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22nd International Investors' Day

Frankfurt, 23 October 2019

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Pursuing the outperformance journey

Jean-Jacques Henchoz, Chief Executive Officer
22nd International Investors' Day
Frankfurt, 23 October 2019

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Agenda

- 1 Our position in the reinsurance market
 - 2 Our business model: successful being "somewhat different"
 - 3 Outlook: outperforming tomorrow
-

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1

**Our position in the
reinsurance market**

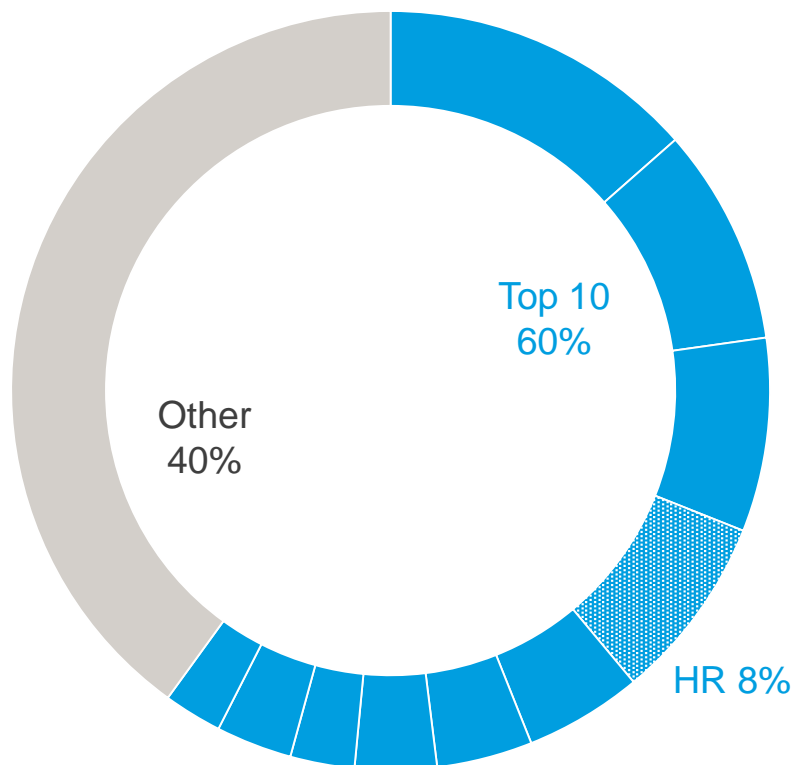


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Property and Casualty reinsurance market

Hannover Re outperforms the market with profitable growth

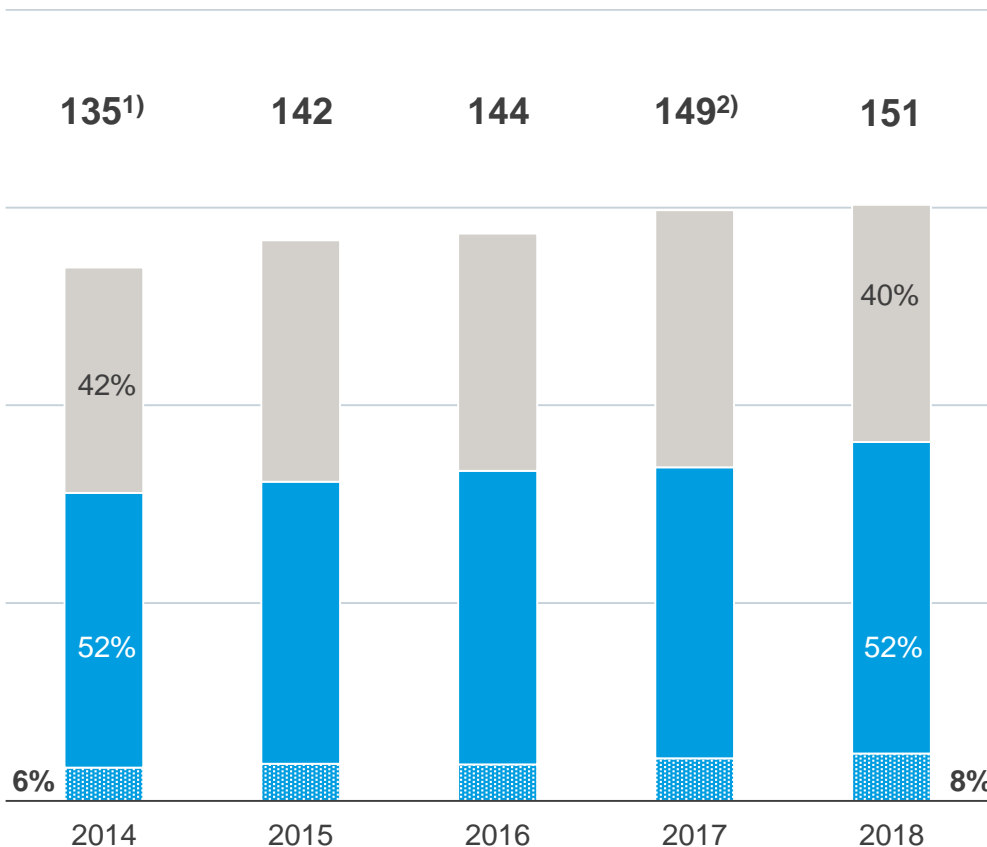
Market size and concentration 2018



Source: own research as at May 2019
 Top 10 in 2018: MR, SR, Lloyd's, HR, Berkshire Hathaway, SCOR, Everest Re, GIC India, XL Group, Alleghany
 Top 10 ranking for each year
 1) F/x adjusted (2015 rates)
 2) Berkshire Hathaway excl. AIG deal

in bn. EUR

4-year CAGR



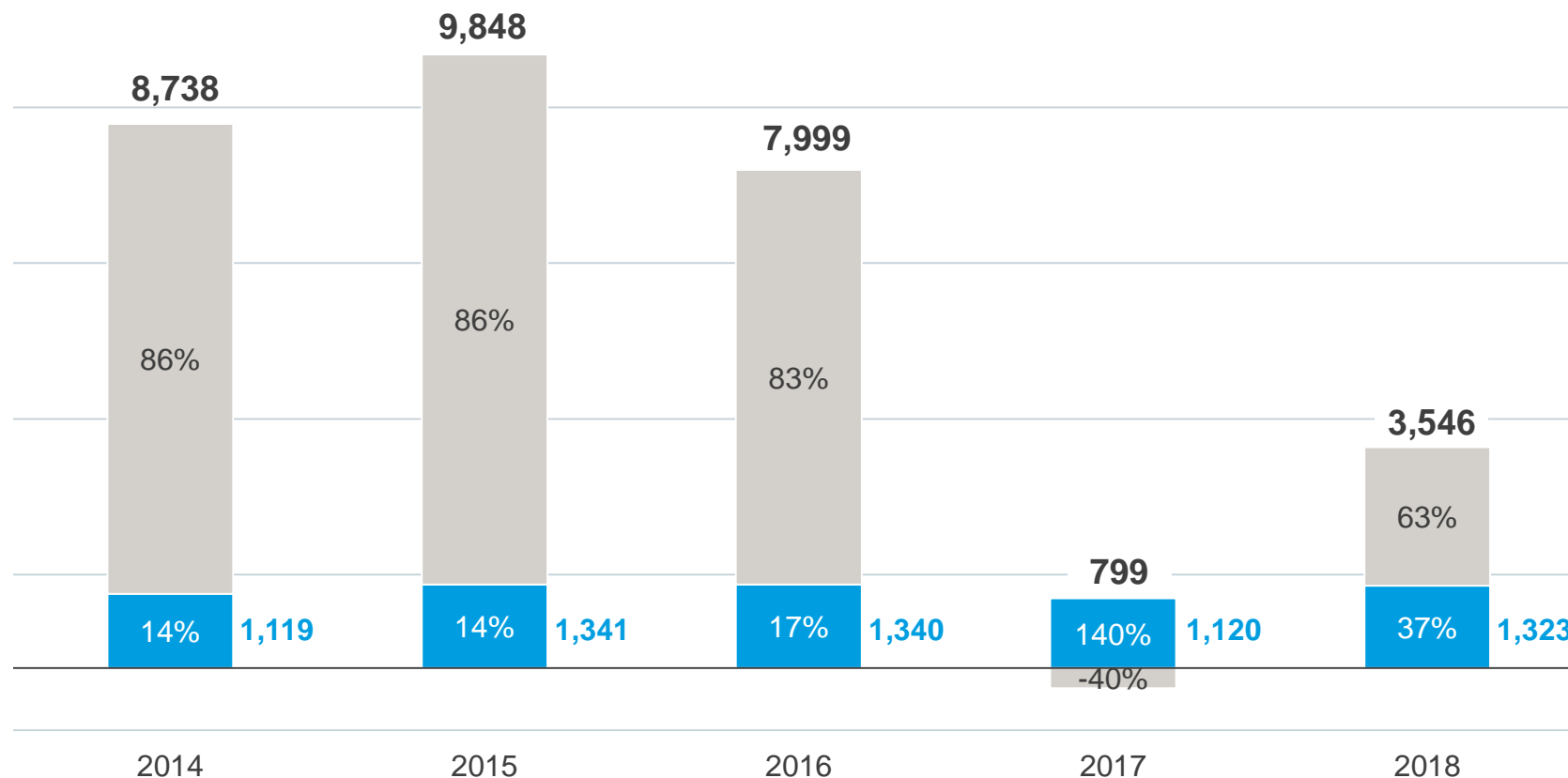
| Category | 4-year CAGR |
|----------|-------------|
| Market | +2.9% |
| Other | +1.6% |
| Top 10 | +3.8% |
| HR | +9.4% |

Strong and steady P&C EBIT contribution across market cycles

Hannover Re with stable earnings despite losses in 2017 and 2018

Market share of peer group Property & Casualty EBIT

in m. EUR



| <u>CAGR of EBIT (absolute)</u> | |
|--------------------------------|--------|
| Total | -20.2% |
| Peers | -26.3% |
| Hannover Re | +2.7% |

Source: own research as at May 2019
Peers: Munich Re, Swiss Re, SCOR, Everest Re

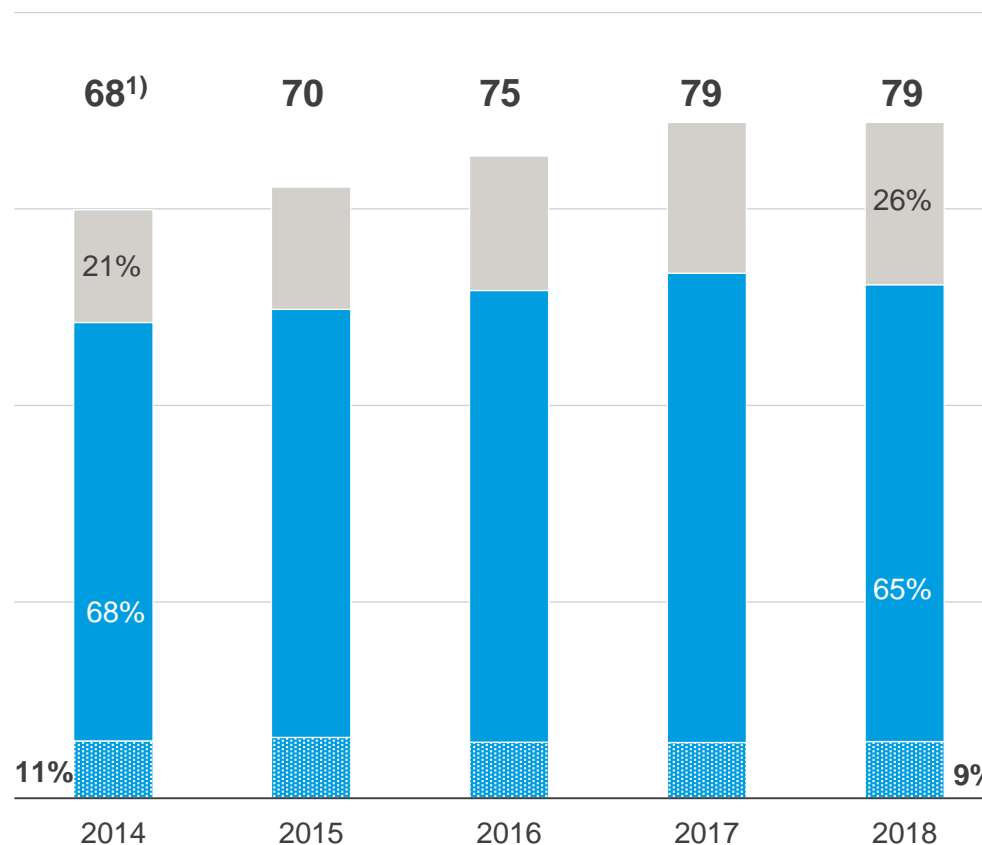
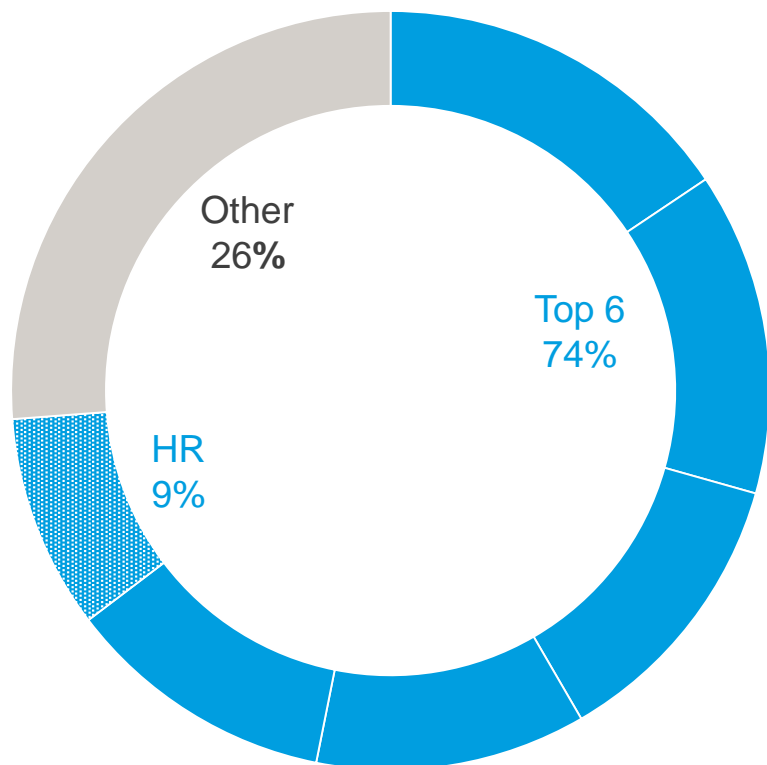
Life and Health reinsurance market

HR's market share reflects conservative approach to commoditised segments

Market size and concentration 2018

in bn. EUR

4-year CAGR



| Segment | 4-year CAGR |
|---------|-------------|
| Market | +3.9% |
| Other | +9.6% |
| Top 6 | +2.2% |
| HR | -0.4% |

Source: own research as at May 2019

Top 6 in 2018: Swiss Re, Munich Re, RGA, SCOR, Grest-West Lifeco, Hannover Re

Top 6 ranking for each year

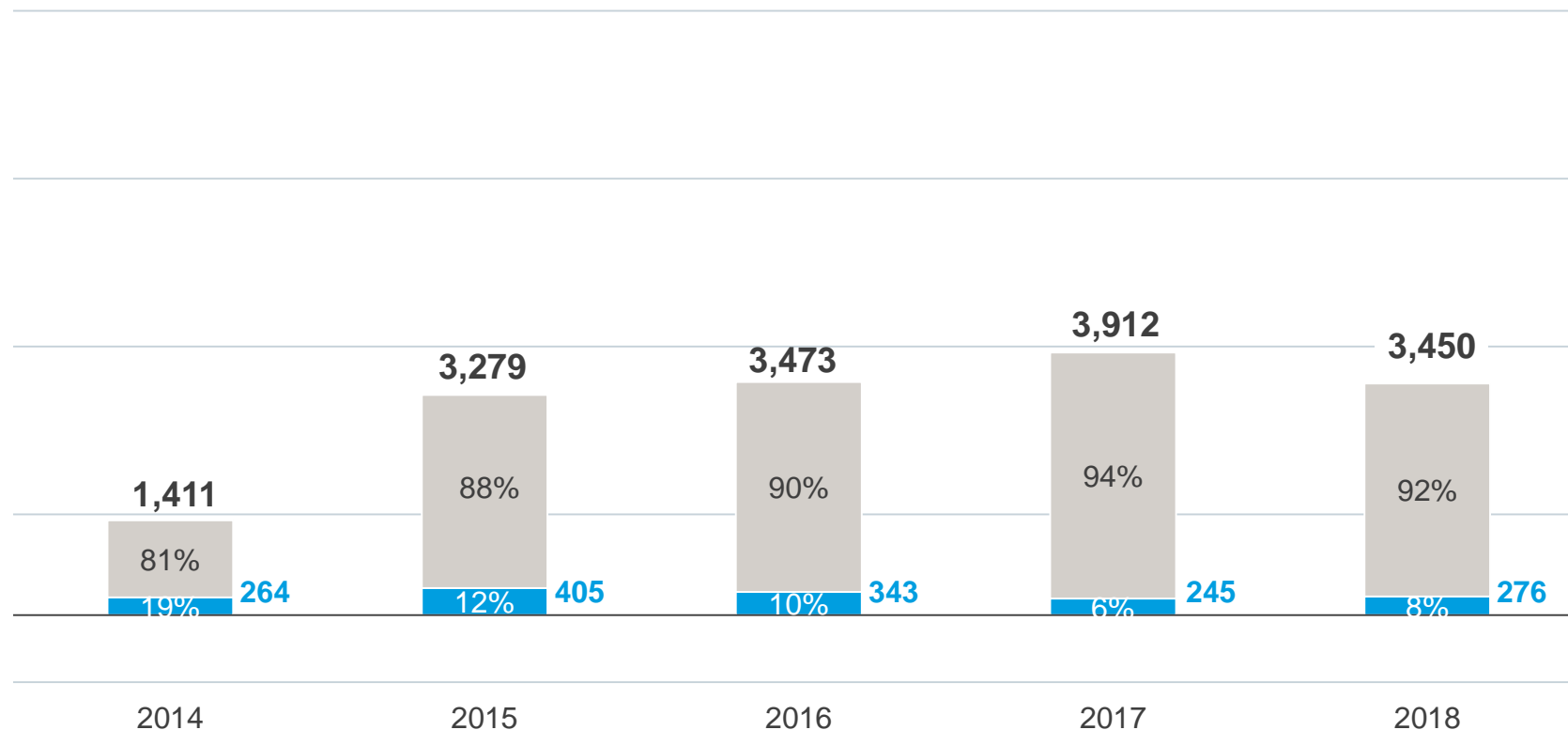
1) F/x adjusted (2015 rates)

Solid EBIT contribution in Life & Health

US mortality market has been a source of earnings volatility

Market share of peer group Life & Health EBIT

in m. EUR



CAGR of EBIT (absolute)

| | |
|-------------|--------|
| Total | +25.1% |
| Peers | +29.0% |
| Hannover Re | +1.1% |

Source: own research as at May 2019
Peers: Munich Re, Swiss Re, SCOR, RGA

Reinsurance is an attractive market with earnings growth potential whilst offering us the opportunity to create value for our clients

Demand drivers



Global trends

- Value concentration
- Protection gap
- Demographic change

New products/markets

- Emerging markets
- Digitalisation/Cyber
- Emerging risks

Capital requirements

- Regulatory changes
- Risk-based capital models
- Ratings, local GAAP, IFRS

Volatility

- Earnings expectations from shareholders

Impact on insurance



- **New risks** lead to volatility and require additional know-how
- **Capital requirements** are challenging/**cost of capital** needs to be competitive
- **Earnings volatility** needs to be managed

