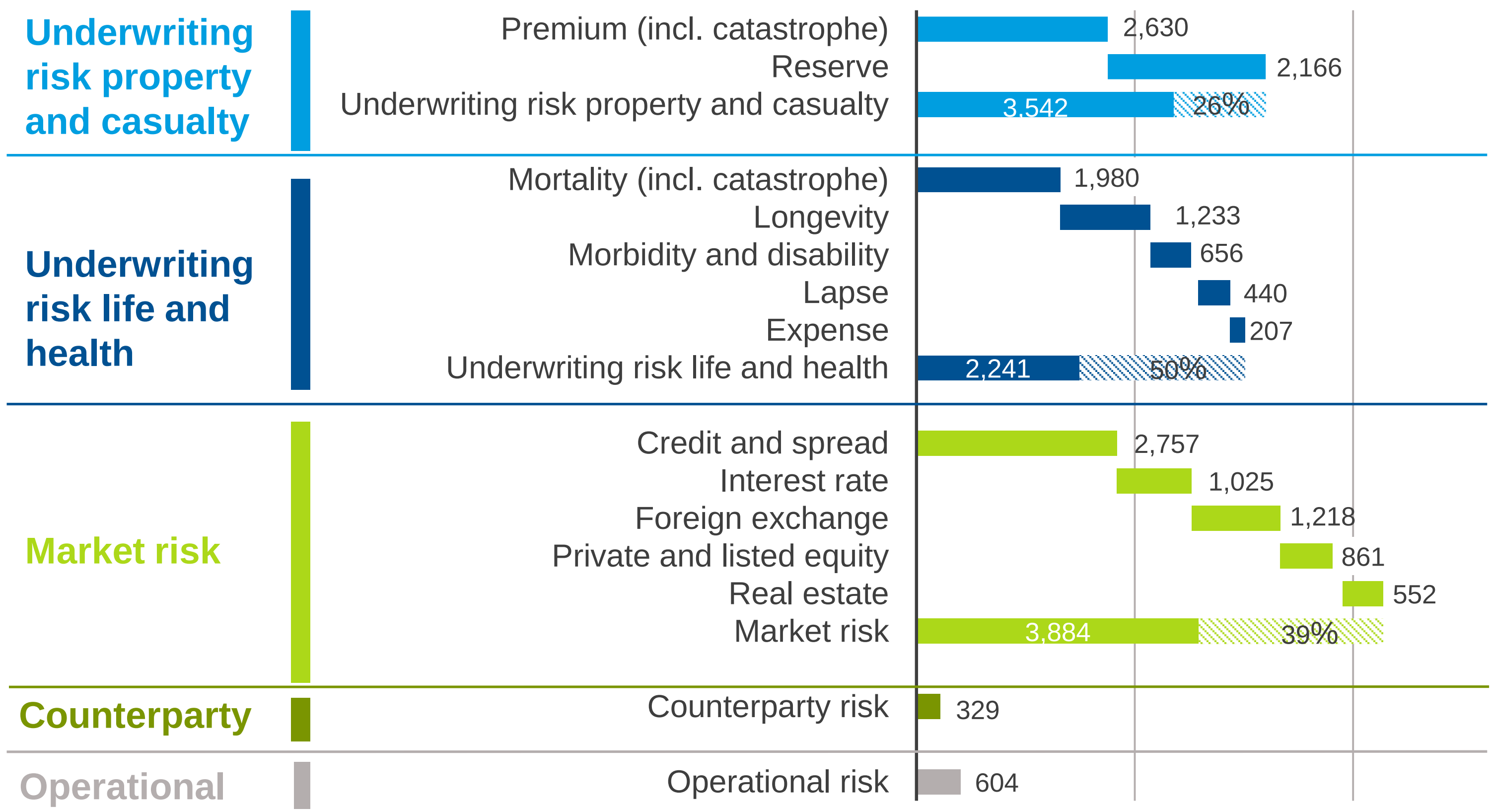
Hannover Re is well diversified within each risk category

