

50  
years

somewhat  
different



# Risk profile and reserving level

A risk management update

**Dr. Andreas Märkert, Managing Director, Chief Risk Officer**

# Agenda

---

- ▶ Hannover Re is well-capitalized and has flexibility to manage its capital position.
- ▶ Our limit system supports controlled risk taking and transparency of capital usage.
- ▶ Reserving level remains comfortable and has significantly improved during 2015.

# Hannover Re Group maintains comfortable capital position

## Capital adequacy above targets with substantial excess capital

in m. EUR	Internal Metrics		Solvency II
Available Economic Capital/Eligible Own Funds	13,282		12,611
<b>Confidence Level</b>	<b>99.97%</b>	<b>99.5%</b>	<b>99.5%</b>
Required Capital/Solvency Capital Requirements	10,126	5,200	5,460
Excess Capital	3,156	8,082	7,151
<b>Capital Adequacy Ratio (CAR)</b>	<b>131%</b>	<b>255%</b>	<b>231%</b>
Minimum Target Ratio (Limit)	100%	200%	180%
Minimum Target Ratio (Threshold)	110%	n/a	200%

► Stable Solvency II capital position in 2016:

	Q2/2016	Q1/2016	Q4/2015
<b>Solvency II CAR</b>	<b>231%</b>	<b>228%</b>	<b>221%</b>

As at 30 June 2016

## Focus for internal steering on economic view with regulatory view as side condition

in m. EUR	Available Capital	Required Capital	CAR
Internal model at VaR <sup>1)</sup> 99.97%	13,282	10,126	131%
		↓ -4,926	
Internal model at VaR <sup>1)</sup> 99.5%	13,282	5,200	255%
Haircut for minority interests <sup>2)</sup>	↓ -671		
	12,611	5,200	243%
Add-On, standard formula OpRisk		↓ +260	
Regulatory view at VaR <sup>1)</sup> 99.5%	12,611	5,460	231%

- ▶ Economic view: internal target confidence level at 99.97%, full internal model, full transferability of capital
- ▶ Regulatory view: partial internal model with standard formula for operational risk, confidence level at 99.5%, transferability restrictions on minority interests

As at 30 June 2016

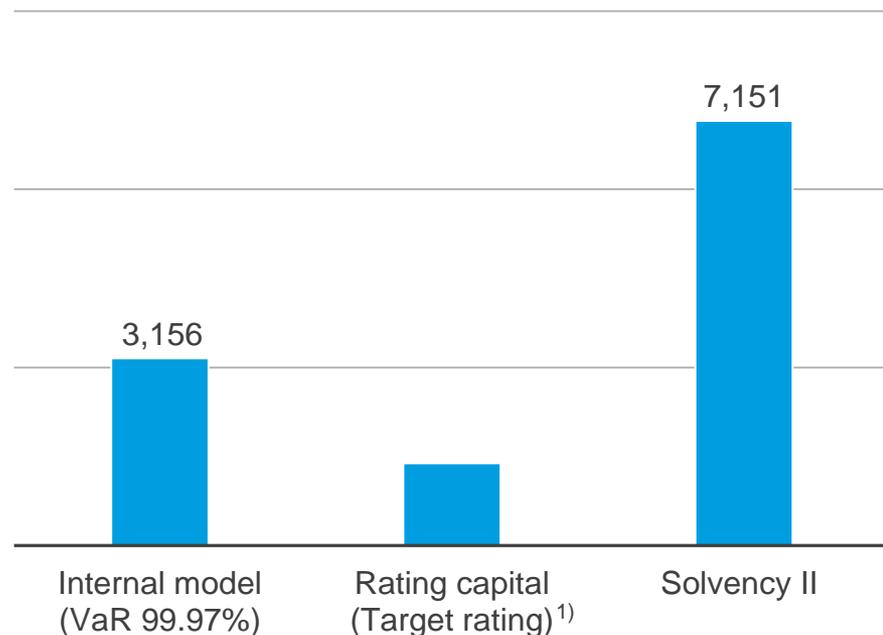
1) Value-at-Risk

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

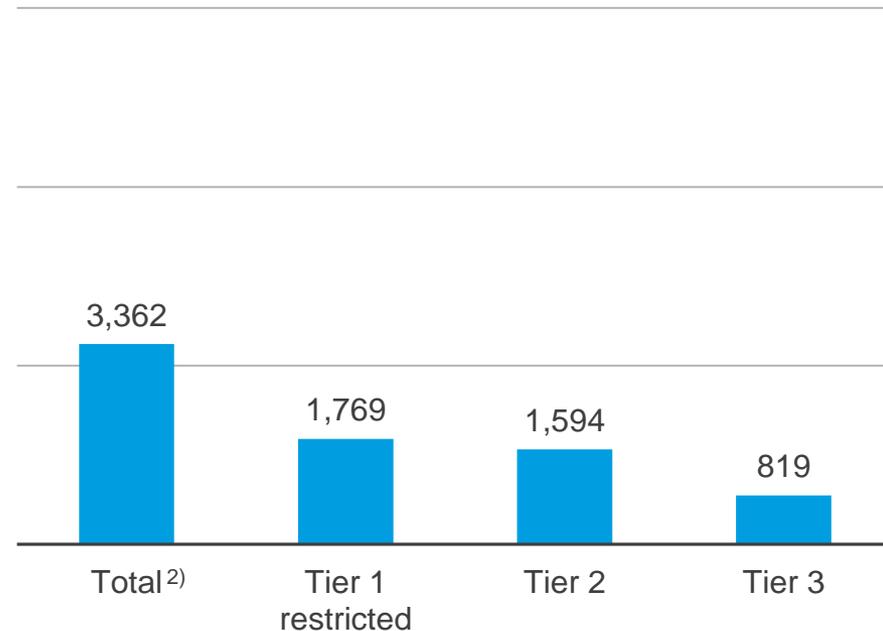
# Comfortable excess capital

with flexibility to react on market potentials or adverse developments

**Current excess capital** in m. EUR



**Additional hybrid capacity (Solvency II) in m. EUR**



► Additional but more restricted flexibility exists in rating agencies' models, too