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- **Strong capital base** and **diversified portfolio**
- **Services** to assess new risks or move into new markets
- **Solutions** to
 - reduce cost of capital
 - meet capital requirements
 - manage earnings volatility

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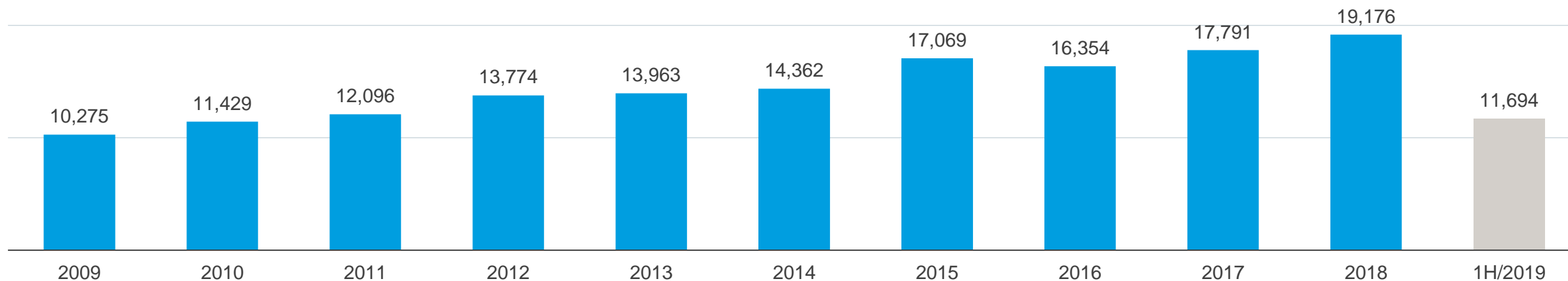
**Our business model:
successful being
"somewhat different"**

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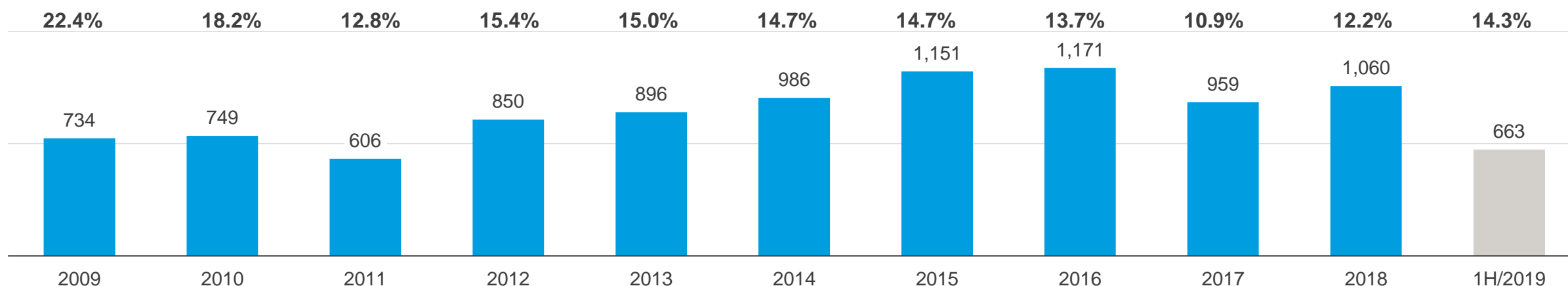
Our “somewhat different” approach is highly effective

Business model continuity is key to further success and outperformance

Gross written premium

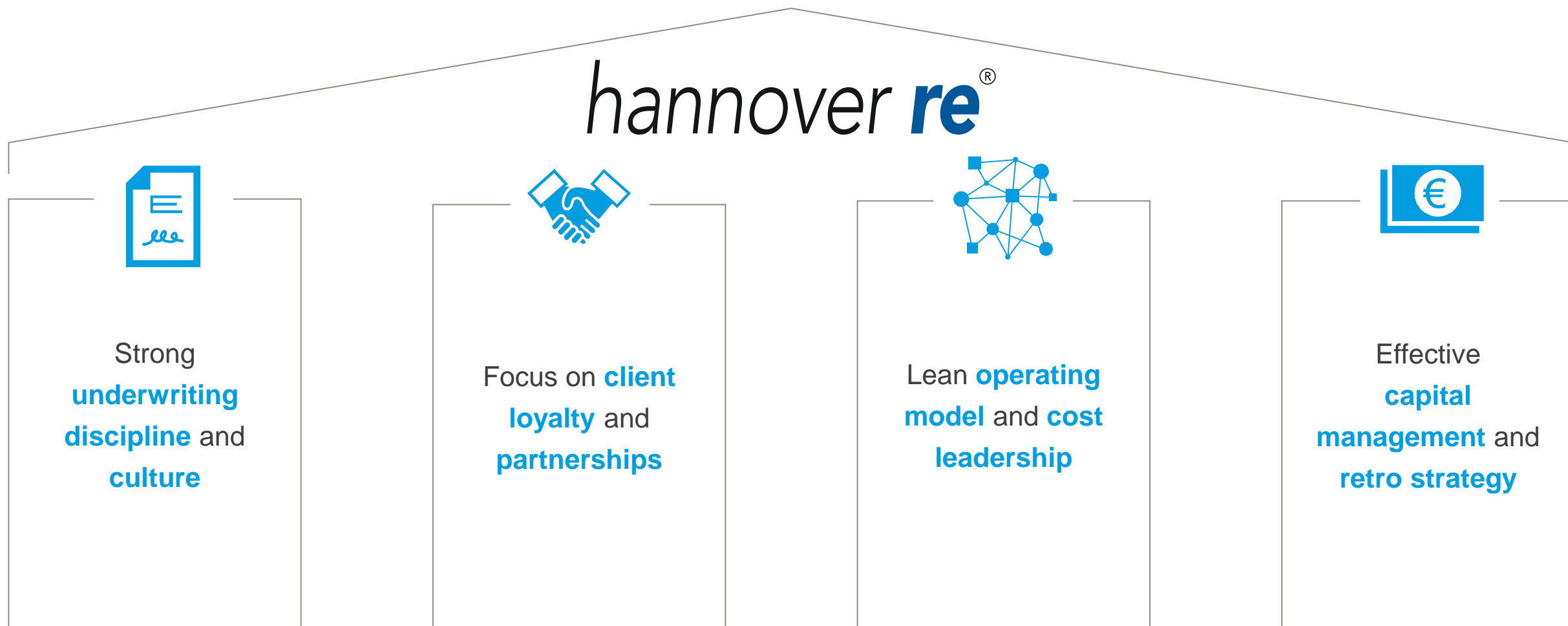


Group net income/Return on equity



Hannover Re's strengths lie in its corporate culture and operating model

Four competitive advantages we need to maintain and strengthen



Superior return with relatively low volatility

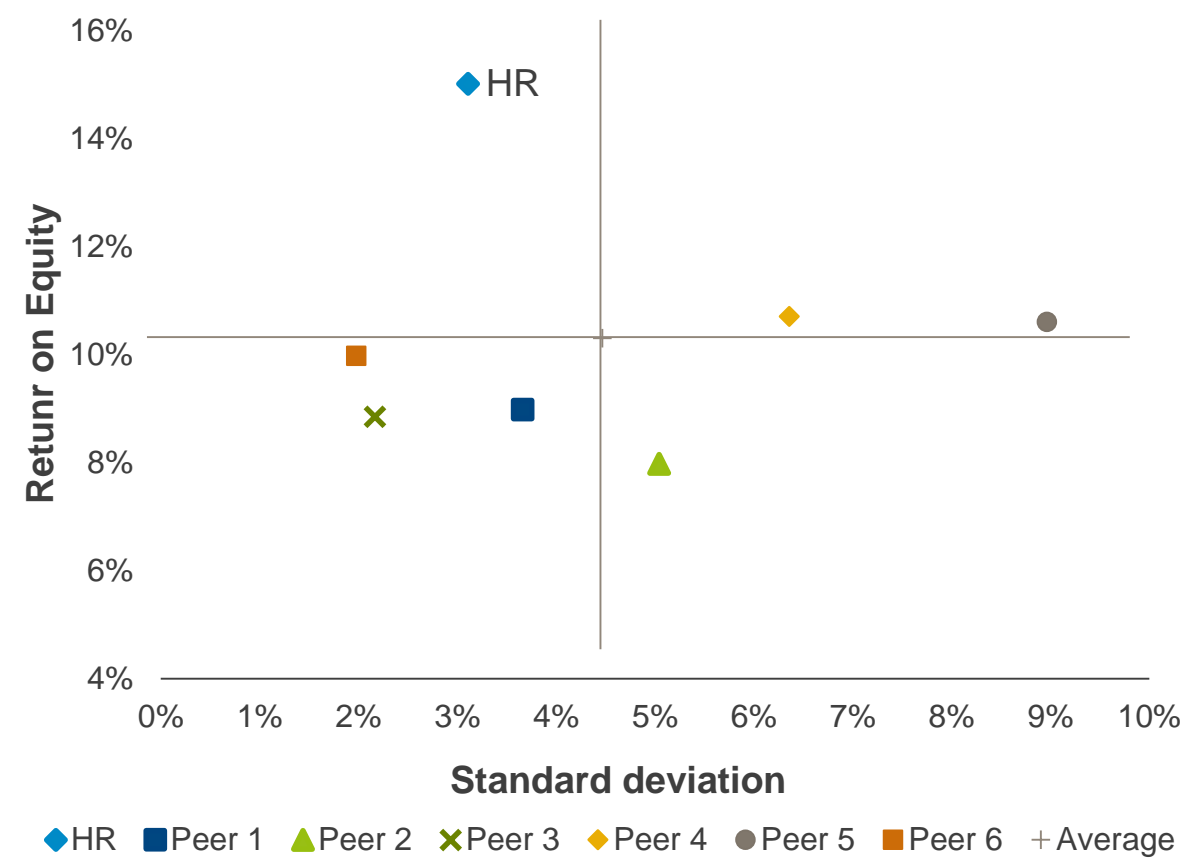
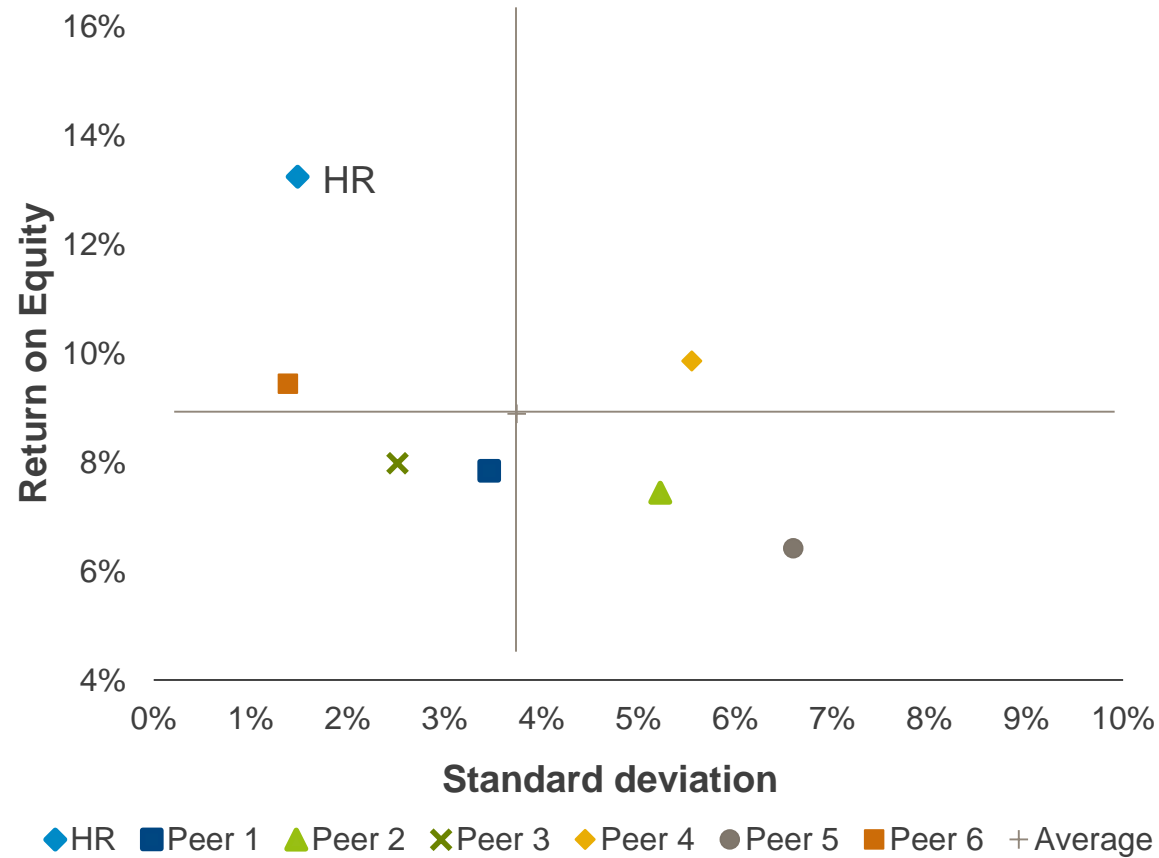
Hannover Re's RoE outperformance

5 years (2014 – 2018 annualised)

in %

10 years (2009 – 2018 annualised)

in %



1) Peers in alphabetical order: Everest Re, Munich Re, Renaissance Re, RGA, Scor, Swiss Re; own calculation based on annual reports, RGA excl. effect from US tax reform in 2017

Successful execution of our strategy 2018 – 2020

Hannover Re's Group target matrix

| Business group | Key figures | Strategic targets | 2018 | | 1H/2019 | |
|-------------------------|--|-------------------|------------|---|----------------------|---|
| Group | Return on investment ¹⁾ | ≥ 2.7% / ≥ 2.8% | 3.2% | ✓ | 3.5% | ✓ |
| | Return on equity ²⁾ | ≥ 9.4% | 12.2% | ✓ | 14.3% | ✓ |
| | Earnings per share growth (y-o-y) | ≥ 5% | 10.5% | ✓ | 19.3% | ✓ |
| | Economic value creation ³⁾ | ≥ 6.4% | 8.1% | ✓ | n.a. | |
| | Solvency ratio | ≥ 200% | 245.7% | ✓ | 248.8% ⁴⁾ | ✓ |
| Property & Casualty R/I | Gross premium growth ⁵⁾ | 3 - 5% | 16.2% | ✓ | 18.4% | ✓ |
| | Combined ratio ⁶⁾ | ≤ 96% / ≤ 97% | 96.5% | | 96.7% | ✓ |
| | EBIT margin ⁷⁾ | ≥ 10% | 12.2% | ✓ | 11.0% | ✓ |
| | xRoCA ⁸⁾ | ≥ 2% | 9.0% | ✓ | n.a. | |
| Life & Health R/I | Gross premium growth ⁹⁾ | 3 - 5% | 4.6% | ✓ | 7.4% | ✓ |
| | Value of New Business (VNB) ¹⁰⁾ | ≥ EUR 220 m. | EUR 290 m. | ✓ | n.a. | |
| | EBIT growth ¹¹⁾ | ≥ 5% | 12.5% | ✓ | 30.3% | ✓ |
| | xRoCA ⁸⁾ | ≥ 2% | -2.4% | | n.a. | |

1) Excl. effects from ModCo derivatives

3) Growth in economic equity + paid dividend; target: 600 bps above 5-year average return of 10-year German government bonds

5) On average throughout the R/I cycle at constant f/x rates

7) EBIT/net premium earned

9) Organic growth only; target: annual average growth over a 3-year period, at constant f/x rates

11) Annual average growth over a 3-year period

2) After tax; target: 900 bps above 5-year average return of 10-year German government bonds

4) According to our internal capital model and Solvency II requirements as of 31 March 2019

6) Incl. large loss budget of EUR 875 m.

8) Excess return on allocated economic capital

10) Based on Solvency II principles; pre-tax reporting

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Outlook:
outperforming
tomorrow

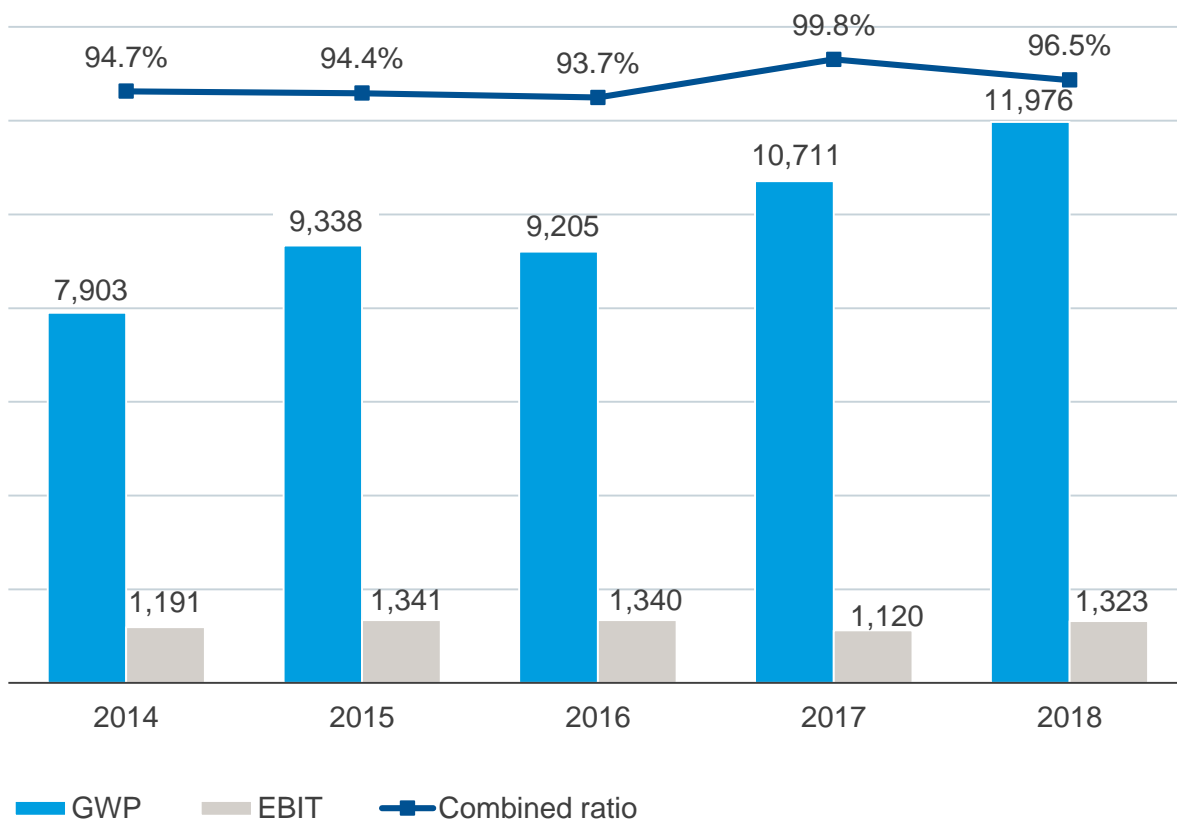


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Our strategy will continue to build on our competitive strengths

Property & Casualty reinsurance

Property & Casualty GWP and EBIT development
in m. EUR



- Strong **market franchise** combined with **broker distribution channel** offer continuous growth as preferred partner
- Leading position and continued profitable growth potential in our core markets **Europe** and **North America**
- Excellent reputation and growth outlook in **Specialty lines** and **Cyber reinsurance**
- Well-positioned to benefit from the growing importance of **Structured Solutions**
- Strict **adherence to margin requirements** and **conservative reserving**