and has a well balanced asset and liability portfolio

Risk Ranking



Required capital at confidence level 99.5% (SCR*) in m. EUR



As at 30 June 2018

* SCR - Solvency Capital Requirements according to Solvency II internal model

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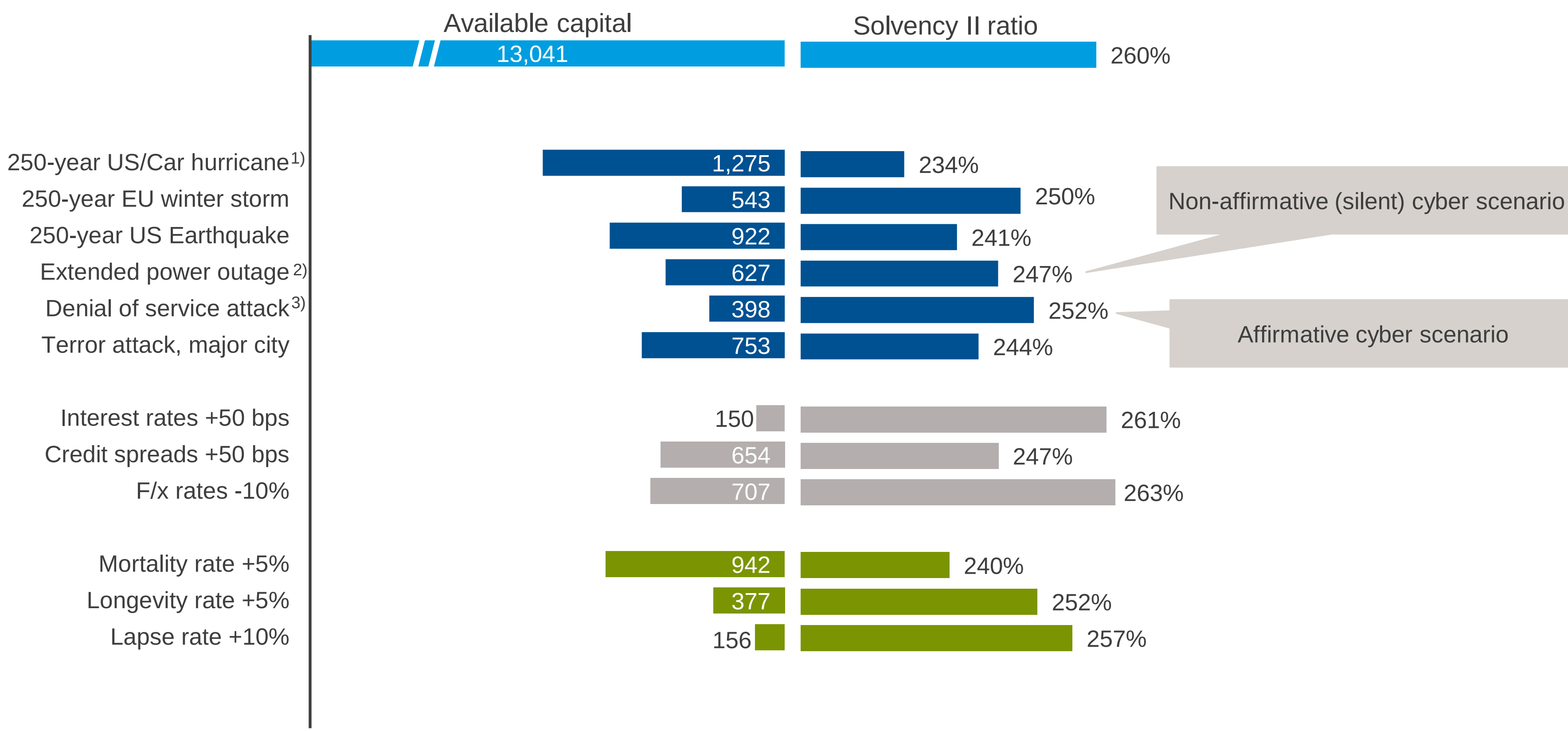
Individual risks with limited impact on own funds

Solvency ratio above targets for all sensitivities

Sensitivities and stress tests



As at 31 December 2017, in m. EUR; post-tax

1) A return period of 250 years is equivalent to an occurrence probability of 0.4%; based on the aggregate annual loss. Car – Caribbean