All figures as of Q2/2016

1) Average of target ratings, internal calculation

2) Sum of Tier 2 and Tier 3 capital is limited to 50% SCR

# Significant diversification between largest risks

## Hannover Re's risk profile

Property & Casualty	Life & Health	Market & Counterparty	Operational & Other
NatCat	Life & Health Cat	Credit & Spread	Compliance & Fraud
Man-Made Cat	Mortality Trend	Interest Rate	Processes
Pricing	Longevity Trend	F/x Rate	IT, IT Security & Data
Reserving	Disability/Morbidity	Equity <sup>2)</sup>	Human Resources
	Lapse	Real Estate	Strategic & Reputational <sup>1)</sup>
	Other	Counterparty	Emerging <sup>1)</sup>

■ High: VaR 99.5% > 10% of available capital<sup>3)</sup>

■ Medium: VaR 99.5% > 5% of available capital

□ Low: VaR 99.5% ≤ 5% of available capital

1) Not covered by VaR/Internal model

2) Including Private/Non-Listed Equity

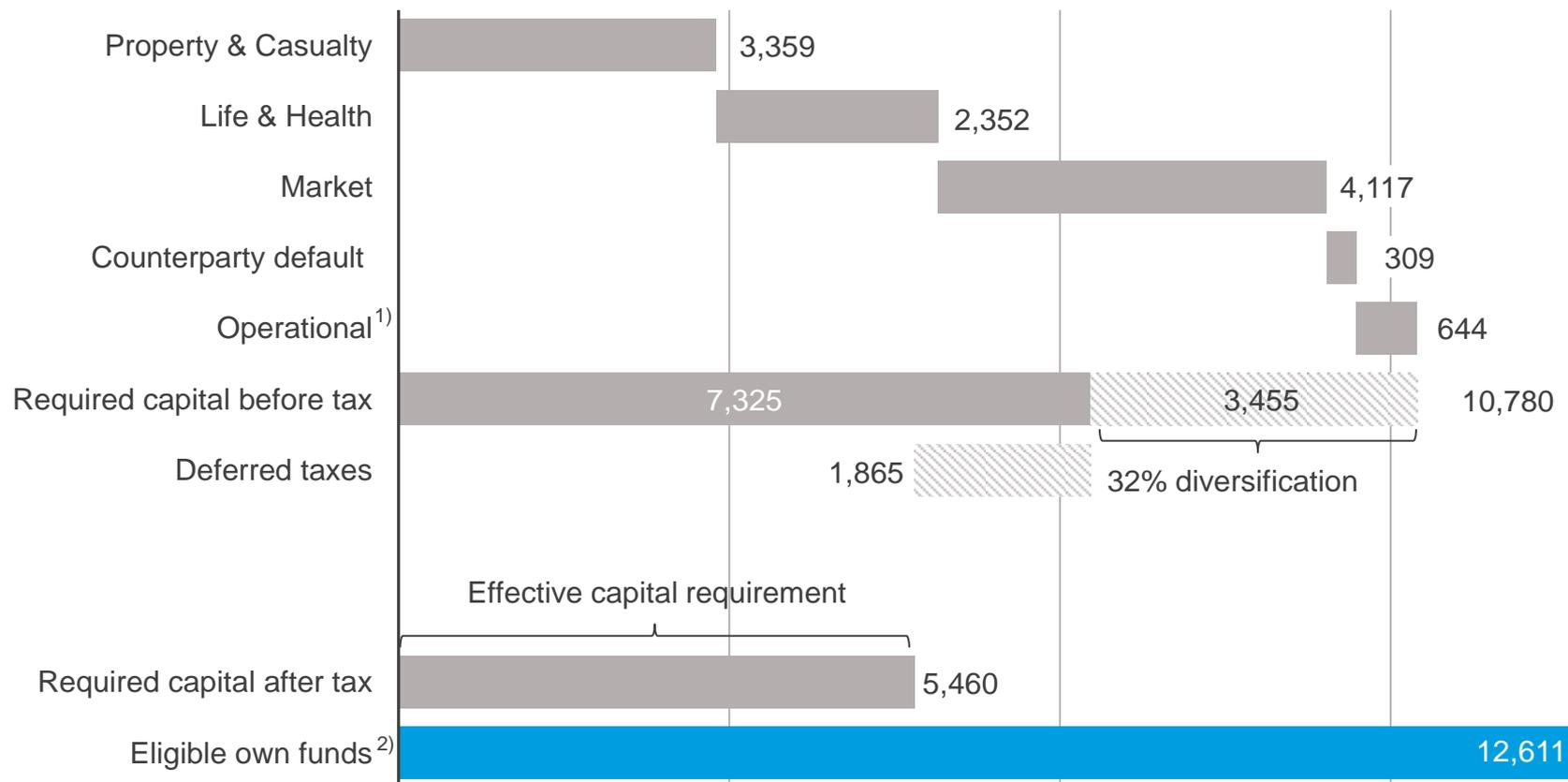
3) VaR – Value-at-Risk, pre-tax

# Capital efficiency supported by high diversification

## Breakdown of Solvency II capital requirements

### Risk capital for the 99.5% VaR (according to Solvency II)

in m. EUR



As at 30 June 2016

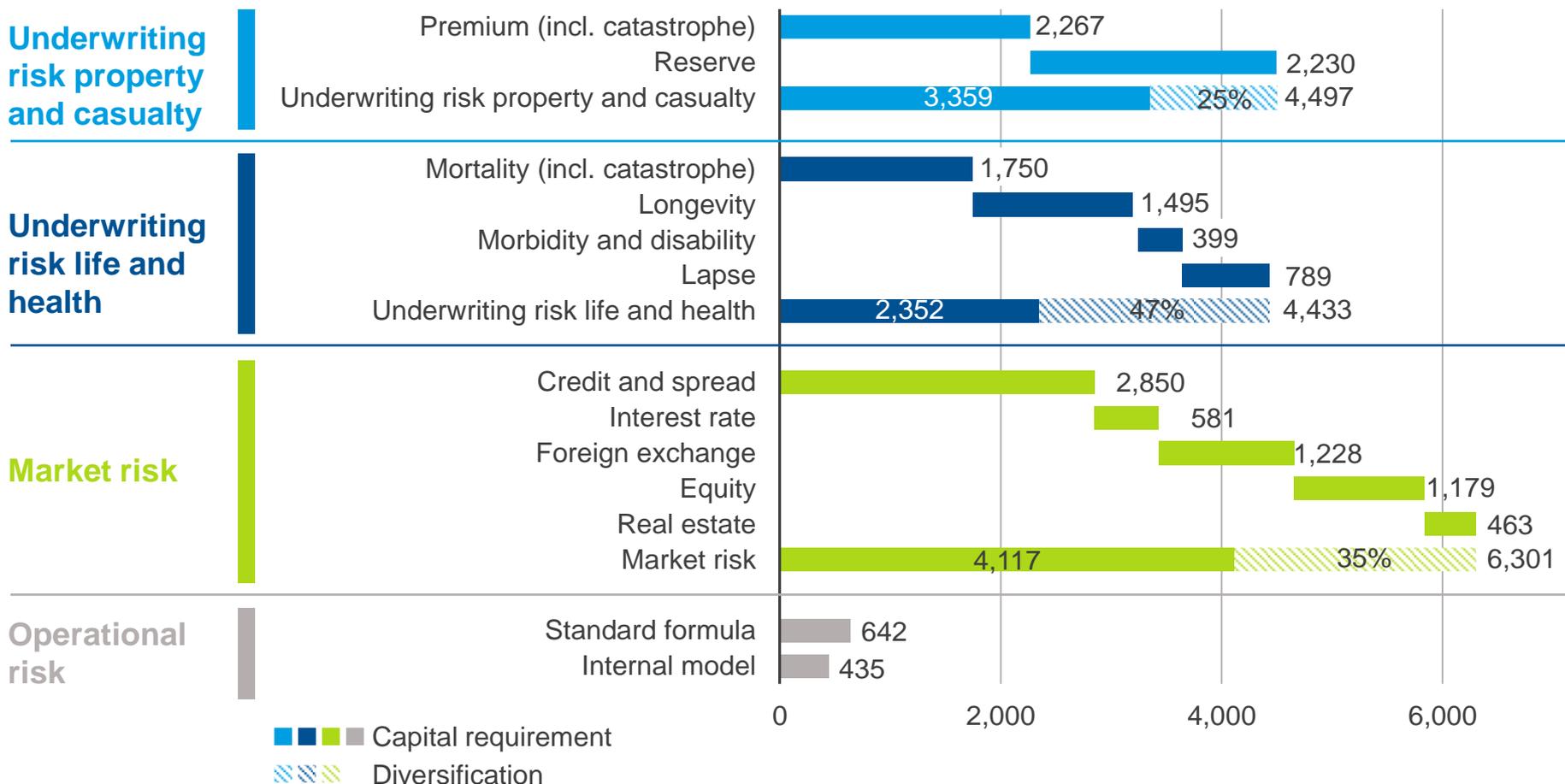
1) Operational risk according to standard formula

2) To meet Solvency Capital Requirements

# Hannover Re is well diversified within each risk category and has a well balanced asset and liability portfolio

## Risk capital for the 99.5% VaR (according to economic capital model)

in m. EUR



As at 30 June 2016

# Controlled and transparent risk taking

## Supported by a multi-level limit system



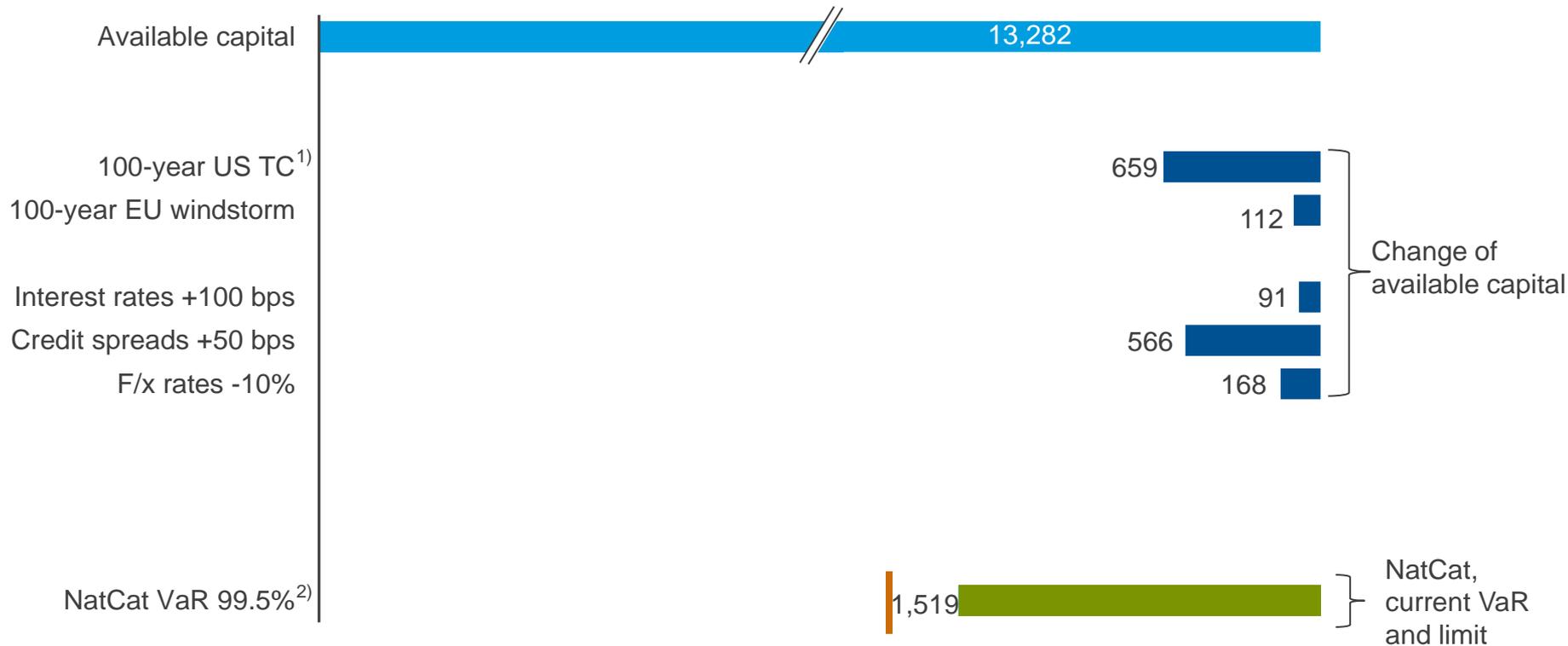
**Efficient processes and systems allow for quick check of new transactions**