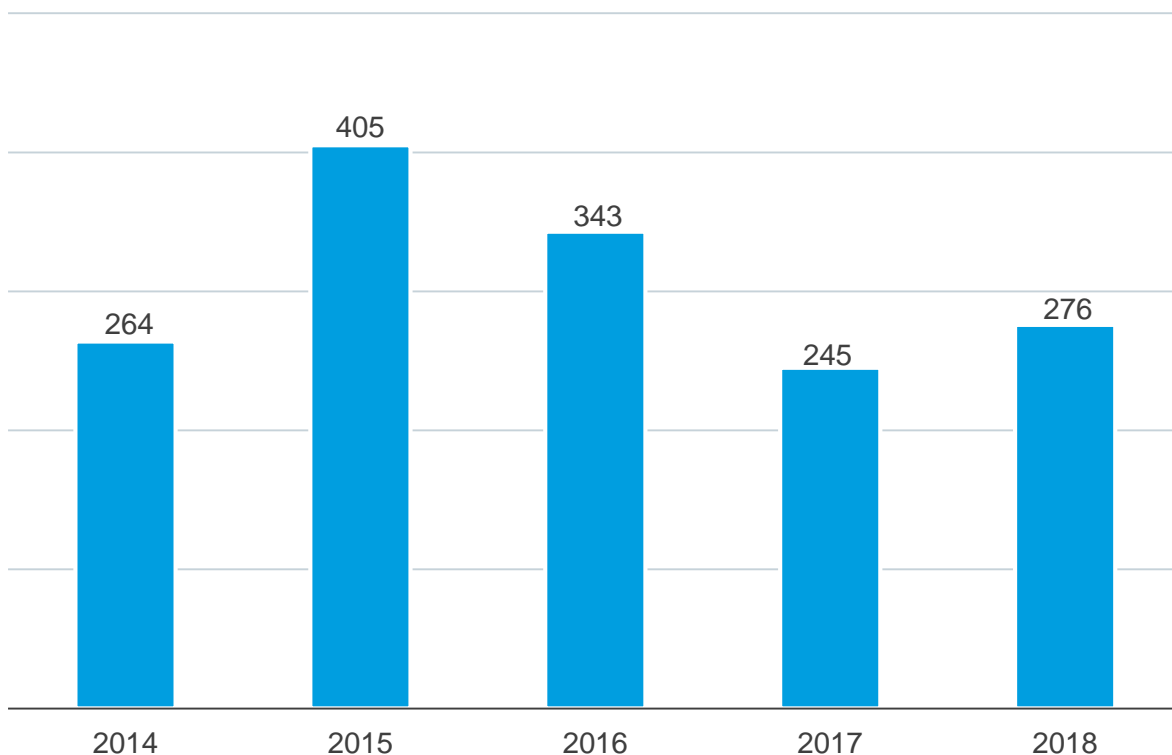
Continued profitable growth and underwriting discipline

Our strategy will continue to build on our competitive strengths

Life & Health reinsurance

L&H EBIT development

in m. EUR



- Strong **global network** offering solutions to support our clients' **underwriting** and **product development**
- Building on **core competencies** and **client partnerships**
- Leading position in **Financial Solutions** and continued growth in **Longevity**
- Stringent monitoring of **in-force portfolios** and continued focus on management of **US mortality book**
- Gaining momentum with **innovation** and **digital partnerships**

Expanding market position with strong in-force management

Some additional key success factors will be required for Hannover Re to outperform in the future



Accelerate our **Asia-Pacific growth strategy**



Foster **digital innovation** to broaden revenue base and strengthen partnerships



Seek leadership in **customer centricity** and broaden client relationships



Win the **competition** for talents and **develop key talents**

Accelerate our Asia-Pacific growth strategy



- Share of **global insurance premiums** continuously shifting to the APAC region (45% by 2027)
- **New target framework** based on systematic analysis of potentials
- **Strengthening regional footprint** to support long-term earnings growth
- **Lean structures** with **empowered management** to secure speed of execution
- **Increase our market share** without compromising on profitability in this competitive region

Foster digital innovation to broaden revenue base and strengthen partnerships



- Enhancing data analytics capabilities and developing new solutions for our clients
- Current examples include Personal Lines in Asia, ReFlex, hr | equarium, es | Tmatik, Perseus
- Aspiration to further expand cooperation with selected new market entrants and InsurTechs
- Active participation in industry initiatives like Rüschtikon, RITA, B3i
- Continued focus on writing new risks such as Cyber reinsurance

Seek leadership in customer centricity and broaden client relationships



- Unlock potentials with existing and new clients
- Further expand holistic customer-centric approach
- Continue to live culture of cooperation and knowledge sharing for the benefit of the client
- Utilise cross-selling potential across markets
- Adapt ourselves to the clients' organisational and purchasing requirements in an efficient way

Win the competition for talents and develop key talents



- Secure effective **talent sourcing and recruitment** and further strengthen the candidate's journey
- **Foster mobility** across markets and functions
- Further develop **leadership skills and competencies**
- **Strengthen succession plans** and prepare the new generation of underwriters

Our ambition for the next strategy cycle

Striving for performance at full potential

The recognised **client-centric reinsurer**



The profitably growing, consistent **industry outperformer**



The **go-to partner** for insurers, brokers and new entrants



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From the CFO's desk

Roland Vogel, Chief Financial Officer
22nd International Investors' Day
Frankfurt, 23 October 2019

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Agenda

| | | |
|---|-------------------|----|
| 1 | Investment update | 3 |
| 2 | Expense ratio | 11 |

Agenda

1 Investment update

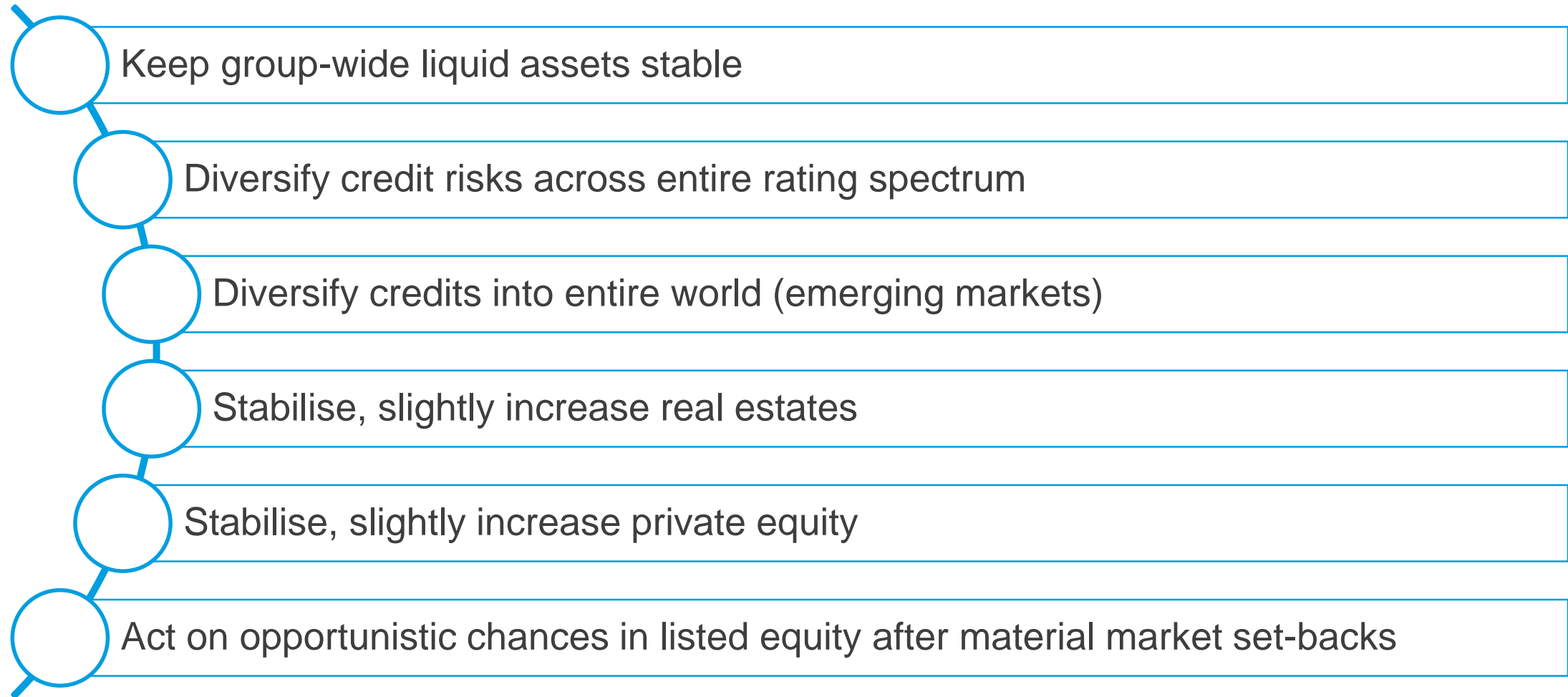
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2 Expense ratio

11

Reinvestments into greater geographical diversification continue

Stabilise liquidity, geo-shifting and stabilise credit risks



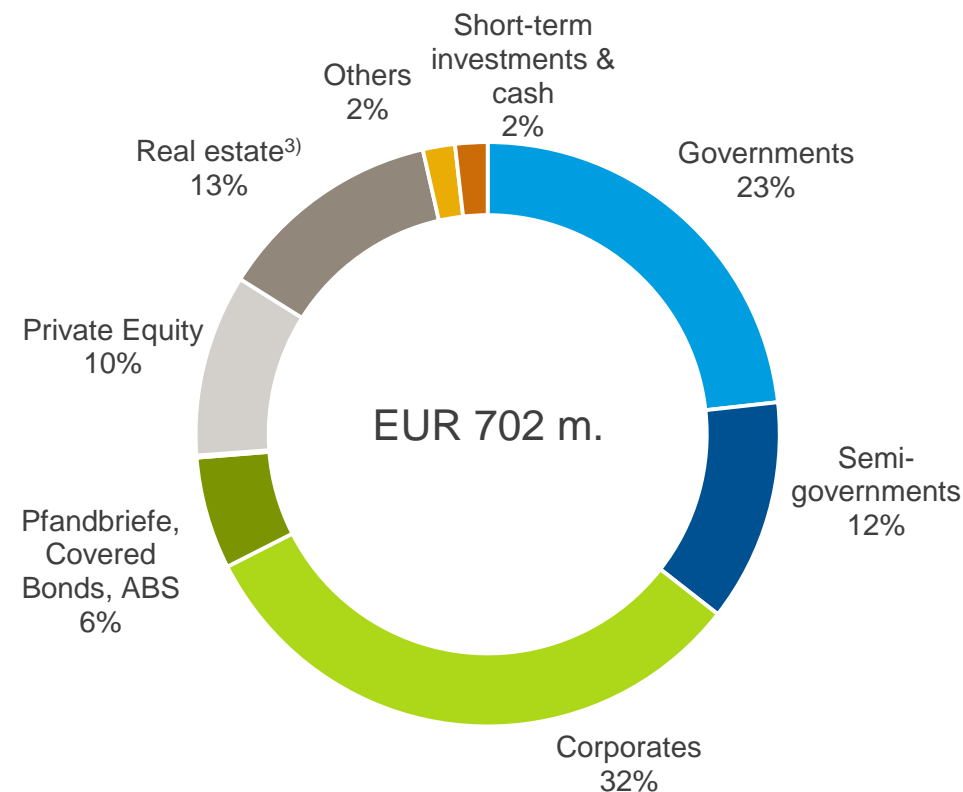
Ordinary income well supported by alternatives

Credit quality more defensive, offset by geographical shifts towards emerging markets

Asset allocation¹⁾

| Investment category | 2015 | 2016 | 2017 | 2018 | 30 Jun 2019 |
|--|-------------|-------------|-------------|-------------|------------------|
| Fixed-income securities | 87% | 87% | 87% | 87% | 87% |
| - Governments | 26% | 28% | 30% | 35% | 34% |
| - Semi-governments | 17% | 18% | 17% | 16% | 16% |
| - Corporates | 34% | 33% | 32% | 29% | 29% |
| Investment grade | 30% | 28% | 27% | 25% | 25% |
| Non-investment grade | 4% | 4% | 5% | 4% | 4% |
| - Pfandbriefe, Covered bonds, ABS | 10% | 9% | 8% | 7% | 7% ²⁾ |
| Equities | 3% | 4% | 2% | 2% | 2% |
| - Listed equity | 1% | 2% | <1% | <1% | <1% |
| - Private equity | 2% | 2% | 2% | 2% | 2% |
| Real estate/real estate funds | 4% | 5% | 5% | 6% | 5% |
| Others | 1% | 1% | 1% | 1% | 2% |
| Short-term investments & cash | 5% | 4% | 4% | 4% | 4% |
| Total market values in bn. EUR | 39.8 | 42.3 | 40.5 | 42.7 | 45.3 |

Ordinary income split



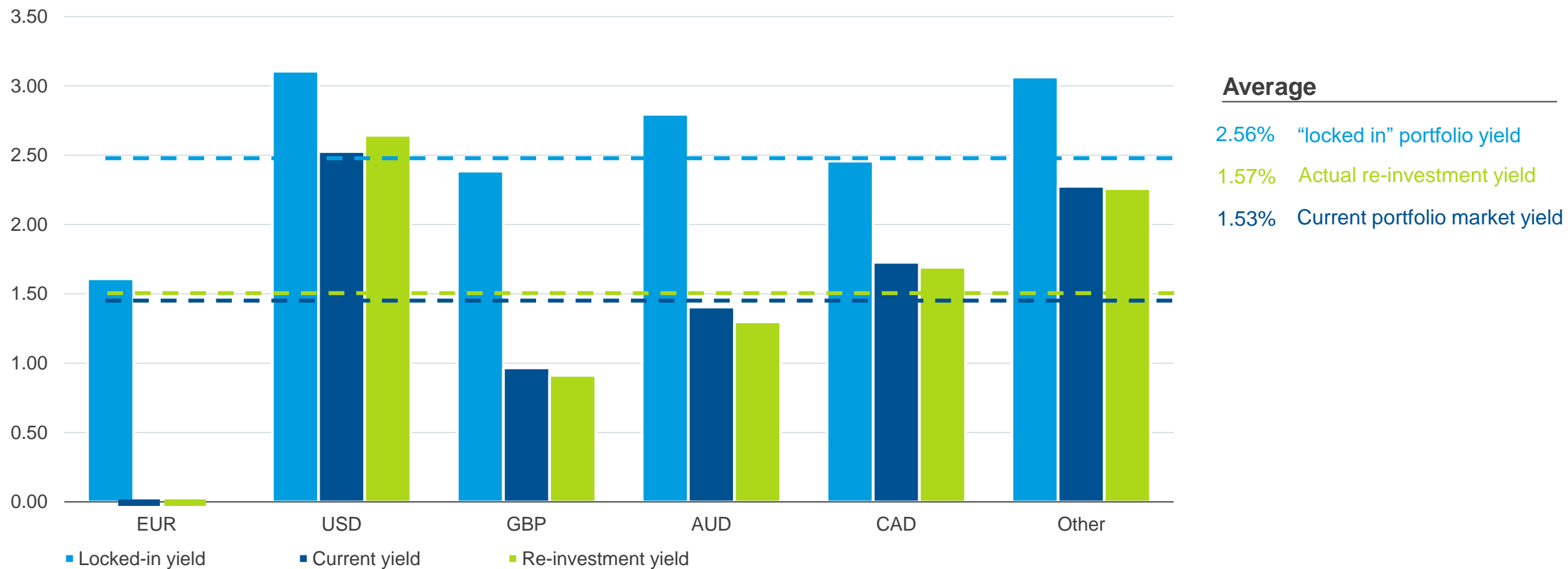
1) Economic view based on market values without outstanding commitments

2) Of which Pfandbriefe and Covered Bonds = 71%

3) Before real estate-specific costs. Economic view based on market values as at 30 June 2019

Disappearing positive reinvestment EUR yields and significantly lower interest rate levels across the globe

Current analysis per currency of fixed-income portfolio¹⁾

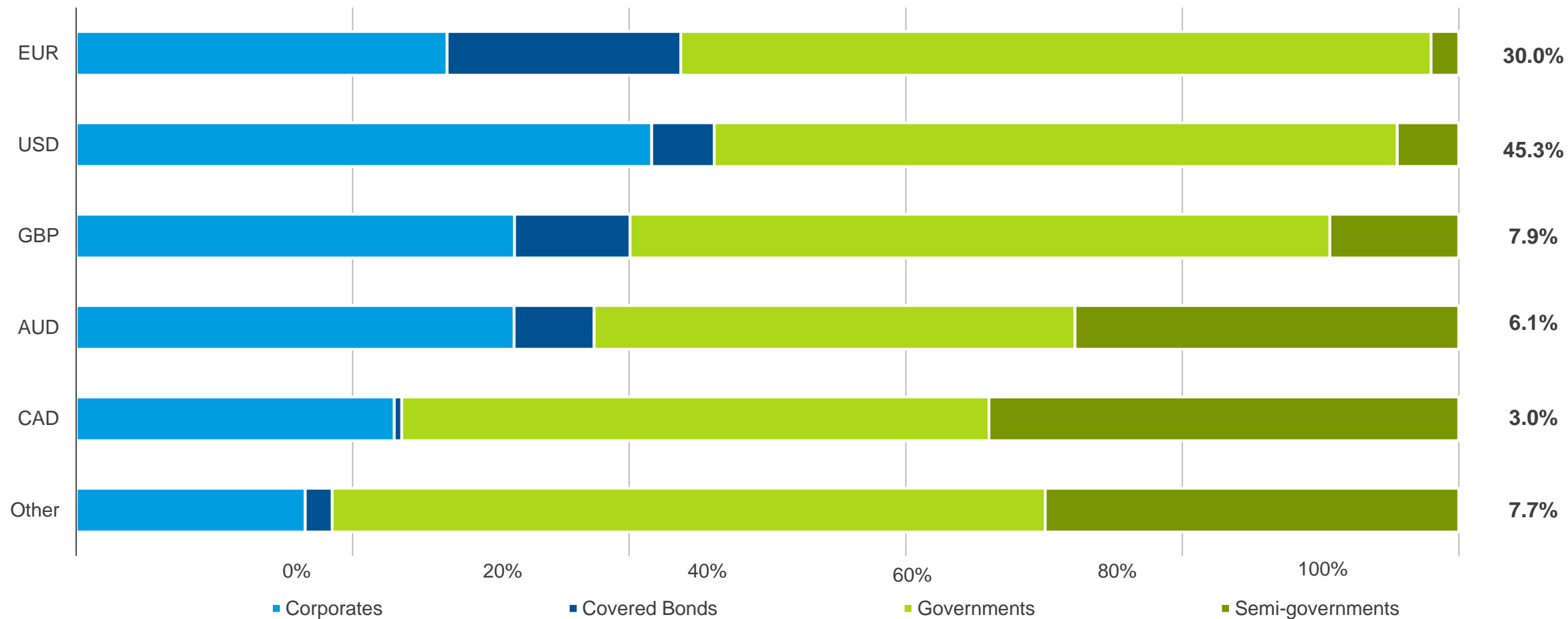


1) As at 15 August 2019, excluding short-term investments and cash

Fixed-income allocation varies significantly per currency

Allocation of fixed income portfolio¹⁾ per currency

EUR 40 bn.