2) Approx. 3 week of power outage in a larger area of a developed country

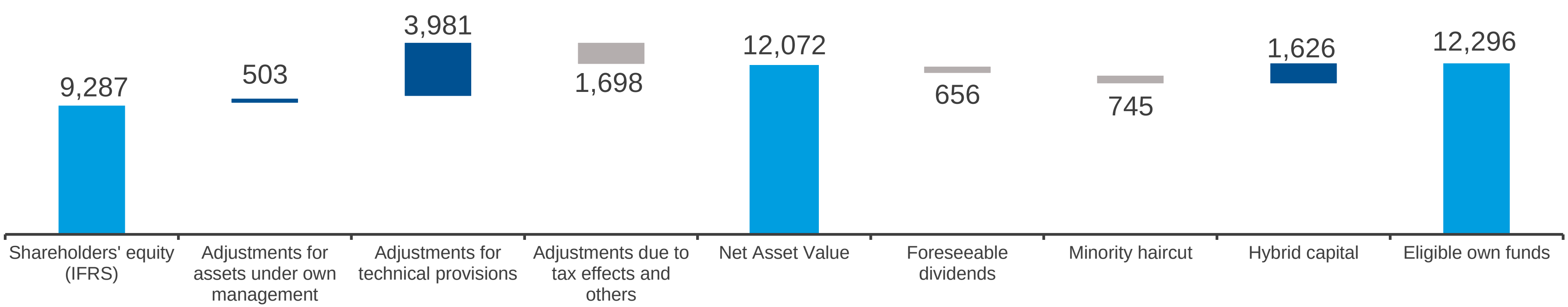
3) Distributed denial of service attack on main DNS provider

Reconcilliation IFRS vs. Solvency II

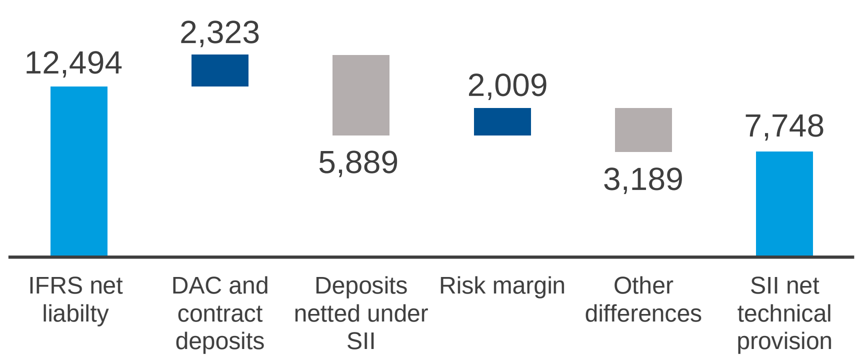
Solvency II valuation based on current assumptions