# Individual risks with limited impact on own funds

## Sensitivity of own funds for selected risks

### Sensitivity of available capital

in m. EUR



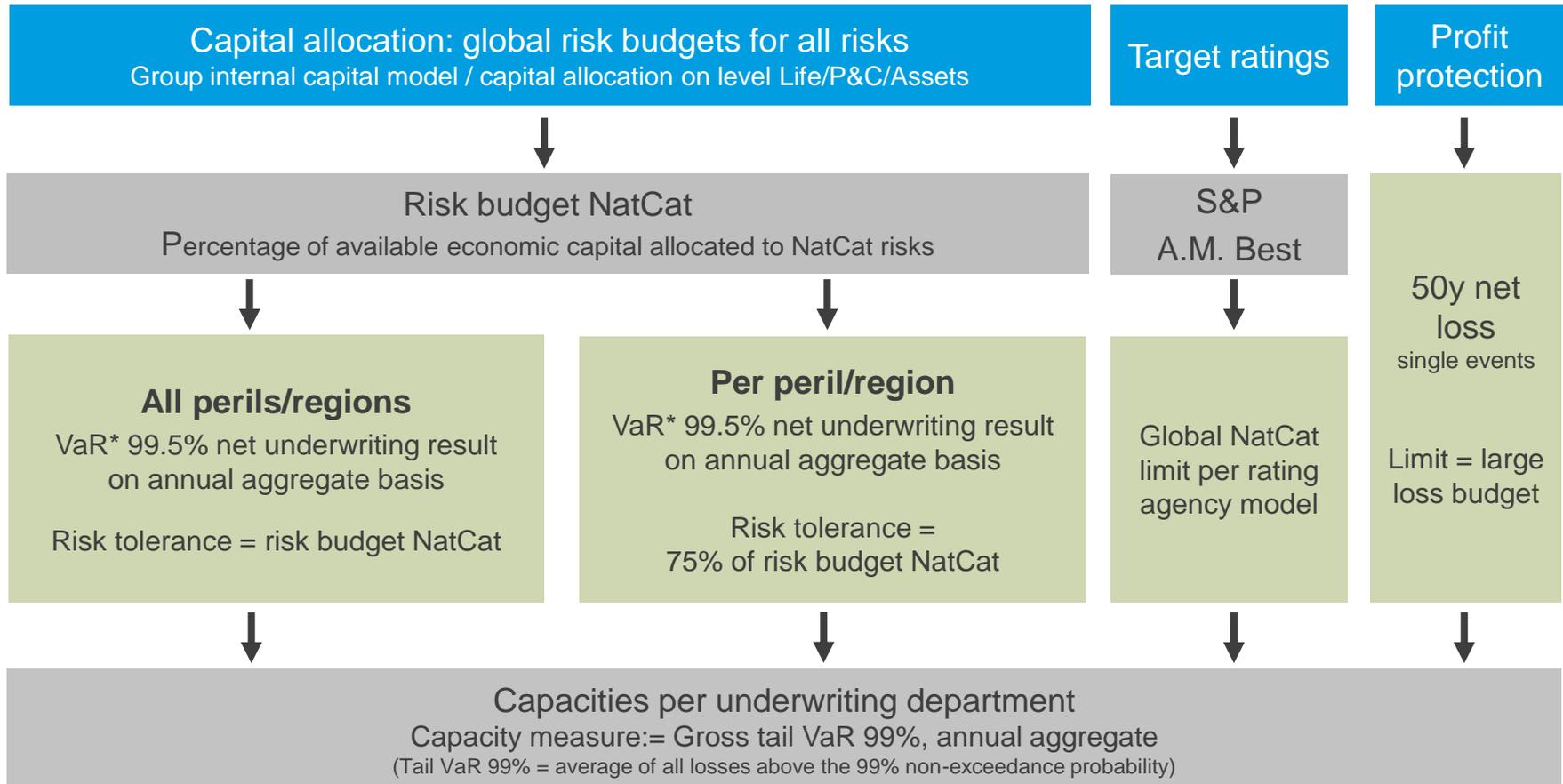
As at 30 June 2016

1) A return period of 100 years is equivalent to a occurrence probability of 1% (TC – Tropical Cyclone)