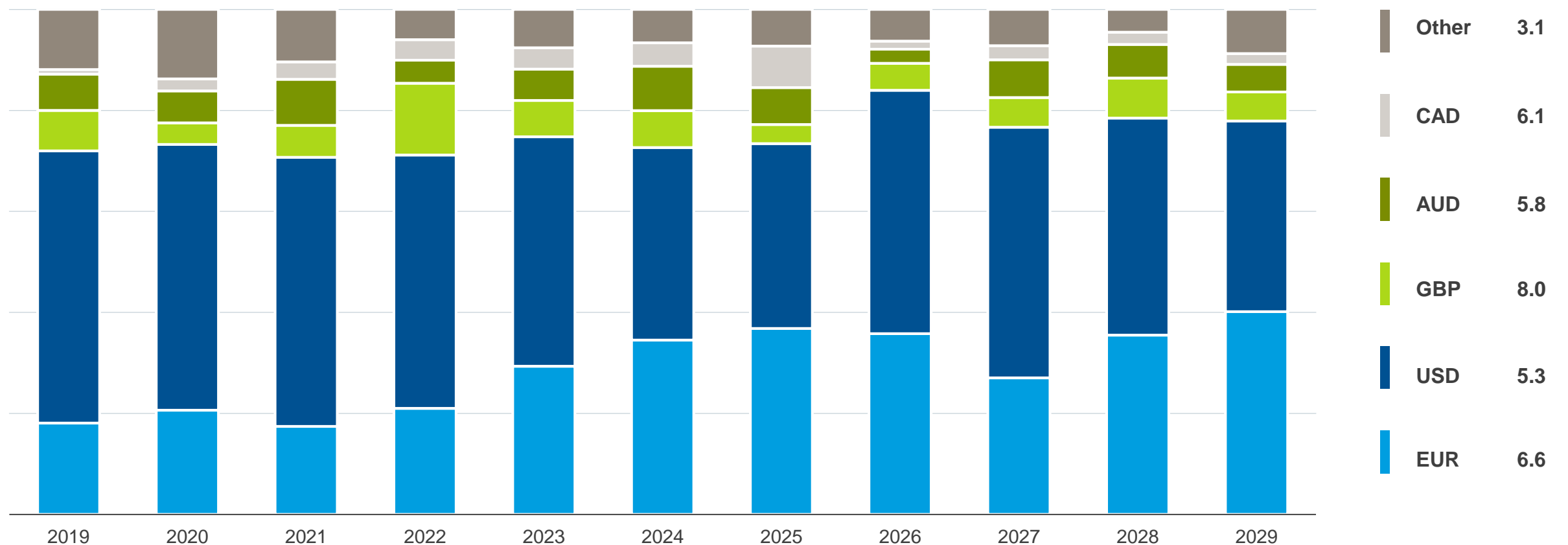


1) Analysis as at 15 August 2019, excluding short-term investments and cash

More importantly: maturity profile per currency deviates remarkably

Faster turnover in USD compared to EUR

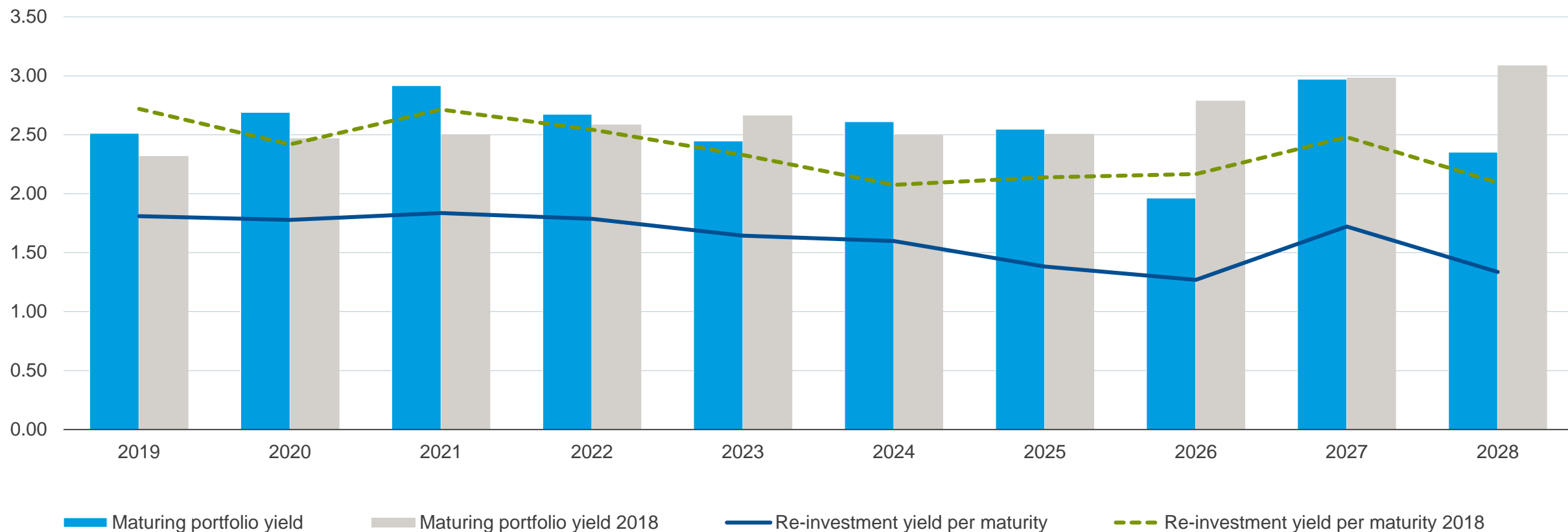
Maturities of fixed-income portfolio¹⁾ per currency



1) Analysis as at 15 August 2019, excluding short-term investments and cash

RoI under pressure again by around -12 bps per year if reinvestments stay where they are today

Projection of fixed-income portfolio maturing vs. re-investment yield¹⁾

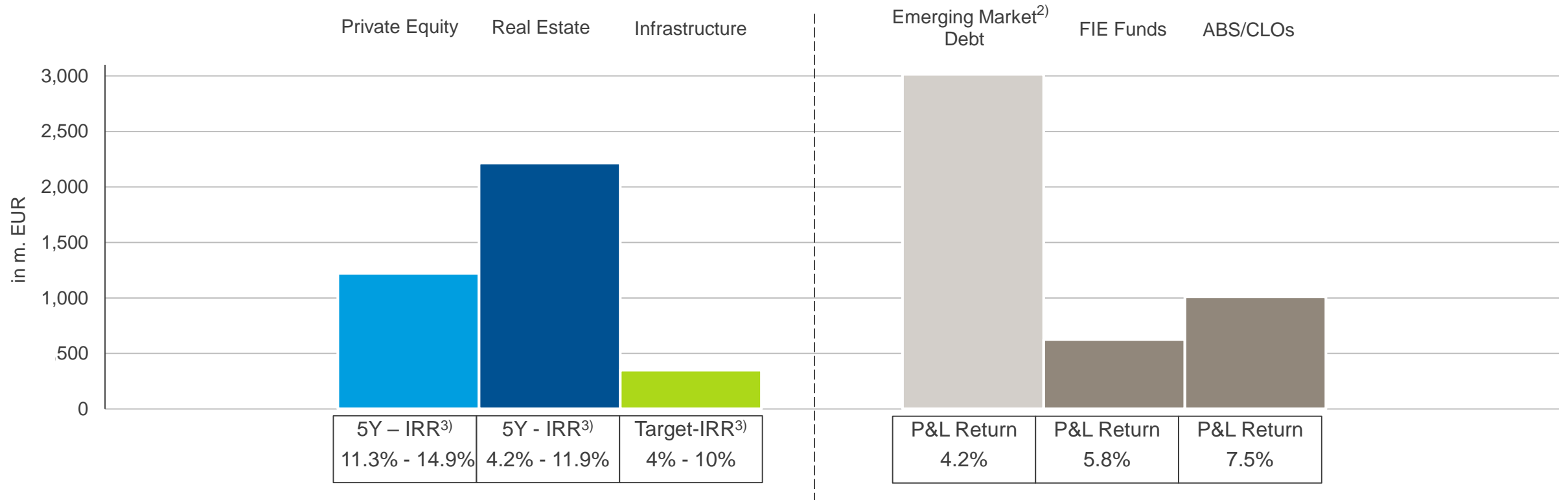


1) Analysis as at 15 August 2019, excluding short-term investments and cash

Alternative asset strategies

As compensation for disappearing interest rates in developed markets

Volume and returns¹⁾ of main alternative asset strategies



1) w/o HR-entities located in emerging markets

2) Volumes as of 15 August 2019; returns as a 5Y Average as of Q4/2018

3) Range due to several investment structures with different risk-return profiles

Agenda

1 Investment update

3

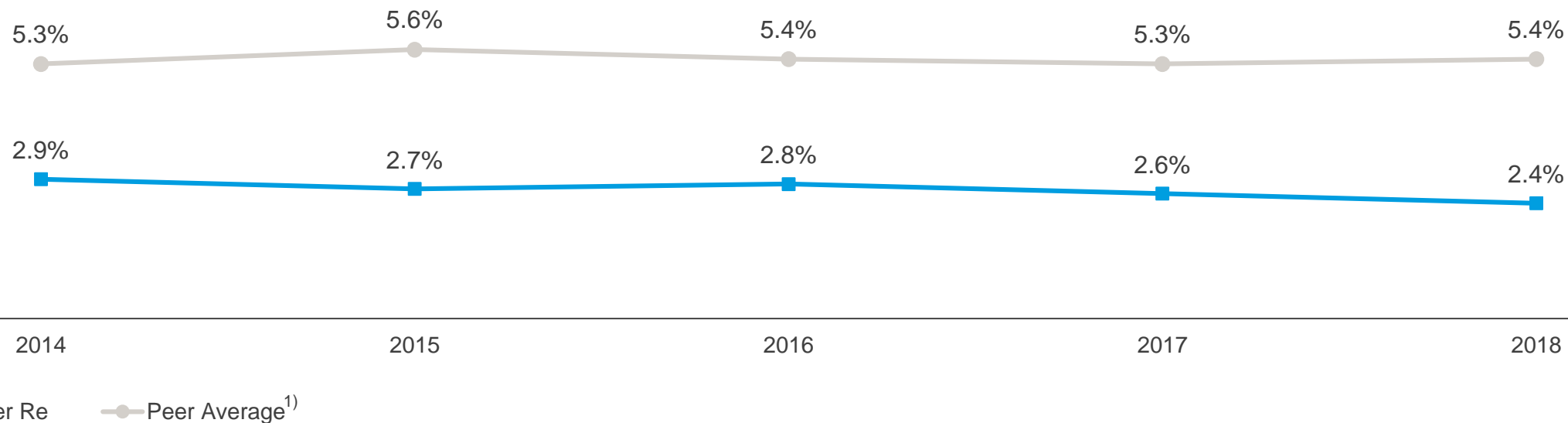
2 Expense ratio

11

Our low expense ratio is an important strategic competitive advantage

The ratio has been improving – in absolute and relative terms

Administrative expense ratio

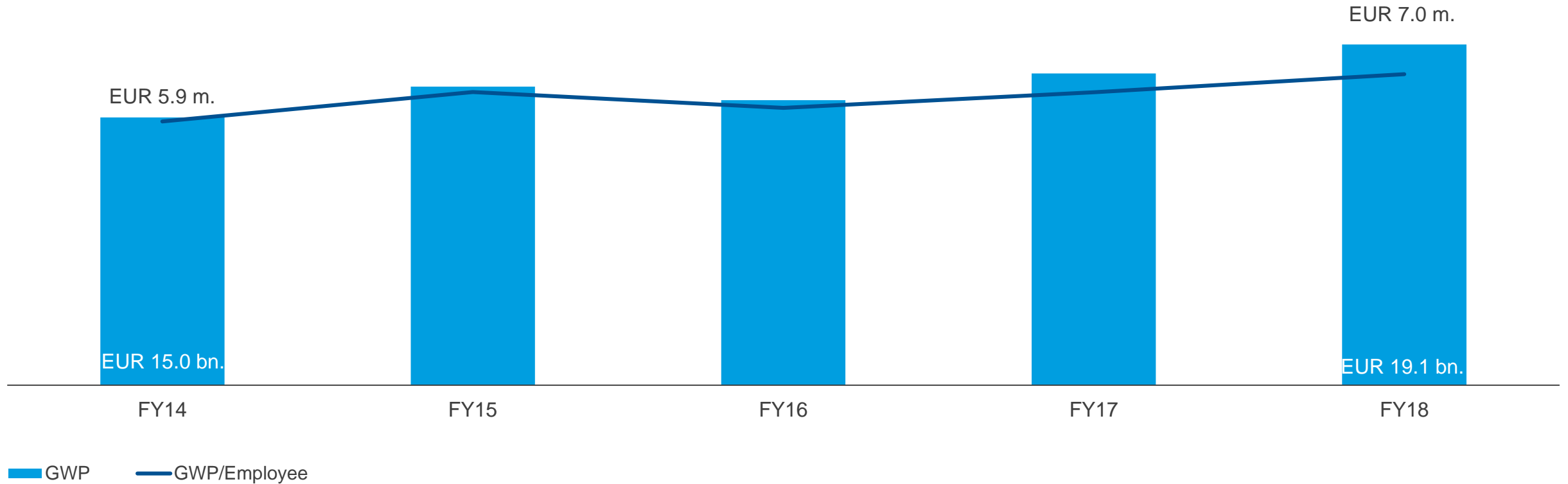


1) Peers: Munich Re, Swiss Re, Scor, Everest Re, RGA; own calculation

We are constantly improving productivity

Premium per employee ratio +20% over 4 years

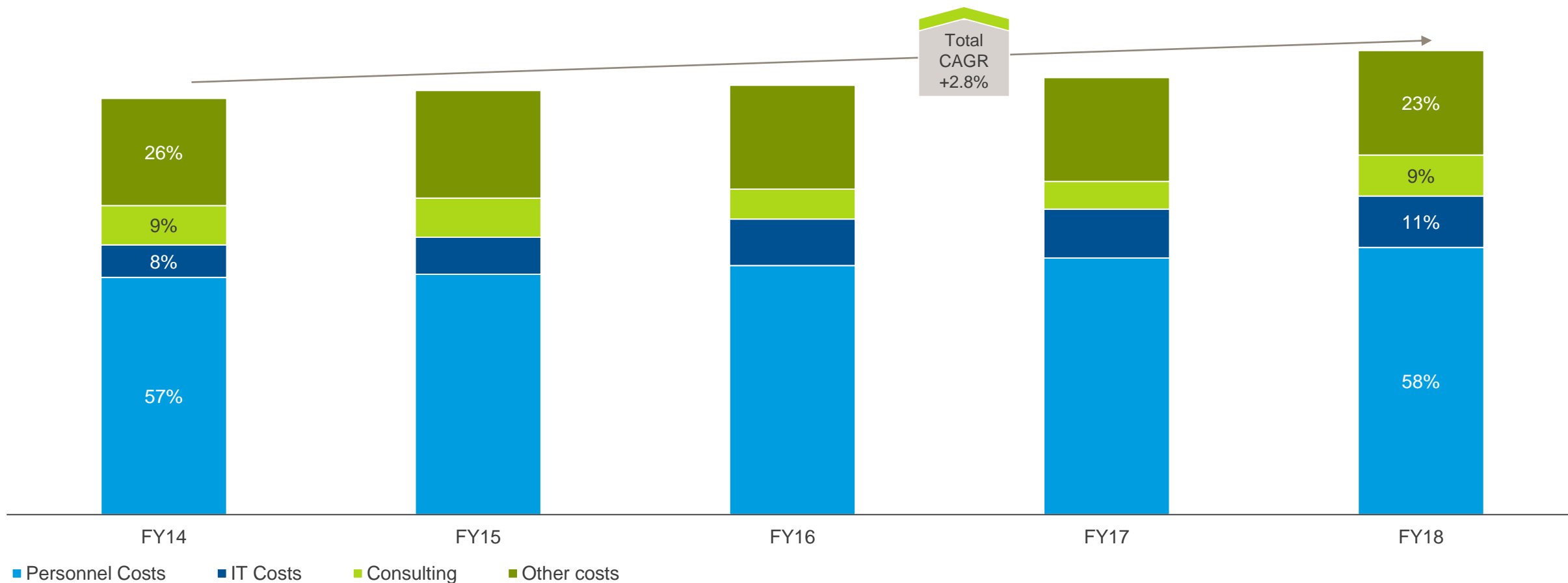
Gross Written Premium and GWP per employee from 2014 to 2018



Excluding Argenta and consolidated agencies, fx-adjusted

Stable other costs allow for new hires and higher IT and project expenses

Cost composition and development from 2014 to 2018



Excluding Argenta and consolidated agencies, fx-adjusted

Key drivers for Hannover Re's cost leadership

- Based in Hannover, Germany – relatively cost-attractive location
- Centralised underwriting in P&C
- Service for our clients is provided only in conjunction with business opportunities
- No major integration project in history
- Clear responsibilities – no matrix
- High degree of delegation of authorities
- Cost leadership as strategic target for decades – part of our DNA
- High degree of internal automation

Such drivers are sustainable factors & keep supporting a long-term competitive advantage

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Capital generation and risk profile

Including an update on our reserving level

Dr. Andreas Märkert, Chief Risk Officer and Managing Director Group Risk Management
22nd International Investors' Day
Frankfurt, 23 October 2019

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Agenda

- 1 Capital generation, Solvency II outlook and sensitivities
 - 2 Natural catastrophes and climate change risk
 - 3 Cyber risk management
 - 4 Annual update of the P&C claim reserving level
-

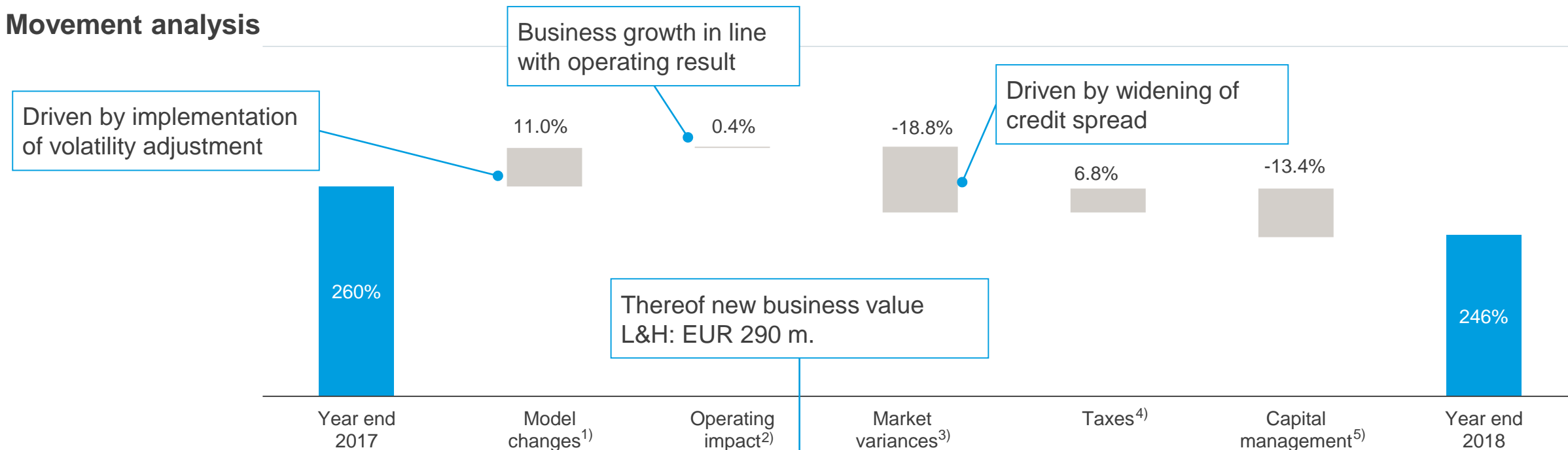
Agenda

- 1 Capital generation, Solvency II outlook and sensitivities
 - 2 Natural catastrophes and climate change risk
 - 3 Cyber risk management
 - 4 Annual update of the P&C claim reserving level
-