IFRS shareholders‘ equity vs. Solvency II eligible own funds

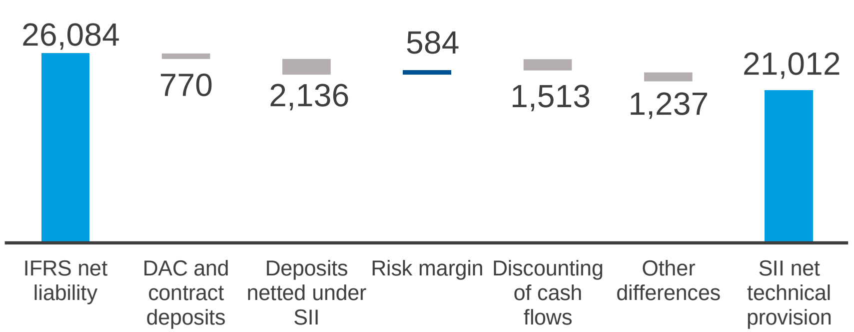
in m. EUR



L&H technical provision: IFRS vs. Solvency II



P&C technical provision: IFRS vs. Solvency II

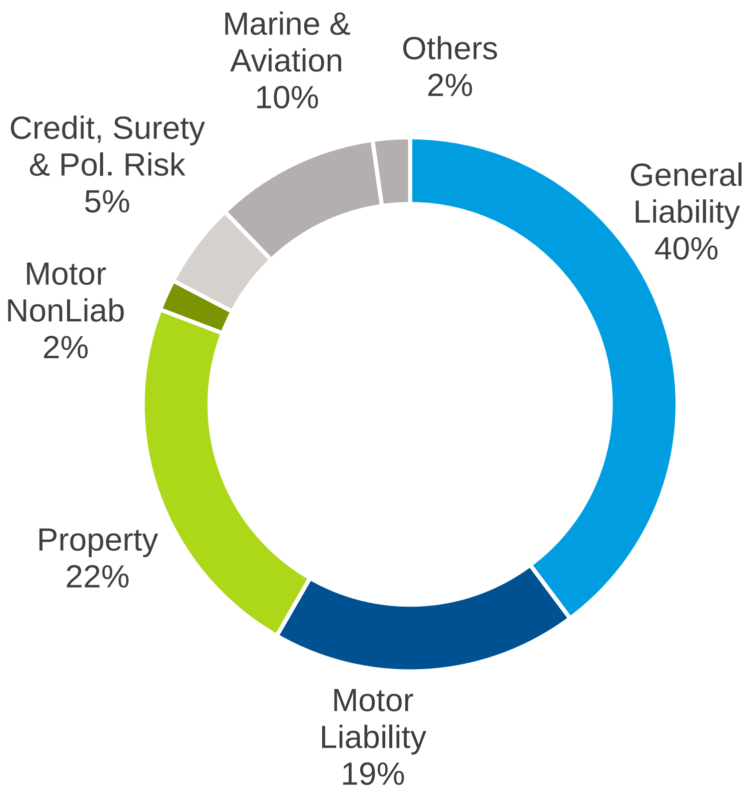


As at 31 December 2017; according to Solvency II year-end reporting, incl. minority interests, in m. EUR

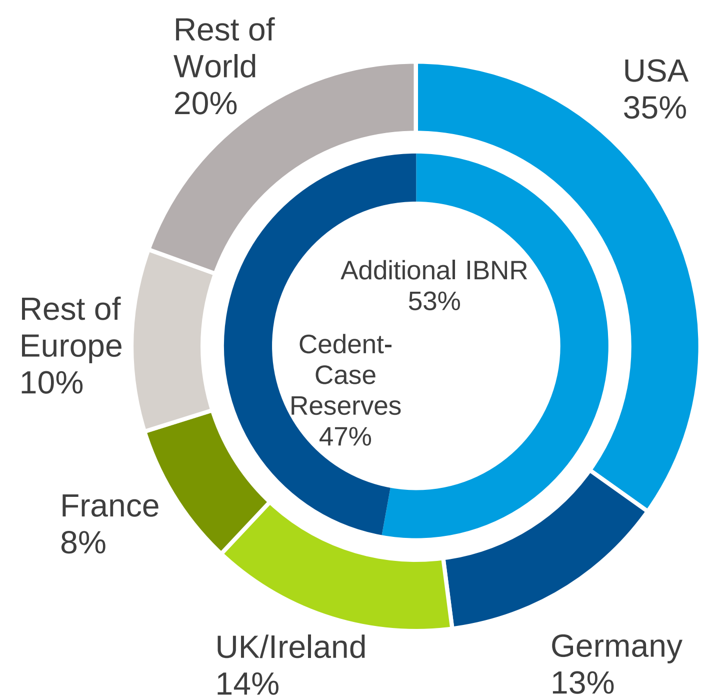
P&C book diversified over regions and lines of business

More than 50% of loss and loss adjustment reserves are additional IBNR*

Lines of business



Cedents' residence / additional IBNR*



Property & Casualty gross loss reserves*

EUR 24,130 m.