2) Net underwriting result, annual aggregate loss, VaR – Value at Risk

# NatCat: risk and capacity measures

## Breakdown of global risk budget to underwriting capacities



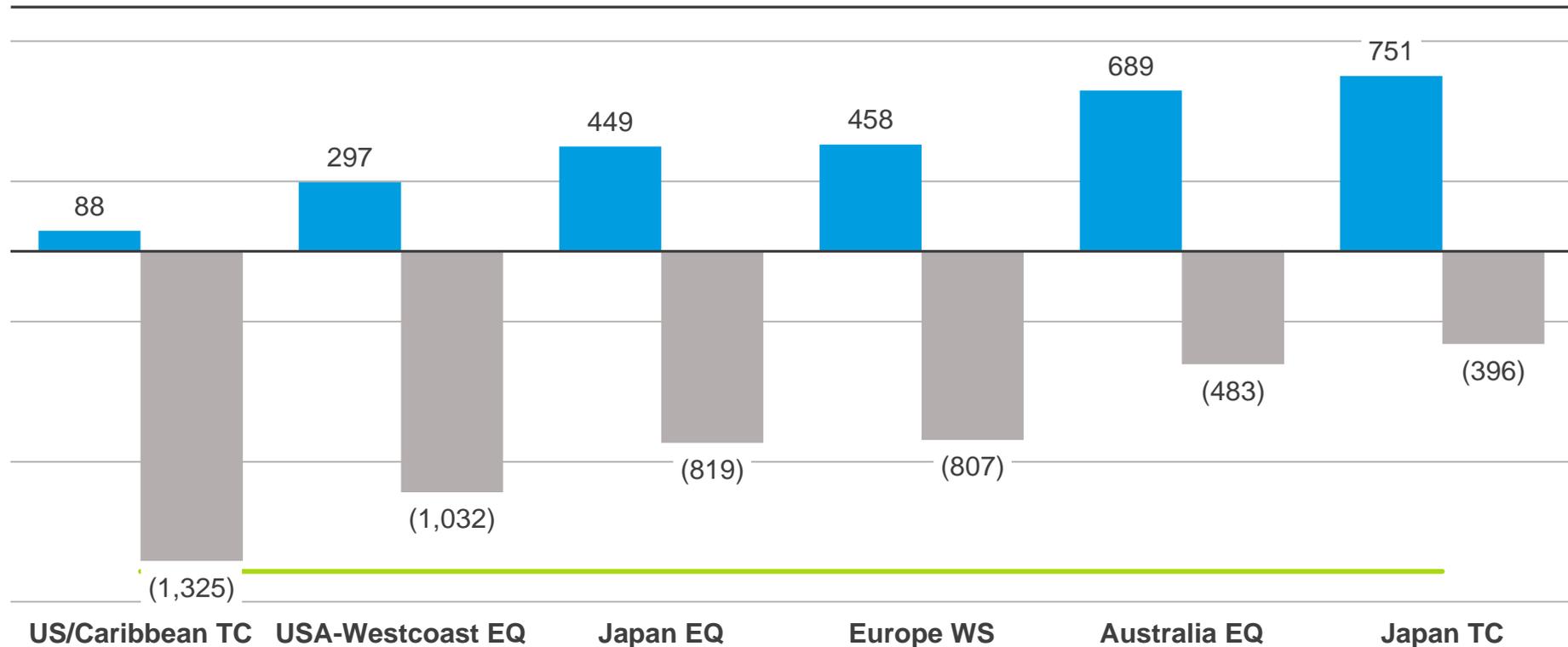
\* VaR – Value at Risk

# Limitation of individual natural catastrophe exposures

## Derived from overall risk appetite

VaR 99.5% and stress test per peril/region\*

in m. EUR



■ Stress test: Net income after realisation of 1/200 y annual aggregate loss  
■ Current VaR 99.5%  
— Limit on VaR 99.5%

\* Figures based on capacities as at 1 April 2016 with f/x rates as at 30 June 2016  
 TC – Tropical Cyclone, EQ – Earthquake, WS – Windstorm

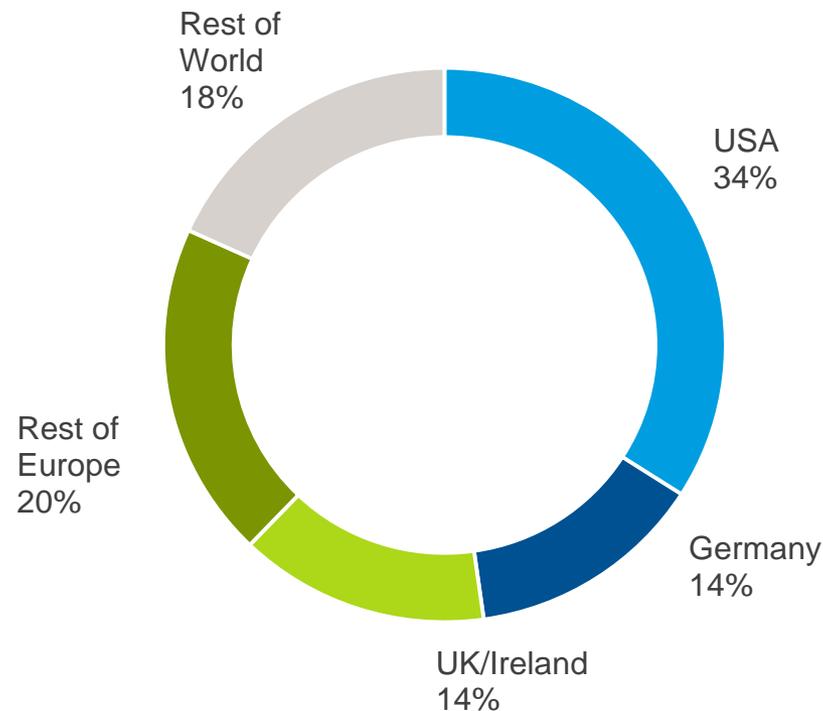
# Significant regional diversification in P&C claim reserves

Main part of the reserves from entities based in Hannover

## HR Group: Property & Casualty - gross loss reserves\*

Total: EUR 22,823 m.