Capital generation: review 2018

Solvency II eligible own funds and SCR movement analysis

Movement analysis



| Category | Year end 2017 | Model changes ¹⁾ | Operating impact ²⁾ | Market variances ³⁾ | Taxes ⁴⁾ | Capital management ⁵⁾ | Year end 2018 |
|--------------------|---------------|-----------------------------|--------------------------------|--------------------------------|---------------------|----------------------------------|---------------|
| Eligible own funds | 12,296 | 393 | 1,037 | -282 | -123 | -686 | 12,635 |
| SCR | 4,729 | -46 | 376 | 264 | -188 | 0 | 5,135 |

Figures in m. EUR. SCR – Solvency Capital Requirements according to Solvency II internal model

1) Model changes, main effect from first-time application of static volatility adjustment; pre-tax

2) Operating earnings and assumption changes; pre-tax

3) Changes due to changes in foreign exchange rates, interest rates, credit spreads and other financial market indicators; pre-tax

4) Tax payments and changes in deferred taxes

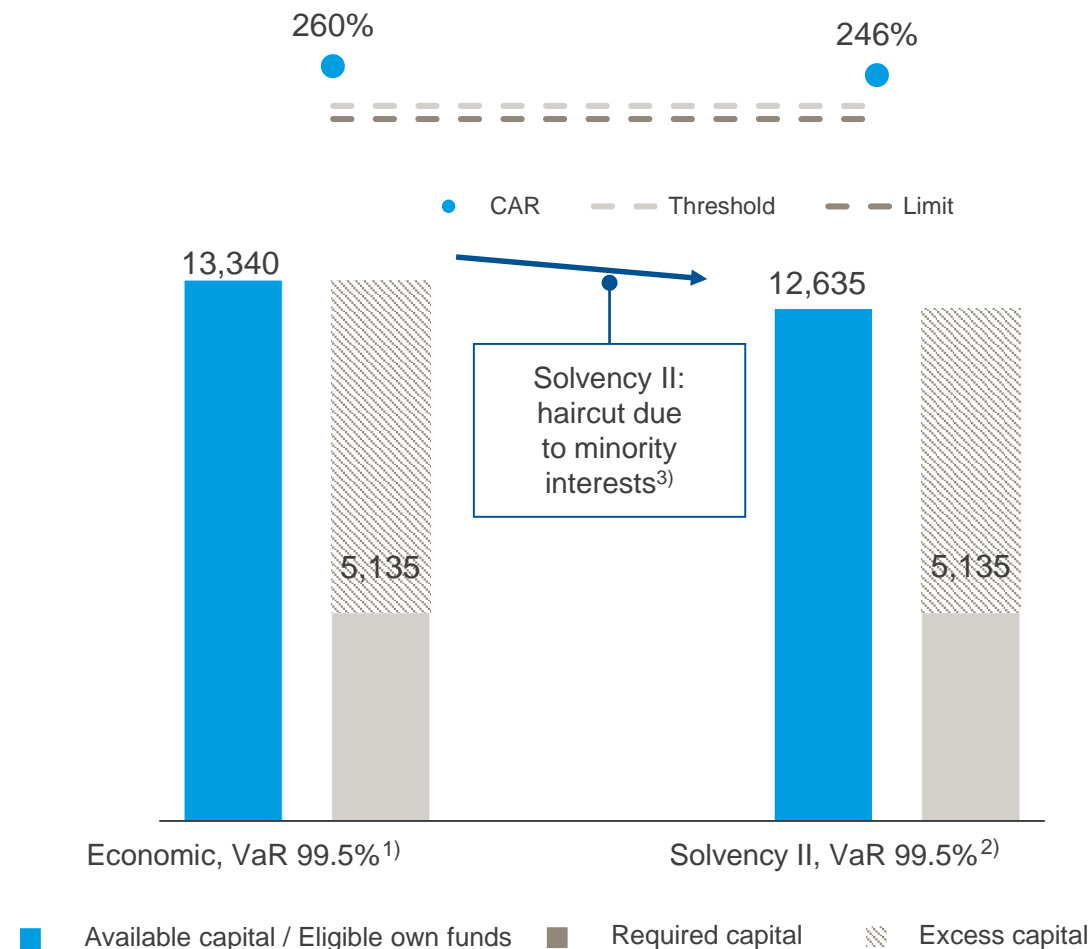
5) Dividend payments and changes in foreseeable dividends

Continuous and consistent monitoring of economic performance

Comfortable capital position above targets

- Monitoring of internal and Solvency II targets
 - on a regular, quarterly basis,
 - upon significant transactions and
 - as a component of our planning process
- Further side constraints
 - Solvency II ratio of Hannover Rück SE: 251%
 - Rating targets
 - Standard & Poor’s rating AA-
 - A.M. Best rating A+
 - include adherence to rating agencies’ capital requirements
 - Ruin probability: currently significantly below target level 0.03%
 - Legal entities solvency requirements

Capital adequacy ratios, internal and Solvency II metrics



All figures as at 31 December 2018 and in m. EUR

1) Available capital vs. Value-at-Risk at confidence level 99.5%

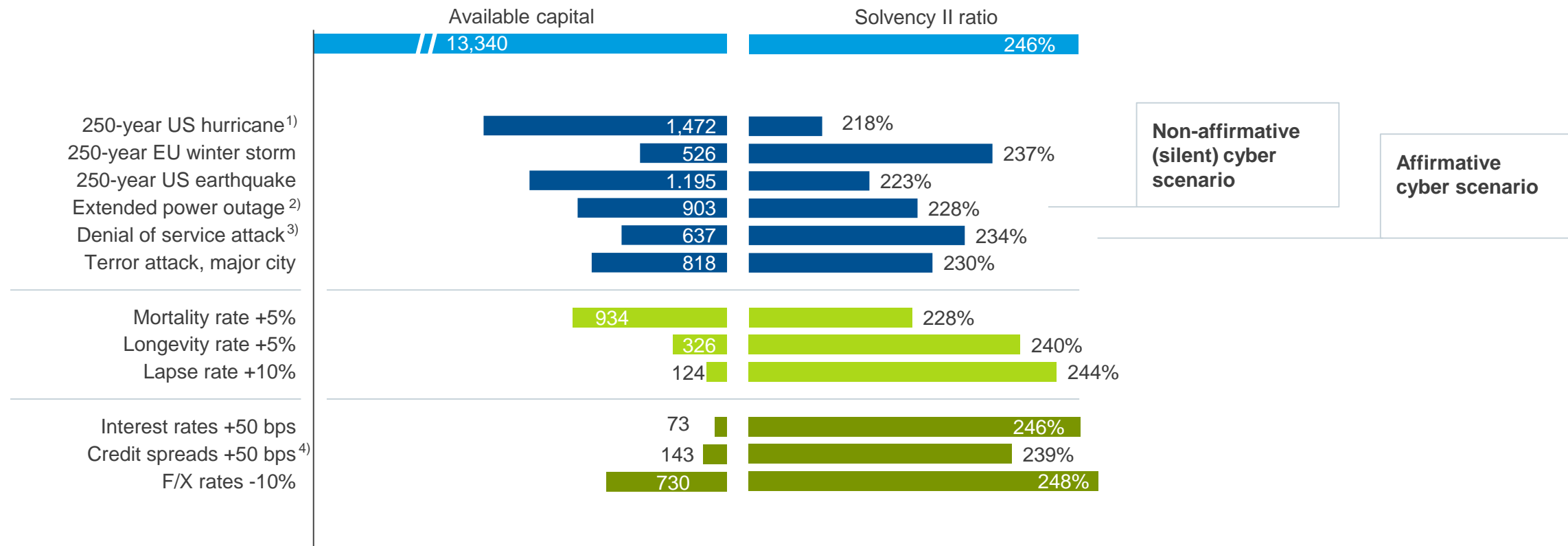
2) Solvency II eligible own funds vs. Solvency Capital Requirements SCR (VaR at confidence level 99.5%)

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

Individual risks with limited impact on own funds

Substantial excess capital to withstand stress events

Sensitivities and stress tests



As at 31 December 2018, 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 weeks of power outage in a larger area of a developed country

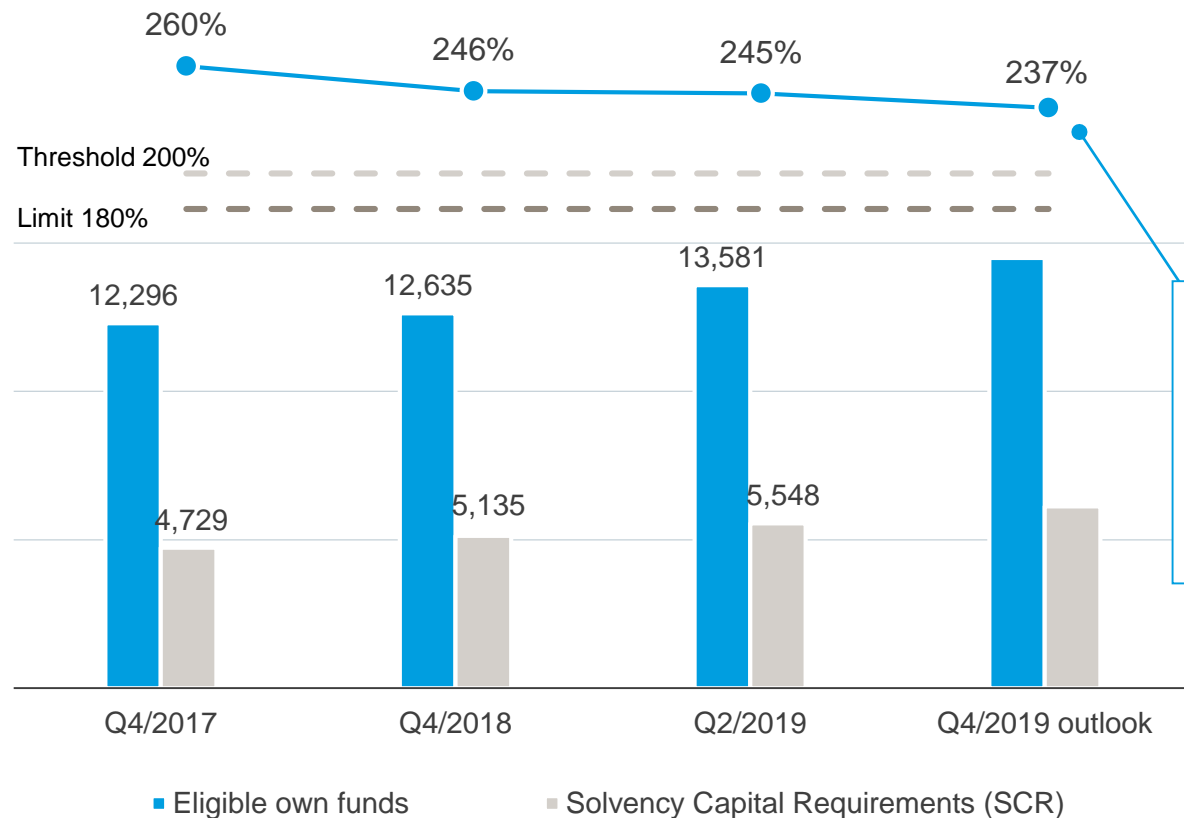
3) Distributed denial-of-service-attack on main DNS provider

4) +50bps for Hannover Re average portfolio bucket. Stress level differs by rating and duration. Includes impact of changes in static volatility adjustment.

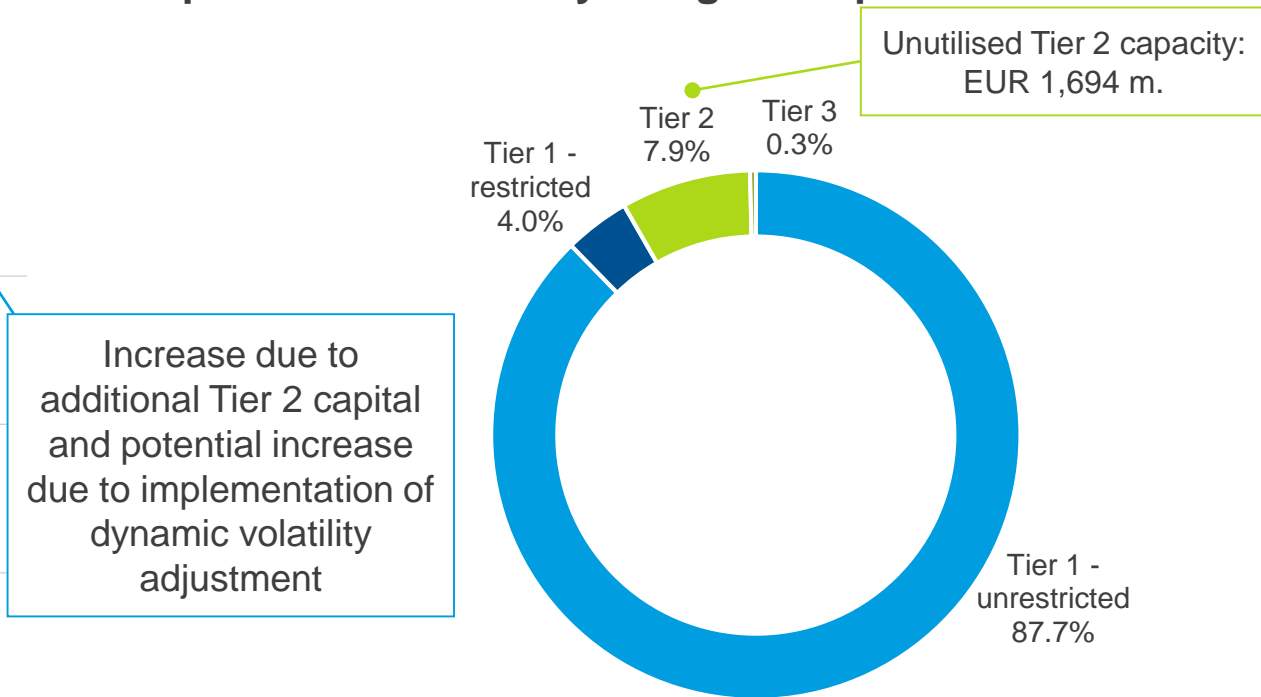
Stable buffer above capital targets

Increasing SCR reflects strong and diversified business volume growth

Development of Solvency II capital adequacy ratio



Composition of Solvency II eligible capital¹⁾



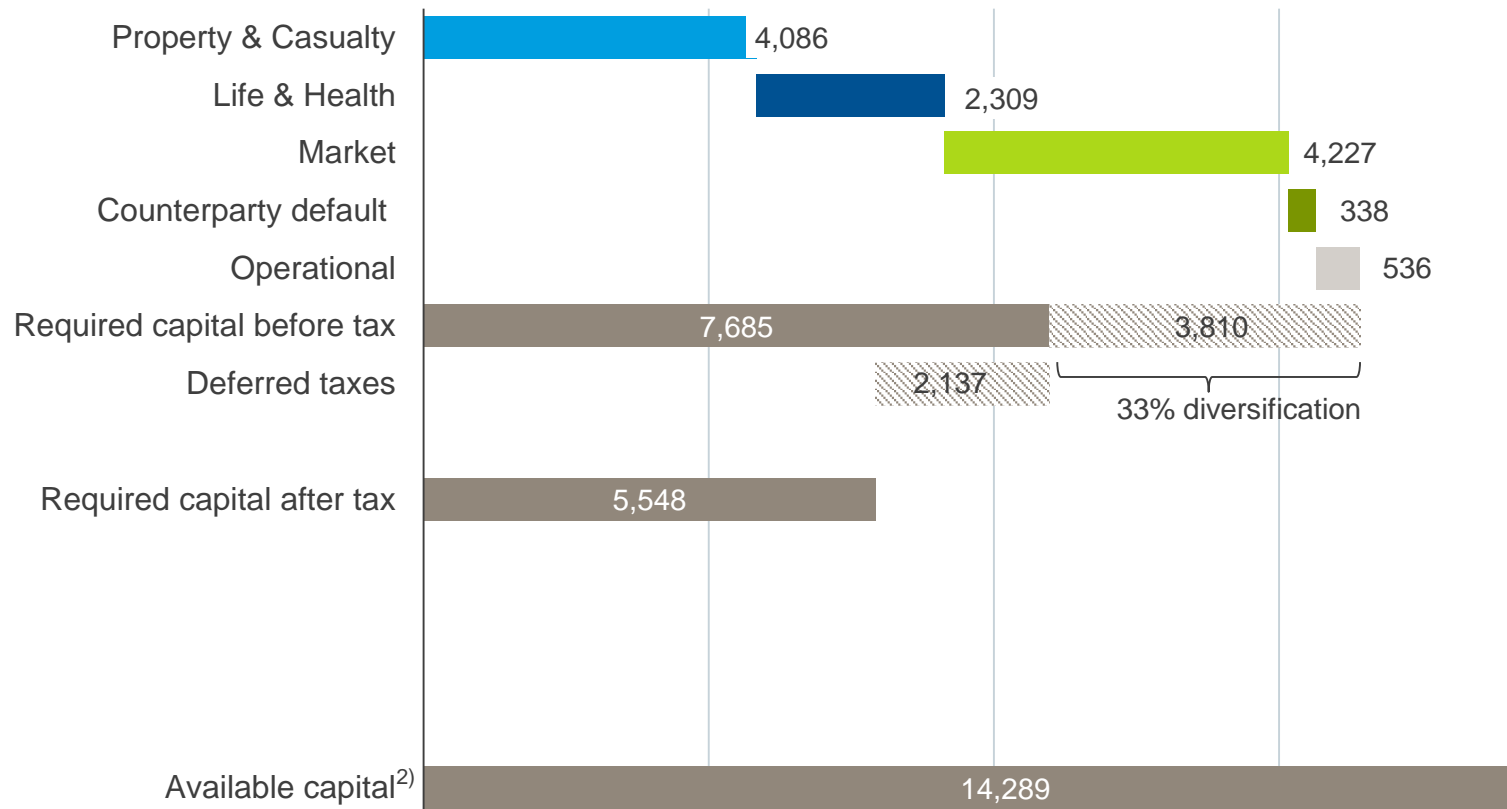
Figures in m. EUR
1) As at Q2/2019

Consistent high degree of diversification

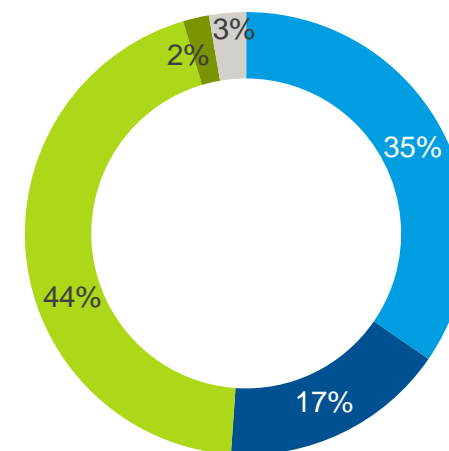
Breakdown of capital requirements and contribution analysis

Required capital at confidence level 99.5% (SCR¹)

in m. EUR



Capital allocation to risk categories³⁾



- Property & Casualty
- Life & Health
- Market
- Counterparty default
- Operational