* As at 31 December 2017, consolidated, IFRS, IBNR – Incurred but not reported

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Stable P&C reserving level in challenging markets

Independent external review confirms reserving level

Year end [1]	Redundancy [2]	Change of redundancy	Impact on loss ratio	Net earned premium (P&C)
2009	867	276	5.3%	5,230
2010	956	89	1.6%	5,394
2011	1,117	162	2.7%	5,961
2012	1,308	190	2.8%	6,854
2013	1,517	209	3.1%	6,866
2014	1,546	29	0.4%	7,011
2015	1,887	341	4.2%	8,100
2016	1,865	-22	-0.3%	7,985
2017	**1,813**	**-52**	**-0.1%**	**9,159**

1) Figures in m. EUR and unadjusted for changes in foreign exchange rate, i.e. based on actual exchange rates at respective year end.
2) Redundancy of loss and loss adjustment expense reserve for P&C against held IFRS reserves, before tax and minority participations.
WillisTowersWatson reviewed these estimates - more details shown in appendix.

Average impact on loss ratio: 2% in the past 9 years (not f/x-adjusted)

Extended coverage of reported loss triangles

Now including the vast majority of reinsurance subsidiaries and branches

	Original scope			Extended scope *		
Line of business	**Reserves U/Y 1979-2005**	**Reserves U/Y 2006-2017**	**U/Y 1979 - 2017 in % of total**	**Reserves U/Y 1979-2005**	**Reserves U/Y 2006-2017**	**U/Y 1979 - 2017 in % of total**
General liability non-prop.	785	4,595	31.8%	799	5,350	27.8%
Motor non-prop.	592	2,114	16.0%	609	2,479	14.0%
General liability prop.	140	1,951	12.4%	242	2,233	11.2%
Motor prop.	190	953	6.8%	194	1,966	9.8%
Property prop.	27	1,375	8.3%	31	2,195	10.1%
Property non-prop.	16	1,289	7.7%	20	2,760	12.6%
Marine	31	962	5.9%	35	1,163	5.4%
Aviation	24	737	4.5%	33	768	3.6%
Credit/surety	48	1,068	6.6%	52	1,198	5.7%
Total*	1,854	15,044	**100.0%**	2,014	20,112	**100.0%**

As at 31 December 2017, consolidated, IFRS figures in m. EUR
* Extended Scope includes Property & Casualty business from Hannover Rück SE incl. its 8 branches, E+S Rückversicherung AG, HR Bermuda, HR Ireland and HR Takaful. Business from primary insurance (Inter Hannover and Argenta), Inter Hannover No. 1 and HR South Africa as well as business written prior to underwriting year (UY) 1979 and a fraction of group internal retrocession are not included. The excluded reserves amount to 2,005 m. EUR.

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Hannover Re financial year better reflects our cash flow profile

Extended scope and reporting now based on Hannover Re's financial year

Future reporting based on Hannover Re's financial year and extended scope

		Hannover Re financial year												Booked data			
U/W year	Earned premium	12	24	36	48	60	72	84	96	108	120	132	144	Ultimate loss ratio	Paid losses	Case reserves	IBNR balance
2006	4,662	13.3%	35.1%	38.8%	41.0%	42.4%	43.5%	43.8%	44.3%	44.4%	44.9%	45.3%	45.6%	49.3%	41.8%	3.8%	3.6%
2007	4,399	18.5%	43.1%	49.5%	52.9%	54.9%	56.0%	57.7%	59.6%	60.5%	60.9%	60.6%		66.2%	54.2%	5.6%	6.4%
2008	4,838	17.8%	46.8%	53.6%	56.9%	58.0%	59.8%	60.6%	61.4%	61.7%	61.7%			68.7%	55.4%	6.1%	7.2%
2009	5,050	14.5%	41.0%	47.9%	49.8%	52.1%	53.5%	55.0%	55.7%	56.0%				65.0%	49.0%	6.5%	9.5%
2010	5,132	19.1%	55.1%	62.8%	66.6%	69.3%	72.0%	72.7%	73.5%					86.9%	65.8%	7.5%	13.5%
2011	5,757	19.3%	46.5%	54.1%	58.5%	59.9%	61.8%	62.7%						77.5%	54.8%	7.6%	15.1%
2012	6,431	13.3%	42.5%	49.3%	52.8%	55.1%	56.9%							70.0%	47.7%	9.2%	13.1%
2013	6,724	15.2%	44.4%	51.1%	53.2%	55.3%								70.6%	45.6%	9.6%	15.4%
2014	7,088	12.2%	41.1%	47.7%	51.6%									67.6%	40.5%	11.3%	15.9%
2015	7,383	12.2%	43.7%	55.3%										77.2%	42.9%	14.2%	20.0%
2016	7,262	14.2%	42.4%											72.1%	24.7%	20.5%	26.9%
2017	5,555	37.6%												98.4%	19.5%	23.5%	55.5%