USA	7,772
Germany	3,130
UK/Ireland	3,288
Rest of Europe	4,477
Rest of World	4,155
<b>Total</b>	<b>22,823</b>



\* As of 31 December 2015, consolidated, IFRS, in m. EUR, Loss and loss adjustment expense reserves

# Further increasing reserve redundancies\* in 2015

7-year average impact on net loss ratio: 2.9%

Year	Redundancy in m. EUR	Increase redundancy in m. EUR	Effect on loss ratio	P&C net premium earned in m. EUR
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
<b>2009 - 2015 total</b>		<b>1.297</b>		<b>45,416</b>
<b>2009 - 2015 average</b>		<b>185</b>	<b>2.9%</b>	<b>6,488</b>

\* Redundancy of loss and loss adjustment expense reserve for P&C insurance business against held IFRS reserves, before tax and minority participations. Willis Towers Watson reviewed these estimates - more details shown in slide II (appendix)

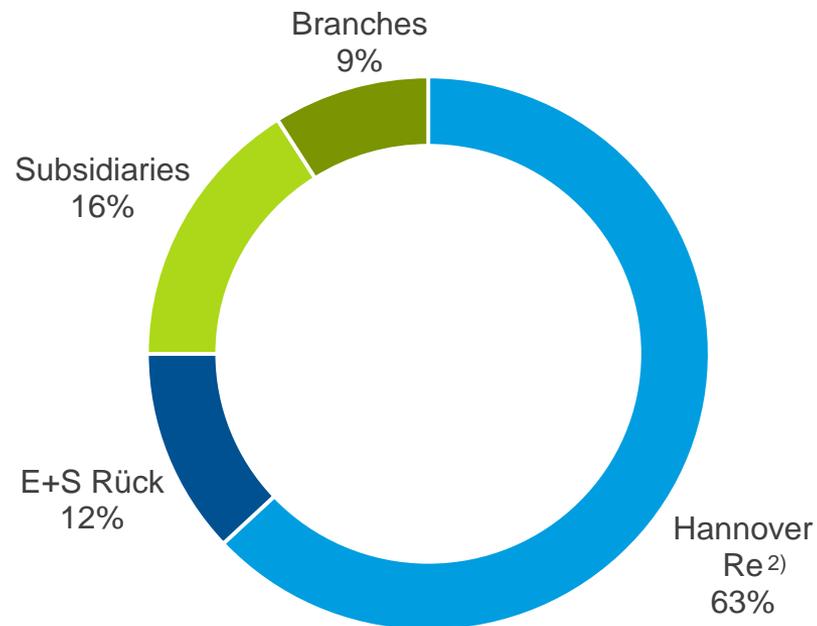
## No change in reserving policy in 2015

# Consistent group-wide steering of reserving level

## HR Group: Property & Casualty – gross loss reserves<sup>1)</sup>

Total: EUR 22,823 m.

Hannover Re	14,430
Subsidiaries	3,670
E+S Rück	2,770
Branches	1,953
<b>Total</b>	<b>22,823</b>



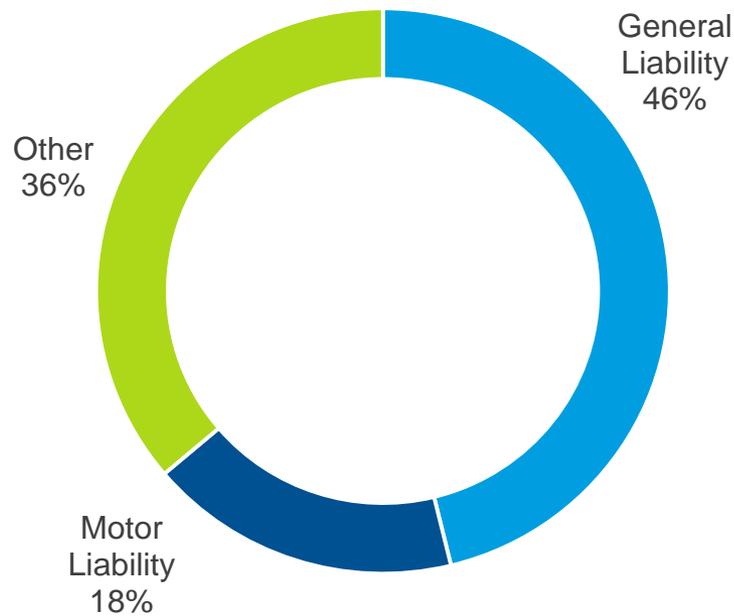
1) As of 31 December 2015, consolidated, IFRS, in m. EUR, Loss and loss adjustment expense reserves as originated

2) Excluding branches and subsidiaries

# Significant share of liability reserves from hard market U/Ys

## One main source of redundancies

**Total gross reserves<sup>1)</sup>** in %



in m. EUR

No.	Line of business	Total reserves <sup>2)</sup> U/Y 1979 - 2003	Total reserves <sup>2)</sup> U/Y 2004 - 2015
1	General liability non-prop.	722.7	4,876.5
2	Motor non-prop.	492.8	1,876.8
3	General liability prop.	160.2	2,017.8
4	Motor prop.	179.5	785.5
5	Property prop.	24.5	1,157.2
6	Property non-prop.	14.6	1,054.7
7	Marine	22.2	1,080.7
8	Aviation	240.7	953.9
9	Credit/surety	49.9	1,027.7
<b>All lines of business</b>		<b>1,907.1</b>	<b>14,830.8</b>

1) As at 31 December 2015, consolidated, IFRS figures, Loss and loss adjustment expense reserves as originated