As at 30 June 2019

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%

Agenda

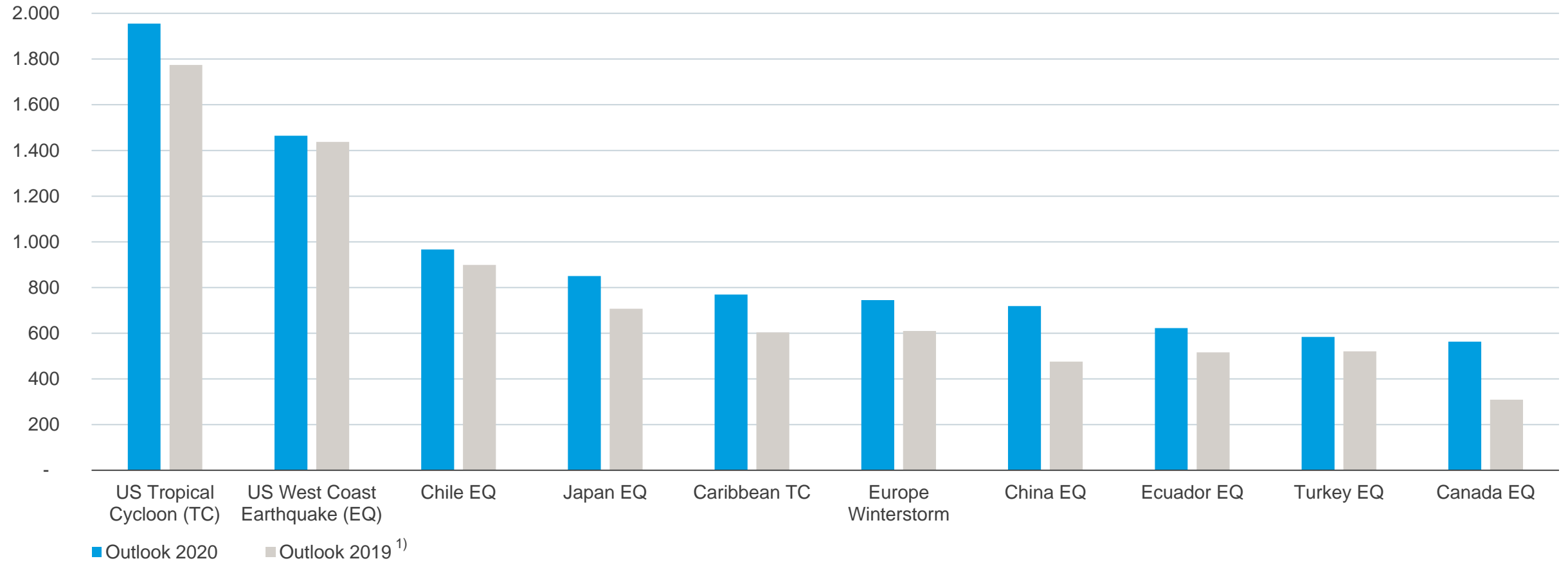
- 1 Capital generation, Solvency II outlook and sensitivities
 - 2 Natural catastrophes and climate change risk
 - 3 Cyber risk management
 - 4 Annual update of the P&C claim reserving level
-

Natural catastrophe exposure – peaks and diversification

Selective growth based on return-on-capital considerations

Required capital at confidence level 99.5% per peril/region (pre-tax)

in m. EUR

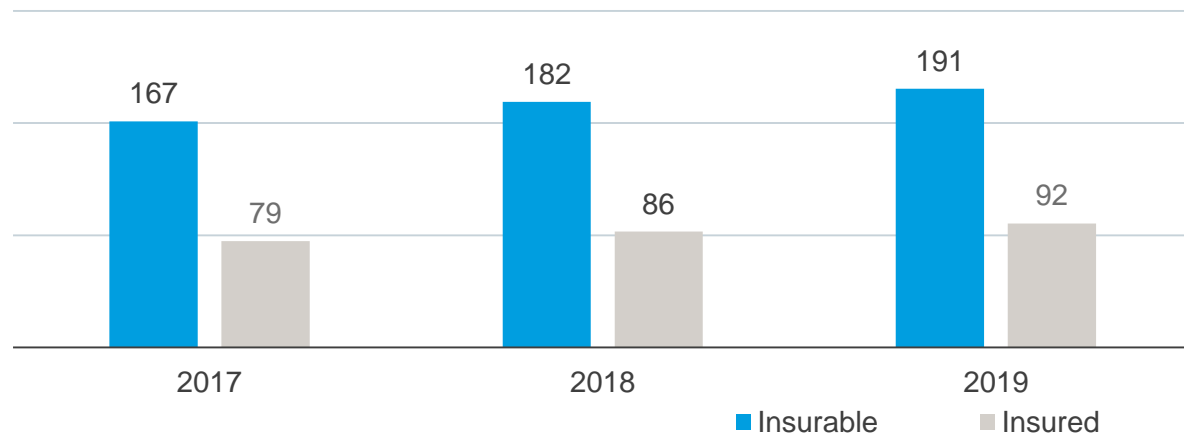


1) Outlook 2019 as of end 2018

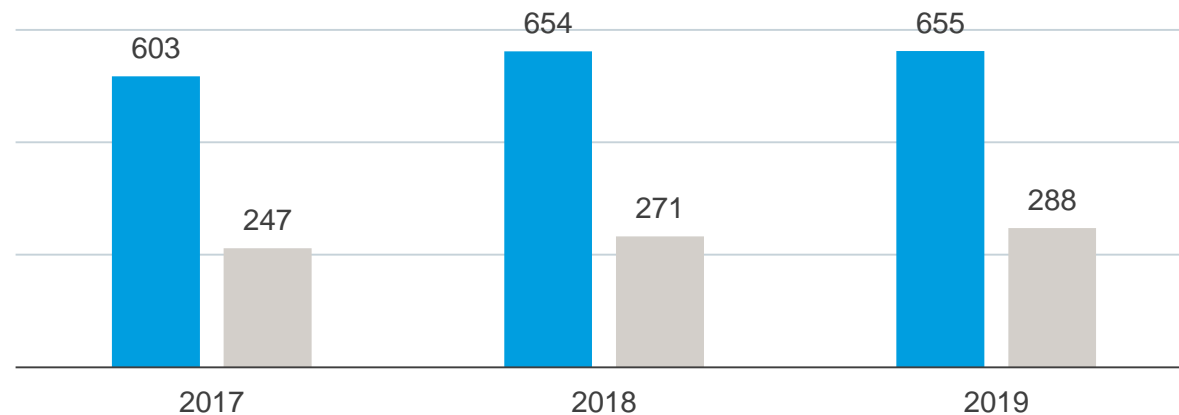
NatCat protection gap remains significant in all regions

Insurable vs. insured losses from natural catastrophes (models)

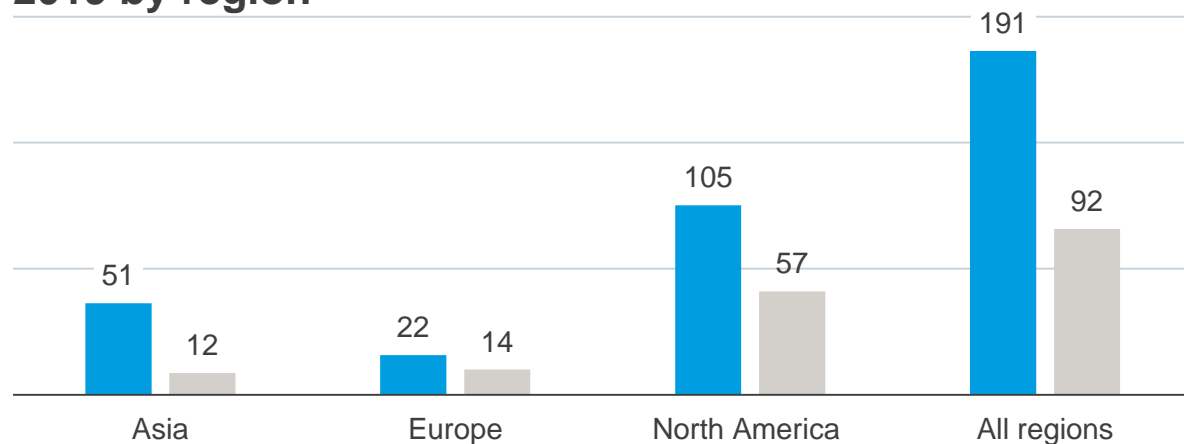
Average annual losses in bn. USD



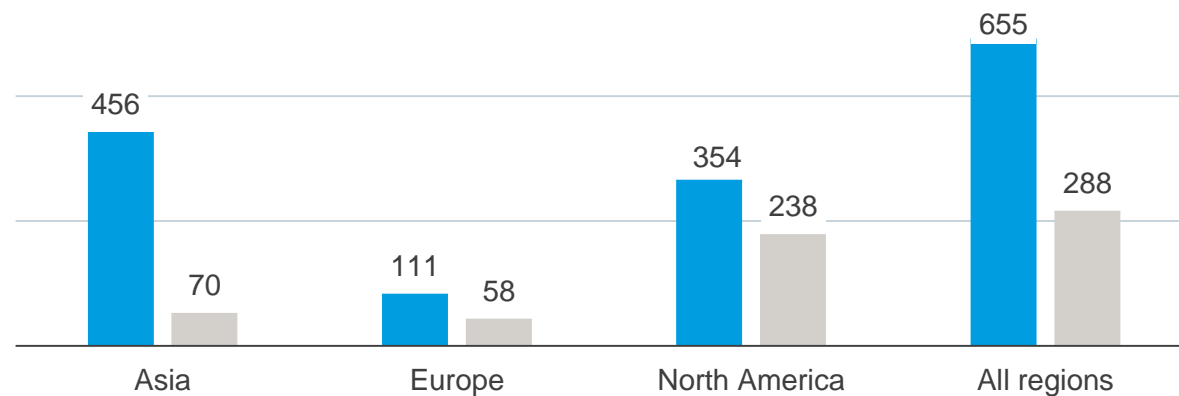
Losses in 100-year event in bn. USD



2019 by region



2019 by region

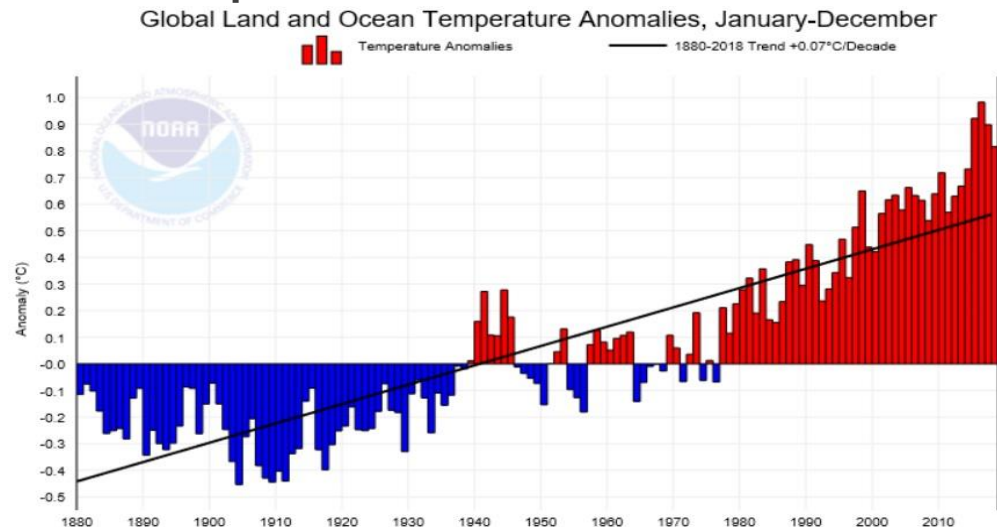


Source: 2019 AIR Worldwide "Global Modeled Catastrophe Losses"

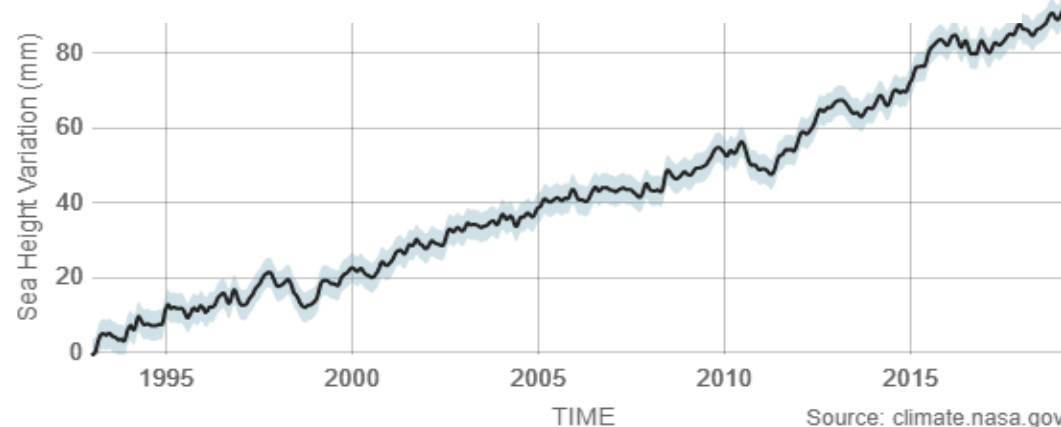
Climate change risk – selected observations

Change in progress

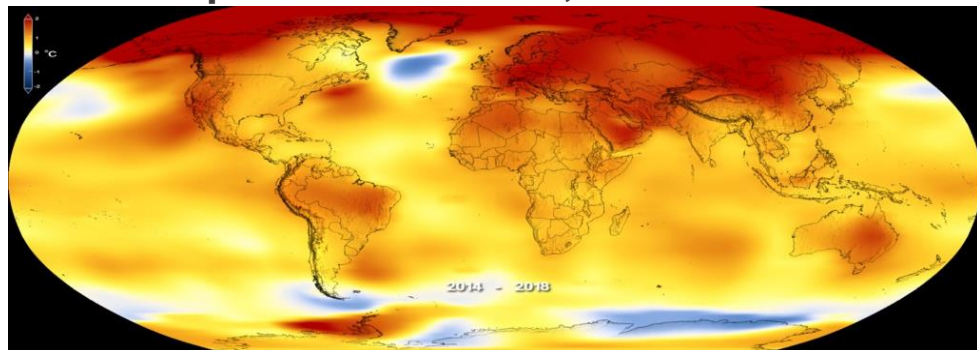
Global temperature increase since 1880



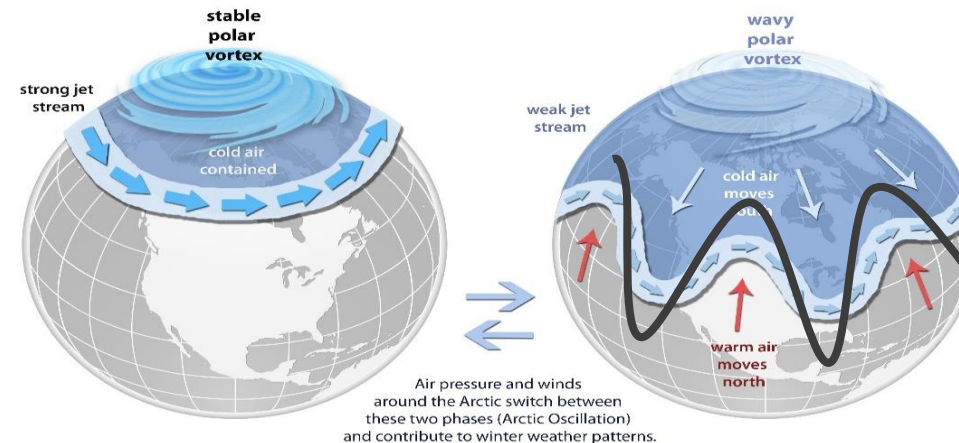
Sea level rise since 1995



Local temperature increase, 1951-1981 vs. 2013-2018



Jet stream variation

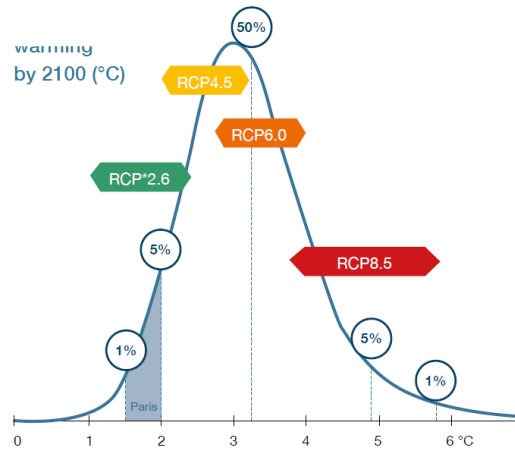


Source: <https://www.ncdc.noaa.gov/cag/global/time-series>; <https://www.noaa.gov/multimedia/infographic/science-behind-polar-vortex>; <https://svs.gsfc.nasa.gov/13142>; <https://climate.nasa.gov/vital-signs/sea-level/>

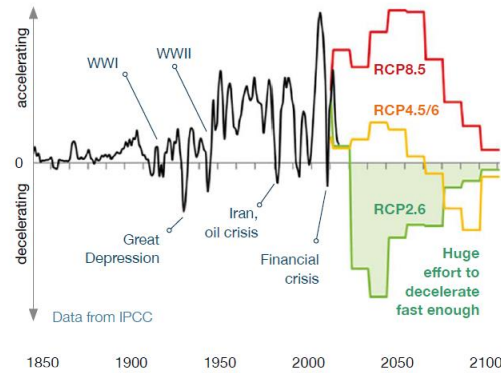
Significant challenges on any path to 2100

The scenarios

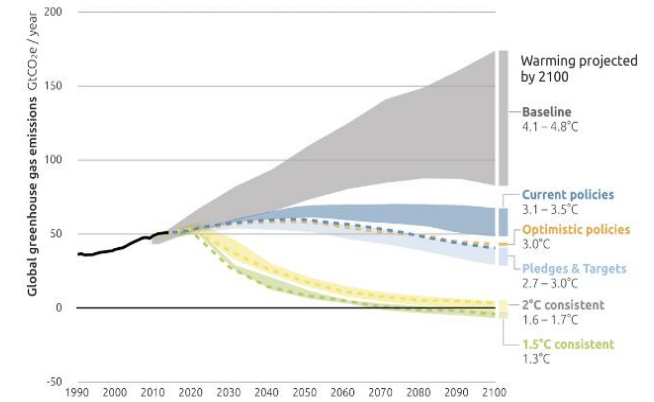
Probability of warming by 2100(°C)



Rate of acceleration of CO2 emissions over time



Emissions and expected warming pledged to policies



Fundamental scenarios

- **Road to Paris:** Fast and orderly transition to a low-carbon economy
- **Bumpy transition:** Disruptive and disorderly transition to a low-carbon economy
- **“End of civilisation”:** No transition to a low-carbon economy. Global temperature increases by 5°C or more









Sources: (1) CRO-Forum, The heat is on (2019),; (2) Intergovernmental Panel on Climate Change IPCC: AR5 Synthesis Report (2014); (3) Climate Action Tracker <https://climateactiontracker.org/> (2019)

The risk landscape

Natural catastrophes and beyond

Warming by 2100

Physical impacts

| | | <2 °C | | 3 °C | 5 °C |
|--|-------------------------------------|-----------|-----------|--------------|---------------|
| | | 1.5 °C | 2 °C | | |
|  | Sea-Level Rise (cm) | 0.3-0.6 m | 0.4-0.8 m | 0.4-0.9 m | 0.5-1.7 m |
|  | Coastal assets to defend (\$tn) | \$10.2tn | \$11.7tn | \$14.6tn | \$27.5tn |
|  | Chance of ice-free Arctic summer | 1 in 30 | 1 in 6 | 4 in 6 (63%) | 6 in 6 (100%) |
|  | Tropical cyclones: Fewer (#cat 1-5) | -1% | -6% | -16% | Unknown |
| | Stronger (# cat 4-5) | +24%* | +16% | +28% | +55% |
| | Wetter (total rain) | +6% | +12% | +18% | +35% |
|  | Frequency of extreme rainfall | +17% | +36% | +70% | +150% |
|  | Increase in wildfire extent | x1.4 | x1.6 | x2.0 | x2.6 |
|  | People facing extreme heatwaves | x22 | x27 | x80 | x300 |
|  | Land area hospitable to malaria | +12% | +18% | +29% | +46% |