Previous reporting based on cedents' financial year and excluding subsidiaries and branches

		Cedent financial year												Booked data			
U/W year	Earned premium	12	24	36	48	60	72	84	96	108	120	132	144	Ultimate loss ratio	Paid losses	Case reserves	IBNR balance
2006	3,628	29.7%	38.3%	41.4%	44.0%	45.4%	46.8%	47.3%	47.7%	47.9%	48.5%	49.0%	49.2%	53.8%	44.6%	4.7%	4.5%
2007	3,581	34.9%	48.2%	53.0%	56.2%	58.6%	60.3%	62.2%	64.0%	65.1%	65.3%	65.3%		71.1%	57.8%	6.4%	6.9%
2008	3,656	35.8%	51.3%	56.7%	59.2%	61.0%	63.0%	63.9%	64.7%	65.3%	65.4%			73.8%	57.5%	7.6%	8.7%
2009	3,841	30.0%	43.3%	48.0%	50.6%	51.7%	53.2%	54.6%	55.1%	55.6%				66.5%	47.3%	7.7%	11.5%
2010	4,050	33.1%	47.7%	51.5%	54.6%	58.1%	59.8%	60.3%	61.1%					75.3%	52.8%	8.1%	14.4%
2011	4,383	34.0%	48.5%	53.5%	56.5%	58.7%	60.8%	61.6%						78.5%	52.4%	8.8%	17.3%
2012	4,668	34.5%	50.6%	55.4%	58.9%	61.3%	63.0%							78.7%	51.7%	11.3%	15.6%
2013	4,819	34.2%	48.5%	52.6%	54.6%	56.8%								75.0%	45.9%	10.8%	18.4%
2014	4,680	29.8%	45.8%	51.1%	54.5%									74.0%	40.5%	14.1%	19.5%
2015	4,763	32.3%	49.1%	55.1%										80.9%	41.1%	16.4%	23.4%
2016	4,525	35.4%	49.0%											82.0%	30.1%	20.7%	31.3%
2017	2,905	35.4%												98.9%	17.3%	22.8%	58.7%

* As at 31 Dec 2017 (in m. EUR), consolidated, IFRS, development in months

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Hannover Re financial year better reflects our cash flow profile