2) Hannover Re and E+S Rück excluding other subsidiaries & branches

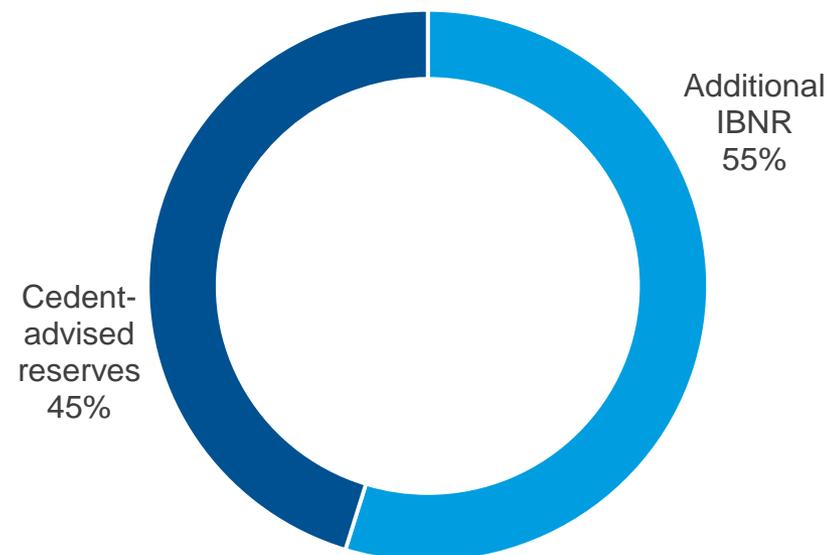
# More than one half of reserve is own IBNR

## Reflects prudent reserving policy

HR/E+S Rück: Property & Casualty, IBNR\*

Total: EUR 17,200 m.

Additional IBNR	9,418
Cedent-advised reserves	7,782
<b>Total</b>	<b>17,200</b>

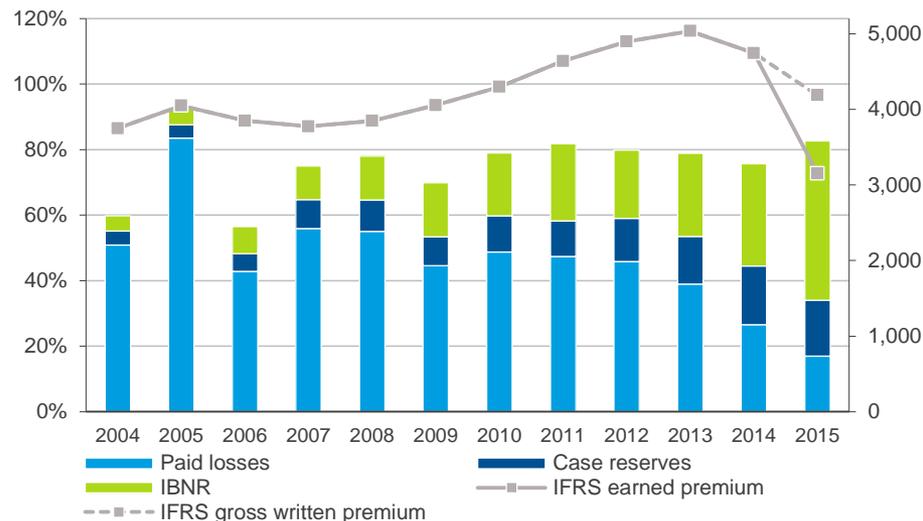
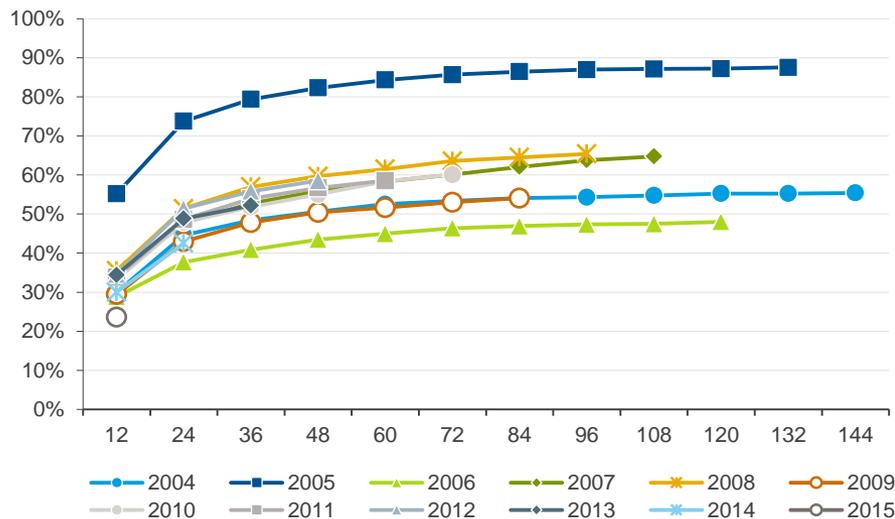


\* As at 31 December 2015, consolidated, IFRS figures, Loss and loss adjustment expense reserves as originated; Hannover Re and E+S Re excluding other subsidiaries & branches