The risk landscape

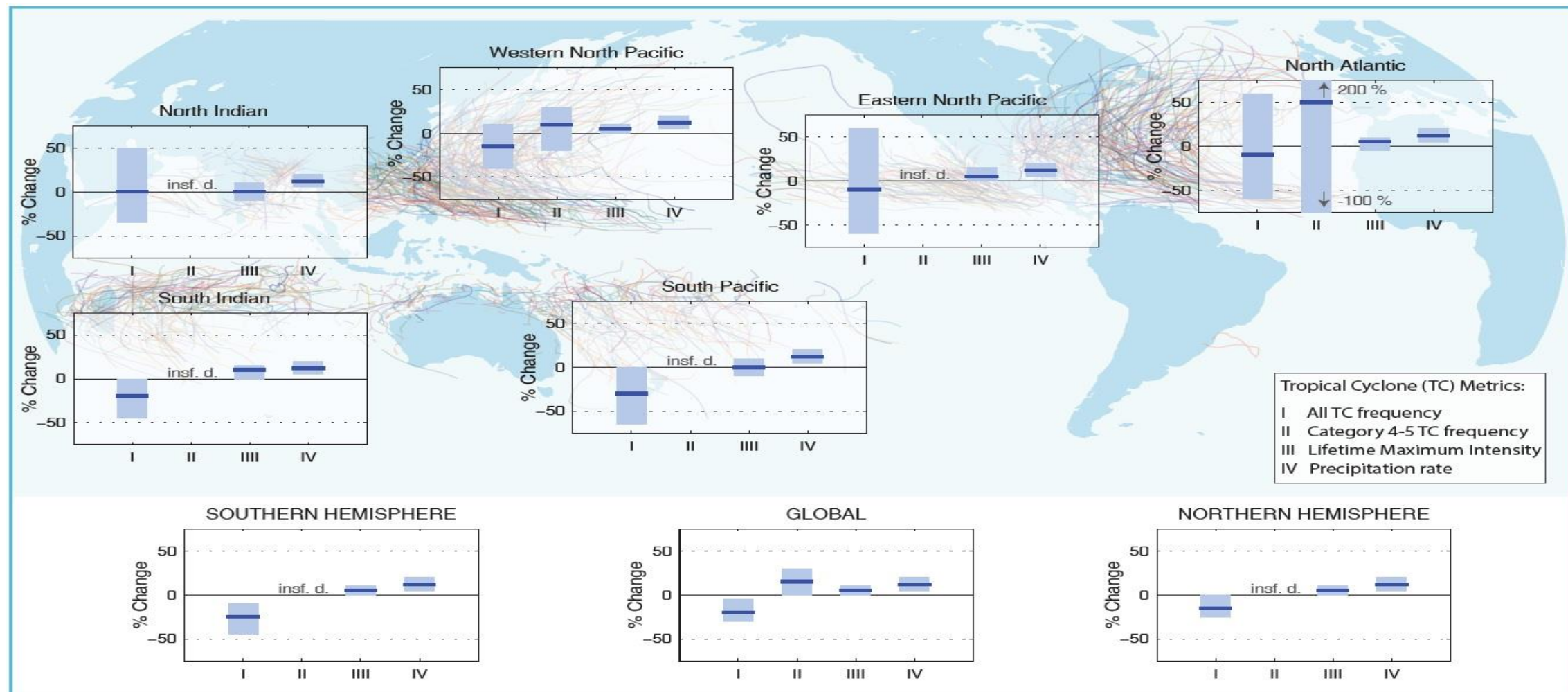
- Natural catastrophes
- Eroding biodiversity
- Liability arising
- GDP decline / economic risk
- Stranded assets / transition risk
- Pandemics / changing mortality rates
- Migration / political risk
- Food / water uncertainty
- Agricultural risks
- Reputational and conduct risk
- ... aspects beyond current research

... and the list of opportunities is at least as long as the list of risks

Source: CRO-Forum, The heat is on – insurability and resilience in a changing climate, 2019, based on IPCC data

Impact on tropical cyclones

No clear direction, yet, due to projection complexity and uncertainty



Source: IPCC report 2013

Climate change risk – conclusions

- Climate change is in progress and any path to 2100 – whether focusing on climate change prevention or adoption - bears significant risks (and opportunities). The speed of change is difficult to estimate, e.g. due to a number of self-inflating processes.
- Natural catastrophe protection remains a core element of re/insurance and a core element of Hannover Re's business model. Increasing uncertainties about the impact of climate change and the impact as it materializes may call for (technical) price increases (for selected exposure).
- Current natural catastrophe models incorporate the past impacts from climate change but no strong trends. The one-year time horizon of natural catastrophe protection helps to limit the impact of currently unknown effects.
- Closing the protection gap remains a challenge for both, the re/insurance industry and policy makers. More so in scenarios with larger temperature increases. Hannover Re contributes to a significant number of projects to address the current and future protection gap.

Agenda

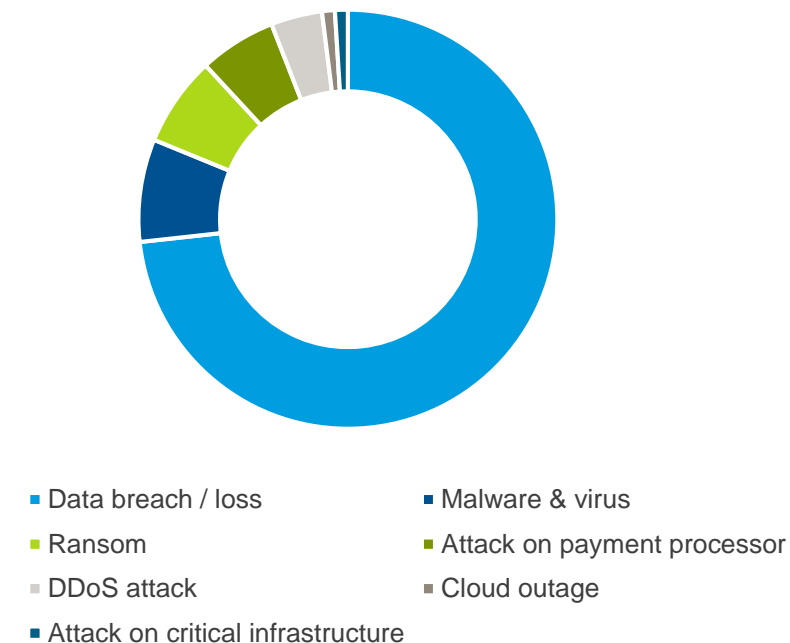
- 1 Capital generation, Solvency II outlook and sensitivities
 - 2 Natural catastrophes and climate change risk
 - 3 Cyber risk management
 - 4 Annual update of the P&C claim reserving level
-

The cyber risk landscape – threats and events

| Name / Target | Year | Event Type | Attack outline | Economic loss ¹⁾ | Insured loss ¹⁾ |
|--------------------|--------|-------------|---|-----------------------------|----------------------------|
| Yahoo | 2013/4 | Data Breach | 3 billion email accounts compromised | \$120m | unknown |
| Dyn (DNS provider) | 2016 | DDoS | several websites temporarily unavailable | unknown | unknown |
| WannaCry | 2017 | Ransomware | over 200,000 machines in 150 countries affected | \$4bn | unknown |
| Equifax | 2017 | Data Breach | theft of social security numbers, credit card information, drivers license numbers... | \$1.4bn | \$125m |
| NotPetya | 2017 | Ransomware | several large manufacturers and service providers affected | \$10bn | \$3bn |
| Marriott | 2018 | Data Breach | 383m sensitive records affected | \$1bn | \$500m |
| Norsk Hydro | 2019 | Ransomware | business interruption, switch to manual controls | \$75m | unknown |

1) All figures are estimates, partially based on public sources

Hannover Re claim frequency dominated by data breaches



Cyber insurance and models

Insurance cover

First Party:

- Data / System Recovery
- Cyber Extortion
- Cyber Breach Remediation
- Network Interruption

Third Party:

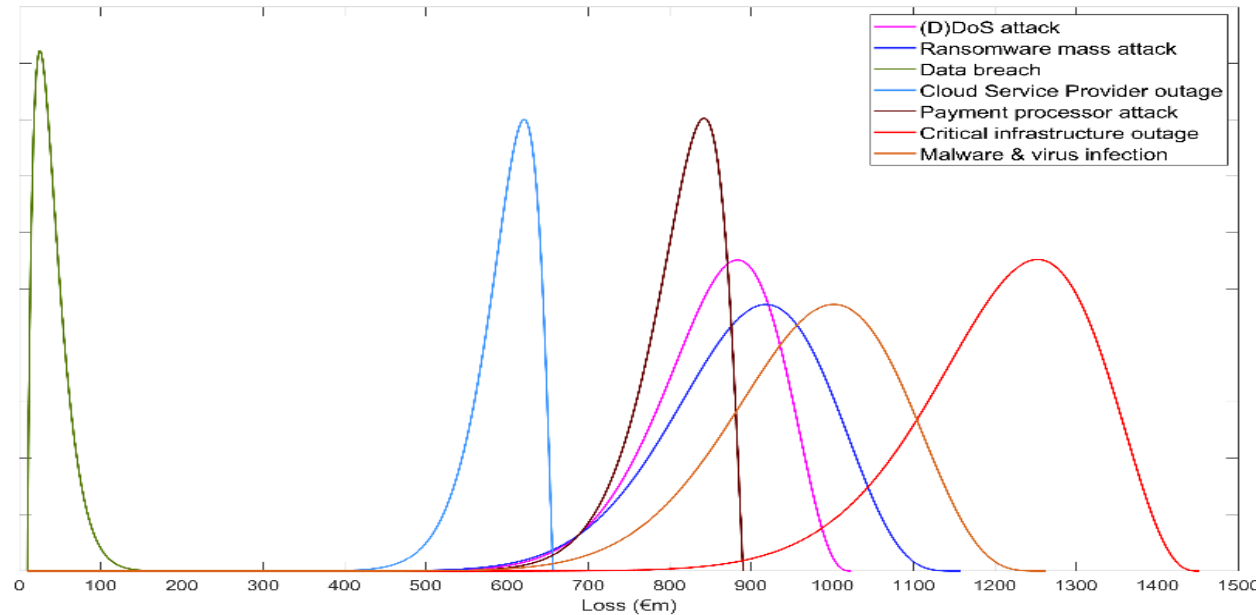
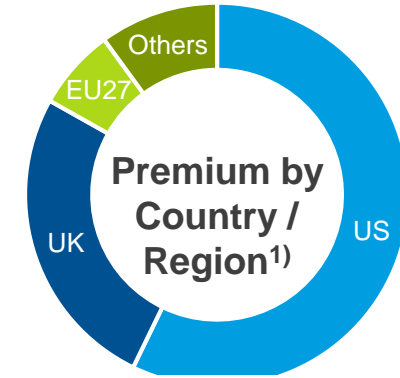
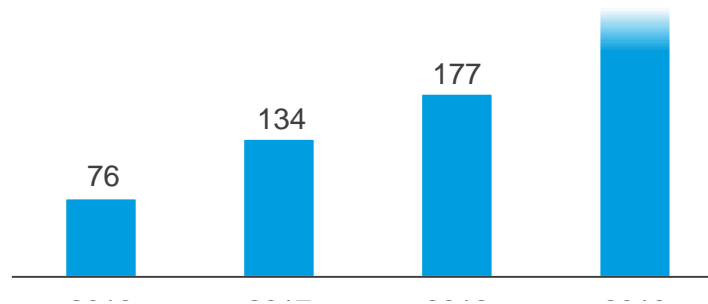
- Network Security Liability
- Privacy Protection Liability
- Media Liability

Features / challenges:

- Modular concept
- Wording differs by policy

1) Cedant home country

Cyber GWP (U/Y) as of Jul 2019 in m. EUR



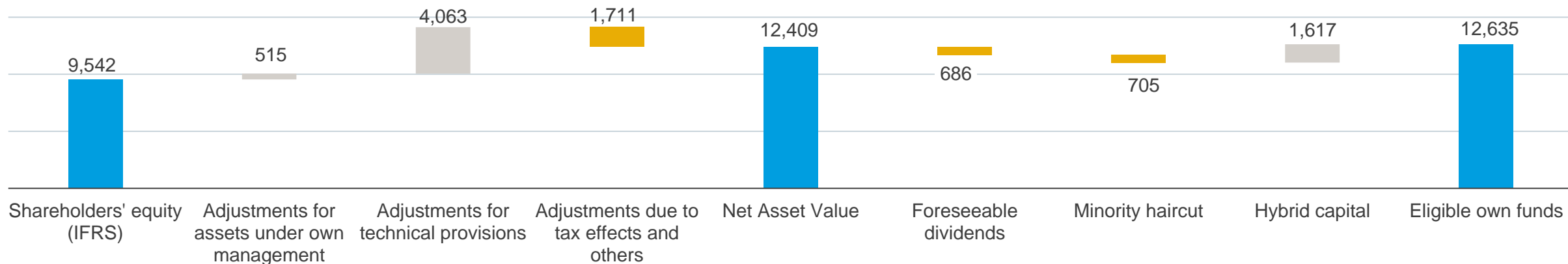
Agenda

- 1 Capital generation, Solvency II outlook and sensitivities
- 2 Natural catastrophes and climate change risk
- 3 Cyber risk management
- 4 Annual update of the P&C claim reserving level

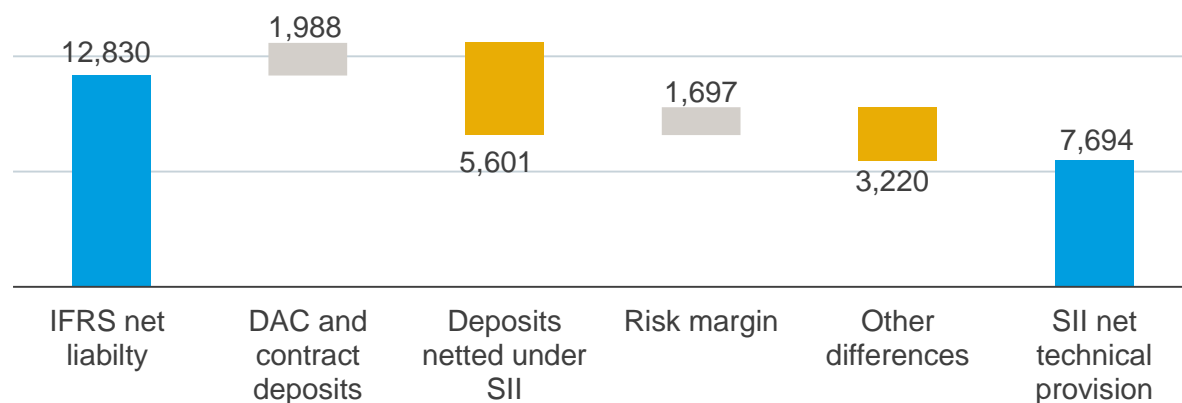
Reconciliation IFRS vs. Solvency II

Solvency II valuation based on current assumptions

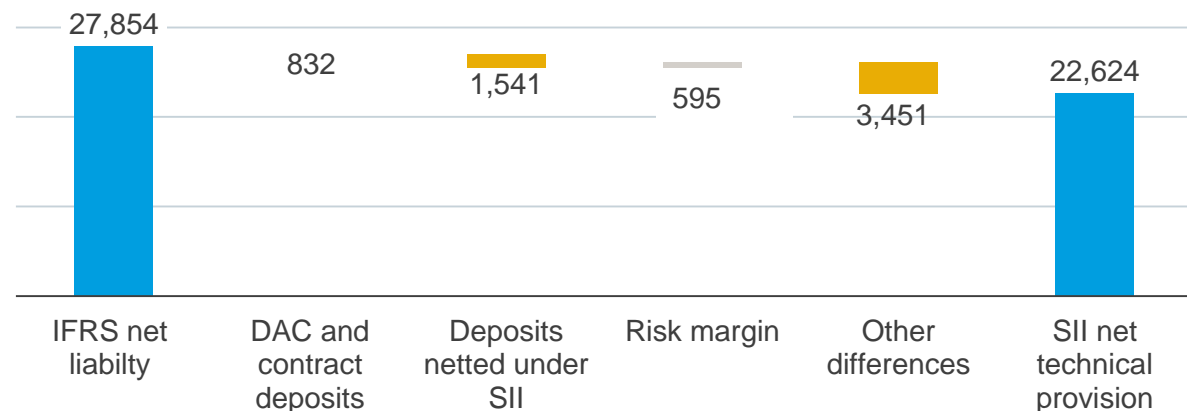
IFRS shareholders' equity vs. Solvency II eligible own funds



L&H technical provision: IFRS vs. Solvency II



P&C technical provision: IFRS vs. Solvency II



As at 31 December 2018; according to Solvency II year-end reporting, incl. minority interests, in m. EUR

Reserve redundancy reduced but remains at high level

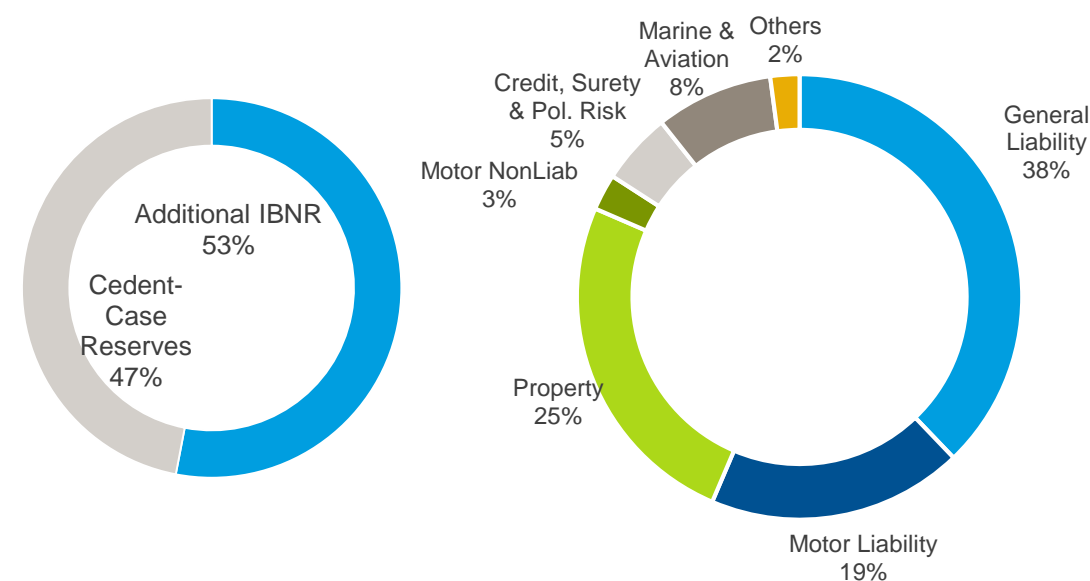
Level of additional IBNR remains above 50%

in m. EUR

| Year end ¹⁾ | Third-party estimate vs. booked ²⁾ | Change | Impact on loss ratio | P&C premium (net earned) |
|------------------------|---|-------------|----------------------|--------------------------|
| 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 | -0.6% | 9,159 |
| 2018 | 1,694 | -118 | -1.1% | 10,804 |

Property & Casualty gross loss reserves³⁾

EUR 26,185 m.