Extended scope and reporting now based on Hannover Re's financial year

U/W year	Earned premium	12	24	36	48	60	72	84	96	108	120	132	144	Ultimate loss ratio	Paid losses	Case reserves	IBNR balance
2006	4,662	13.3%	35.1%	38.8%	41.0%	42.4%	43.5%	43.8%	44.3%	44.4%	44.9%	45.3%	45.6%	49.3%	41.8%	3.8%	3.6%
2007	4,399	18.5%	43.1%	49.5%	52.9%	54.9%	56.0%	57.7%	59.6%	60.5%	60.9%	60.6%		66.2%	54.2%	5.6%	6.4%
2008	4,838	17.8%	46.8%	53.6%	56.9%	58.0%	59.8%	60.6%	61.4%	61.7%	61.7%			68.7%	55.4%	6.1%	7.2%
2009	5,050	14.5%	41.0%	47.9%	49.8%	52.1%	53.5%	55.0%	55.7%	56.0%				65.0%	49.0%	6.5%	9.5%
2010	5,132	19.1%	55.1%	62.8%	66.6%	69.3%	72.0%	72.7%	73.5%					86.9%	65.8%	7.5%	13.5%
2011	5,757	19.3%	46.5%	54.1%	58.5%	59.9%	61.8%	62.7%						77.5%	54.8%	7.6%	15.1%
2012	6,431	13.3%	42.5%	49.3%	52.8%	55.1%	56.9%							70.0%	47.7%	9.2%	13.1%
2013	6,724	15.2%	44.4%	51.1%	53.2%	55.3%								70.6%	45.6%	9.6%	15.4%
2014	7,088	12.2%	41.1%	47.7%	51.6%									67.6%	40.5%	11.3%	15.9%
2015	7,383	12.2%	43.7%	55.3%										77.2%	42.9%	14.2%	20.0%
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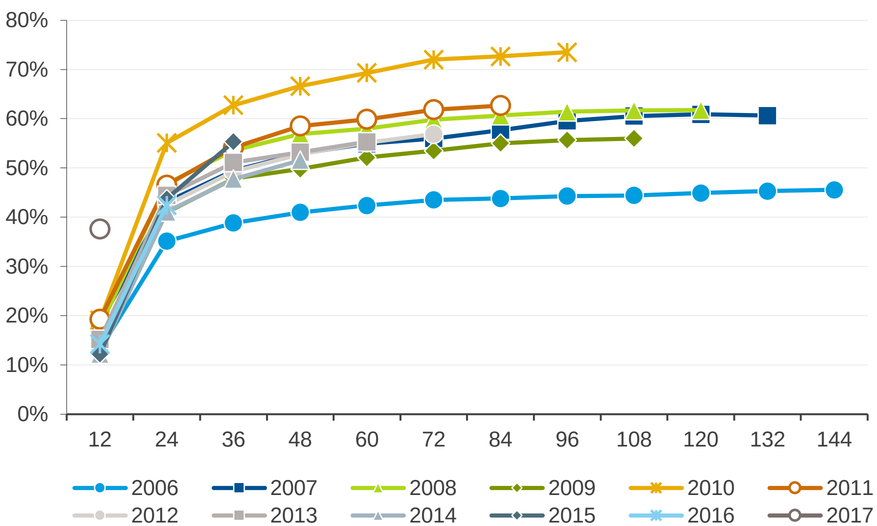

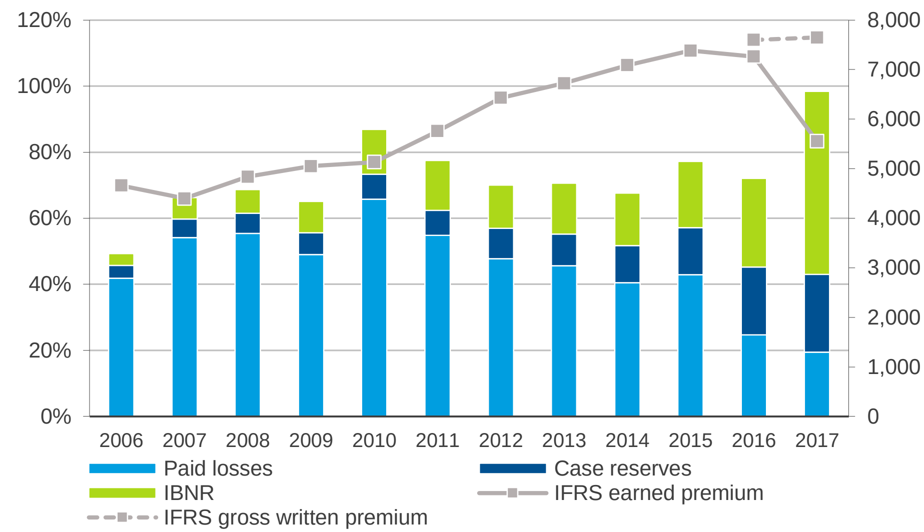

* As at 31 Dec 2017 (in m. EUR), consolidated, IFRS, development in months

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We cope with a challenging regulatory environment

Recent developments

Data protection

- EU General data protection regulation (GDPR)
- International data protection regulation (e.g. PIPA in South Africa)

IT and cyber security

- Requirements on IT security in (re-) insurance (VAIT)
- EIOPA cyber risk initiative

Solvency II review

- Level 2 review in 2018
- Review of the Solvency II directive (level 1) in 2020

IAIS common framework for insurance regulation (ComFrame)

- International capital standards (ICS)
- Monitoring phase until 2025

Conduct and sustainability regulation

- Insurance distribution directive
- Sustainability reporting

Disruption

- Brexit
- US tax reform (Base erosion and abuse tax on affiliate premium)

Internal model regulation

- Market risk benchmark study
- EIOPA initiative of further involvement in internal model review