# Stable loss ratios in recent U/Y despite soft markets

## IBNR remains at high level

U/W year	IFRS earned premium	Statistical data (as provided by cedents)												Booked data			
		12	24	36	48	60	72	84	96	108	120	132	144	Ultimate loss ratio	Paid losses	Case reserves	IBNR balance
2004	3,749	29.9%	44.6%	48.4%	50.6%	52.5%	53.4%	54.1%	54.3%	54.8%	55.2%	55.2%	55.4%	59.8%	50.9%	4.3%	4.6%
2005	4,048	55.2%	73.8%	79.4%	82.3%	84.3%	85.6%	86.4%	87.0%	87.1%	87.2%	87.5%		92.8%	83.5%	4.1%	5.2%
2006	3,850	28.8%	37.7%	40.9%	43.5%	45.0%	46.4%	46.9%	47.3%	47.5%	48.0%			56.5%	42.8%	5.4%	8.2%
2007	3,775	34.2%	47.7%	52.7%	55.9%	58.3%	60.1%	62.1%	63.8%	64.8%				75.0%	55.9%	8.8%	10.3%
2008	3,847	35.5%	51.4%	56.9%	59.7%	61.5%	63.6%	64.5%	65.4%					78.0%	55.0%	9.6%	13.4%
2009	4,054	29.4%	42.9%	47.8%	50.4%	51.6%	53.0%	54.1%						69.9%	44.6%	8.8%	16.5%
2010	4,296	33.2%	47.9%	51.8%	55.0%	58.4%	60.1%							79.0%	48.7%	11.1%	19.2%
2011	4,639	33.8%	48.6%	53.9%	56.7%	58.5%								81.8%	47.4%	10.9%	23.6%
2012	4,896	34.6%	51.4%	55.8%	58.5%									79.8%	45.9%	13.1%	20.8%
2013	5,035	34.4%	48.8%	52.2%										78.9%	39.0%	14.5%	25.4%
2014	4,742	30.0%	42.5%											75.7%	26.6%	17.9%	31.3%
2015	3,152	23.6%												82.6%	17.0%	17.0%	48.6%



\* As at 31 Dec 2015 (in m. EUR), consolidated, IFRS, development in months, Hannover Re and E+S Re w/o other subsidiaries & branches

# Almost all years with positive run-off

## Reflects prudent reserving policy

U/Y	Ultimate loss ratio 2009	Ultimate loss ratio 2010	Ultimate loss ratio 2011	Ultimate loss ratio 2012	Ultimate loss ratio 2013	Ultimate loss ratio 2014	Ultimate loss ratio 2015	Paid losses 2015	Case reserves 2015	IBNR balance 2015
2004	65.8%	65.1%	63.8%	62.8%	62.6%	61.1%	59.8%	50.9%	4.3%	4.6%
2005	96.2%	96.2%	95.8%	94.1%	92.7%	93.3%	92.8%	83.5%	4.1%	5.2%
2006	65.2%	63.3%	62.1%	60.9%	59.5%	57.5%	56.5%	42.8%	5.4%	8.2%
2007	80.2%	78.3%	77.1%	77.5%	77.2%	75.6%	75.0%	55.9%	8.8%	10.3%
2008	84.8%	83.2%	84.1%	81.8%	80.9%	80.3%	78.0%	55.0%	9.6%	13.4%
2009	78.8%	78.3%	75.8%	73.1%	72.7%	70.1%	69.9%	44.6%	8.8%	16.5%
2010		81.2%	84.1%	81.4%	78.9%	80.0%	79.0%	48.7%	11.1%	19.2%
2011			85.6%	82.4%	81.9%	80.9%	81.8%	47.4%	10.9%	23.6%
2012				89.1%	83.1%	79.1%	79.8%	45.9%	13.1%	20.8%
2013					82.8%	80.1%	78.9%	39.0%	14.5%	25.4%
2014						79.0%	75.7%	26.6%	17.9%	31.3%
2015							82.6%	17.0%	17.0%	48.6%

As at 31 December 2015 (in m. EUR), consolidated, IFRS, development in years, Hannover Re and E+S Rück w/o other subsidiaries & branches

somewhat  
different

# Appendix

## High survival ratio for A & E reserves maintained

### While payout has slightly increased in recent years

Financial year	Case reserves (in TEUR)	HR additional reserves for A&E (in TEUR)	Total reserve for A&E (in TEUR)	3-year-average paid (in TEUR)	Survival ratio	IBNR factor = add. reserves/case reserves
2008	22,988	127,164	150,152	6,008	25.0	5.5
2009	26,216	171,363	197,579	8,130	24.3	6.5
2010	29,099	182,489	211,588	9,270	22.8	6.3
2011	28,422	193,957	222,379	8,574	25.9	6.8
2012	27,808	182,241	210,049	7,210	29.1	6.6
2013	28,839	170,805	199,643	6,224	32.1	5.9
2014	33,755	189,306	223,061	7,922	28.2	5.6
2015	35,964	203,345	239,309	8,912	26.9	5.7

\* F/x rates: 12/2014: 1 EUR = 1.2155 USD, 12/2015: 1 EUR = 1.0927 USD

**Increase in total reserves 2015 affected by 11.2% strengthening of USD vs. EUR**

# 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 2015, 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 Willis Towers Watson's range of reasonable estimates.
  - Life reinsurance and health reinsurance business are excluded from the scope of this review.
  - Willis Towers Watson's review of non-life reserves as at 31 December 2015 covered 98.2% / 98.1% of the gross and net held non-life reserves of €22.8 billion and € 21.8 billion respectively. Together with life reserves of gross €3.7 billion and net €3.4 billion, the total balance sheet reserves amount to €26.6 billion gross and €25.2 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 2015. 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, the claims reporting can be delayed due to late notifications by some cedants. 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, Willis 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.

# Disclaimer

This presentation does not address the investment objectives or financial situation of any particular person or legal entity. Investors should seek independent professional advice and perform their own analysis regarding the appropriateness of investing in any of our securities.

While Hannover Re has endeavoured to include in this presentation information it believes to be reliable, complete and up-to-date, the company does not make any representation or warranty, express or implied, as to the accuracy, completeness or updated status of such information.

Some of the statements in this presentation may be forward-looking statements or statements of future expectations based on currently available information. Such statements naturally are subject to risks and uncertainties. Factors such as the development of general economic conditions, future market conditions, unusual catastrophic loss events, changes in the capital markets and other circumstances may cause the actual events or results to be materially different from those anticipated by such statements.

This presentation serves information purposes only and does not constitute or form part of an offer or solicitation to acquire, subscribe to or dispose of, any of the securities of Hannover Re.

© Hannover Rück SE. All rights reserved.

Hannover Re is the registered service mark of Hannover Rück SE.