Major changes in accounting standards

- IFRS 17
- IFRS 9

Appendix

Details on reserve review by Willis Towers Watson

- The scope of Willis Towers Watson's work was to review certain parts of the held loss and loss adjustment expense reserve, net of outwards reinsurance, from Hannover Rück SE's consolidated financial statements in accordance with IFRS as at each 31 December from 2009 to 2017, and the implicit redundancy margin, for the non-life business of Hannover Rück SE. Willis Towers Watson concludes that the reviewed loss and loss adjustment expense reserve, net of reinsurance, less the redundancy margin is reasonable in that it falls within Towers Watson's range of reasonable estimates.
  - Life reinsurance and health reinsurance business are excluded from the scope of this review.
  - Towers Watson's review of non-life reserves as at 31 December 2017 covered 97.3% / 98.4% of the gross and net held non-life reserves of €24.1 billion and € 22.7 billion respectively. Together with life reserves of gross €4.2 billion and net €4.0 billion, the total balance sheet reserves amount to €28.4 billion gross and €26.7 billion net.
  - The results shown in this presentation are based on a series of assumptions as to the future. It should be recognised that actual future claim experience is likely to deviate, perhaps materially, from Willis Towers Watson's estimates. This is because the ultimate liability for claims will be affected by future external events; for example, the likelihood of claimants bringing suit, the size of judicial awards, changes in standards of liability, and the attitudes of claimants towards the settlement of their claims.
  - The results shown in Willis Towers Watson's reports are not intended to represent an opinion of market value and should not be interpreted in that manner. The reports do not purport to encompass all of the many factors that may bear upon a market value.
  - Willis Towers Watson's analysis was carried out based on data as at evaluation dates for each 31 December from 2009 to 2017. Willis Towers Watson's analysis may not reflect development or information that became available after the valuation dates and Willis Towers Watson's results, opinions and conclusions presented herein may be rendered inaccurate by developments after the valuation dates.
  - As is typical for reinsurance companies, claims reporting can be delayed due to late notifications by some cedents. This increases the uncertainty in the estimates.
  - Hannover Rück SE has asbestos, environmental and other health hazard (APH) exposures which are subject to greater uncertainty than other general liability exposures. Willis Towers Watson's analysis of the APH exposures assumes that the reporting and handling of APH claims is consistent with industry benchmarks. However, there is wide variation in estimates based on these benchmarks. Thus, although Hannover Rück SE's held reserves show some redundancy compared to the indications, the actual losses could prove to be significantly different to both the held and indicated amounts.
  - Willis Towers Watson has not anticipated any extraordinary changes to the legal, social, inflationary or economic environment, or to the interpretation of policy language, that might affect the cost, frequency, or future reporting of claims. In addition, Towers Watson's estimates make no provision for potential future claims arising from causes not substantially recognised in the historical data (such as new types of mass torts or latent injuries, terrorist acts), except in so far as claims of these types are included incidentally in the reported claims and are implicitly developed.
  - In accordance with its scope Willis Towers Watson's estimates are on the basis that all of Hannover Rück SE's reinsurance protection will be valid and collectable. Further liability may exist for any reinsurance that proves to be irrecoverable.
  - Willis Towers Watson's estimates are in Euros based on the exchange rates provided by Hannover Rück SE as at each 31 December evaluation date. However, a substantial proportion of the liabilities is denominated in foreign currencies. To the extent that the assets backing the reserves are not held in matching currencies, future changes in exchange rates may lead to significant exchange gains or losses.
  - Willis Towers Watson has not attempted to determine the quality of Hannover Rück SE's current asset portfolio, nor has Willis Towers Watson reviewed the adequacy of the balance sheet provisions except as otherwise disclosed herein.

- In its review, Willis Towers Watson has relied on audited and unaudited data and financial information supplied by Hannover Rück SE and its subsidiaries, including information provided orally . Willis Towers Watson relied on the accuracy and completeness of this information without independent verification.
- Except for any agreed responsibilities Willis Towers Watson may have to Hannover Rück SE, Willis Towers Watson does not assume any responsibility and will not accept any liability to any person for any damages suffered by such person arising out of this commentary or references to Willis Towers Watson in this document.

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