1) Figures 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 net of reinsurance for its non-life insurance business against held IFRS reserves, before tax and minority participations. Willis Towers Watson reviewed these estimates - see appendix

3) As at 31 December 2018, consolidated, IFRS, IBNR – Incurred but not reported

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 2018, 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.
 - Towers Watson's review of non-life reserves as at 31 December 2018 covered 96.9% / 98.6 of the gross and net held non-life reserves of €26.2 billion and € 24.2 billion respectively. Together with life reserves of gross €4.2 billion and net €4.0 billion, the total balance sheet reserves amount to €30.4 billion gross and €28.2 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 2018. 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.
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Insights into growing segments in P&C

Silke Sehm, Member of the Executive Board
22nd International Investors' Day
Frankfurt, 23 October 2019

Agenda

1 Structured Reinsurance

2 Cyber business

somewhat
different

1

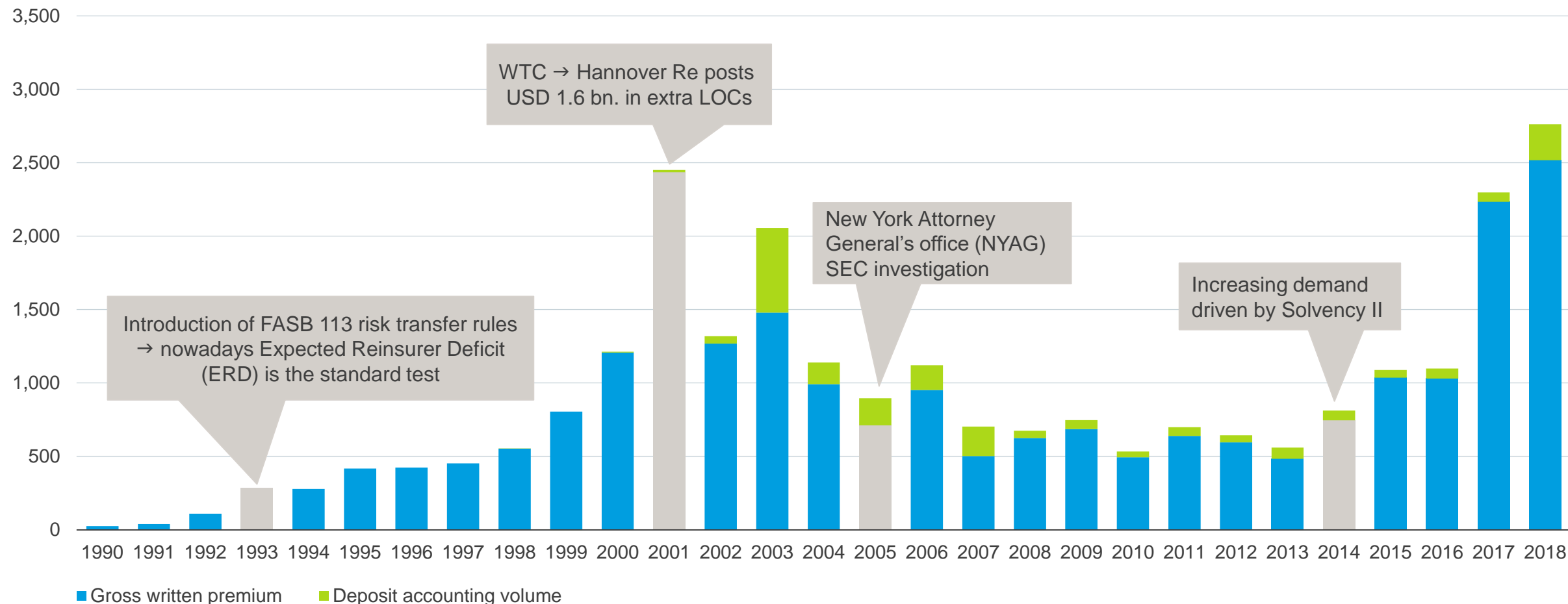
Structured Reinsurance

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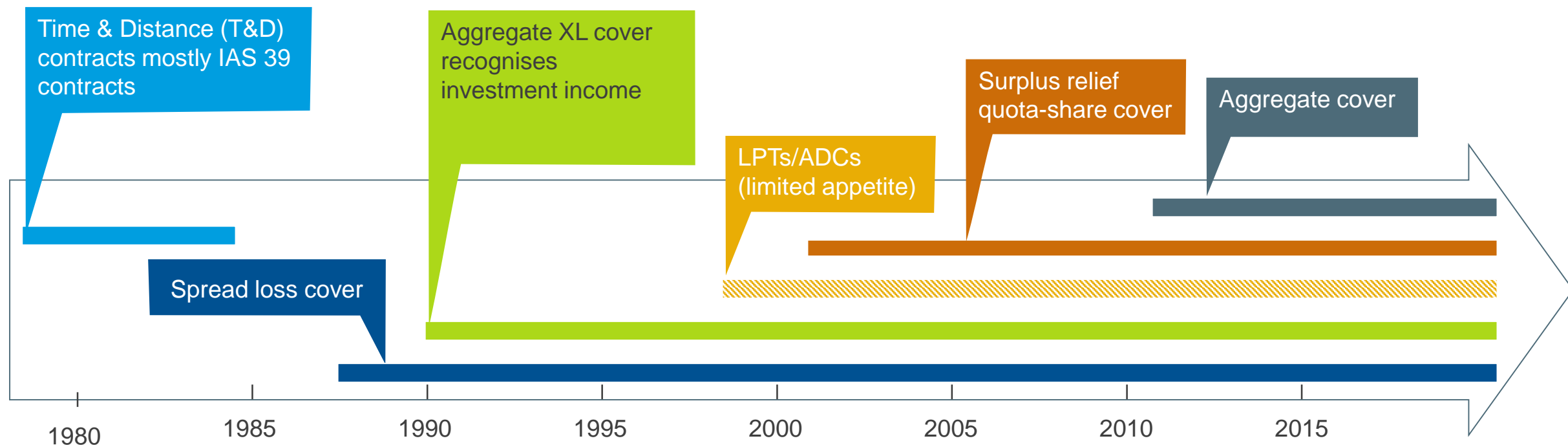
Structured Reinsurance: generation of business strongly opportunity-driven

Gross written premium and deposit accounting volume

FY in m. EUR



From mere T&D contracts to an all-round Advanced Solutions reinsurer

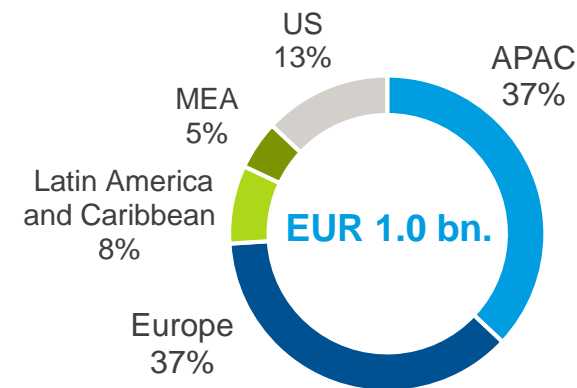
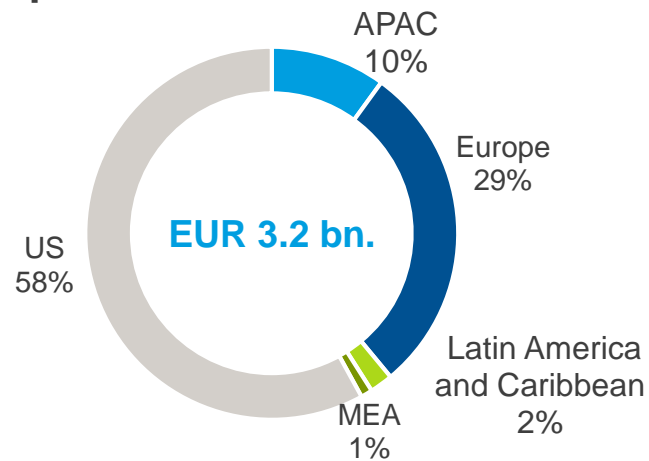


Portfolio overview Structured Reinsurance: geographical breakdown

Gross written premium

U/Y 2018

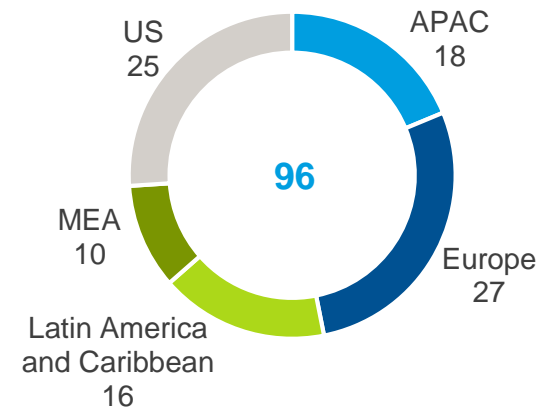
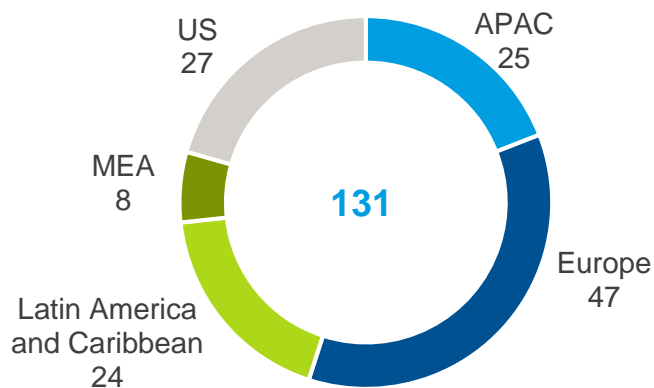
U/Y 2014



Number of contracts

U/Y 2018

U/Y 2014



Structured Reinsurance: our underwriting approach

Active business in 50+ countries and own marketing worldwide

- Sound geographic diversification

Underlying business identical with traditional P&C business

- No differences regarding systemic or cyclical market risks
- P&C underwriting risk – premium risk reflected in a separate module of our internal model, reserve risk reflected in overall reserve risk module with own parameters, Cat risk included in our overall Cat module
- Market, credit, operational & intangible asset risk → incl. in our DFA in the same way as for our traditional business

Less exposed to NatCat compared to traditional P&C book

- Disproportionately low loss share for NatCat events
- Focus on lower layers (i.e. exposure driven merely by frequency rather than severity)
- Remote exposure to vendor model failure risks

Delay in profit realisation compared to the premium earning pattern

- Only when it is evident that the full profit is achieved shall the full profit be recognised

Contributing to the earning targets of Hannover Re

- xRoCa accretive (double-digit xRoCa on average in recent years)

Structured Reinsurance: our underwriting approach (cont'd)

Margin requirement on single contract level as a function of ERD and volatility (among other parameters)

- Individual reflection of transferred risk and volatility in pricing
- Full alignment with traditional margin requirement on risk-adjusted basis

Full actuarial modelling (incl. ERD testing) for every transaction

- Capital allocation on modelled portfolio basis

Treaty terms usually between 1 and 3 years (up to 5 years possible under underwriting guidelines)

- Ensure flexibility to react in the event of spontaneous market cycle changes

Compliance Committee Review for every new transaction

- Highest compliance standards in the industry

Regular exchange with regulators and strict conservative underwriting philosophy concerning compliance

- Avoid reputational risks to Hannover Re

Exemplary case study of a US auto quota share on a net basis

Structure:

- Sliding scale commission (~3%p loss ratio scale)
- Net quota share after inuring reinsurance

Motivation:

- Supporting growth opportunities in presence of a hardening US auto market
- GAAP Premium Leverage:
reduction of net premium written to common equity ratio



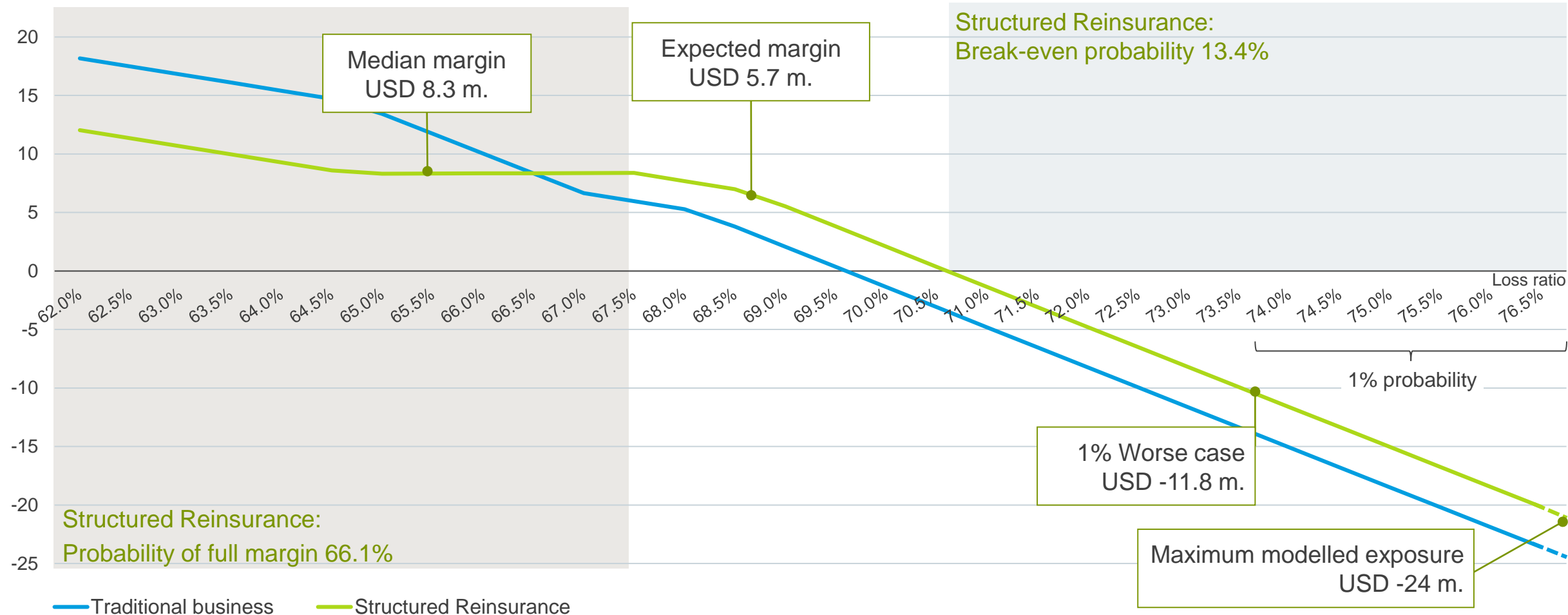
Ceded premium in the region of USD 350 m. per annum at a 2% margin

Present value of reinsurer's result for various levels of loss ratios

Case study US auto quota share

Present value of reinsurer's result

in m. USD



Conclusion: Hannover Re's approach towards Structured Reinsurance

- Advanced Solutions is one of the leading providers for structured reinsurance products worldwide
- Higher demand for solvency relief transactions worldwide (including but not limited to BCAR enhancement in the US)
- We focus on high-quality concepts, innovative ideas, tailor-made solutions ("Advanced Solutions") and hybrid capital-like products
- We continue to actively promote corporate captive solutions: in particular, multi-line (multi-year) Aggregate Excess of Loss protections are of interest to them (Solvency II-related or surplus protection) as well as straight forward Spread Loss concepts
- Further geographical diversification is our continued target
- We strive to lead our treaties

somewhat
different

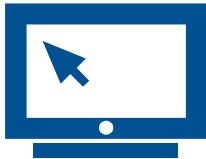
2

Cyber business

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Cyber insurance, example of a breach pay-out

- Unauthorised access to computer system of company
- Access allegedly existed over a long period of 5 years



- Loss of data:
~380 m. sets of personal identifiable data were allegedly stolen, incl. addresses, passport numbers and credit card details
- Data had apparently not yet been sold

- 100 class action lawsuits in US/Canada
- Estimated costs: ~ USD 500 - 900 m.
- Insurance: cyber policy indemnified up to full limit of USD 250 m.



Cyber insurance - affirmative coverage

First party

- Data/System Recovery Costs
- Cyber Incident Response Expenses
- Cyber Extortion
- (Contingent) Network Interruption

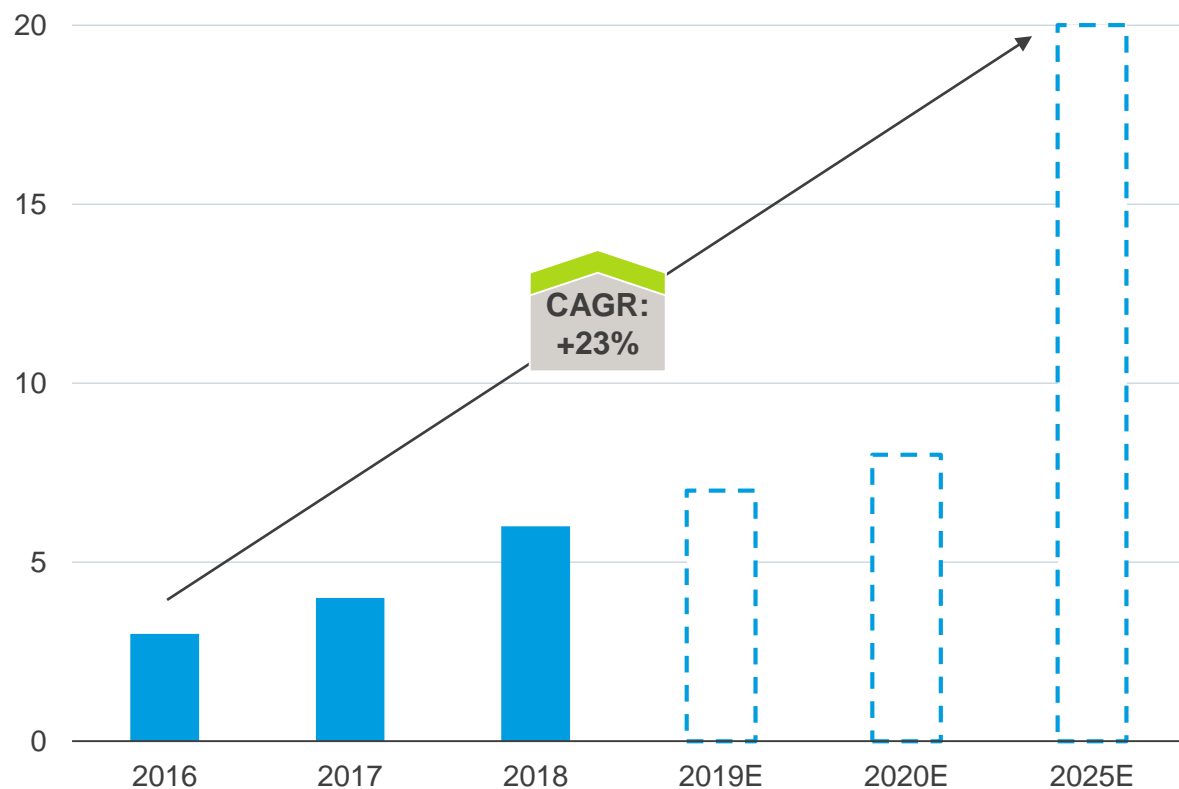
Third party

- Network Security Liability
- Privacy Protection Liability
- Media Liability

- Modular concept, pick sections that are requested by client
- Specific language differs per policy, no standard market wordings in the large corporate sector
- Cyber is often neither explicitly excluded nor included ([silent exposure/non-affirmative](#)) in traditional policies

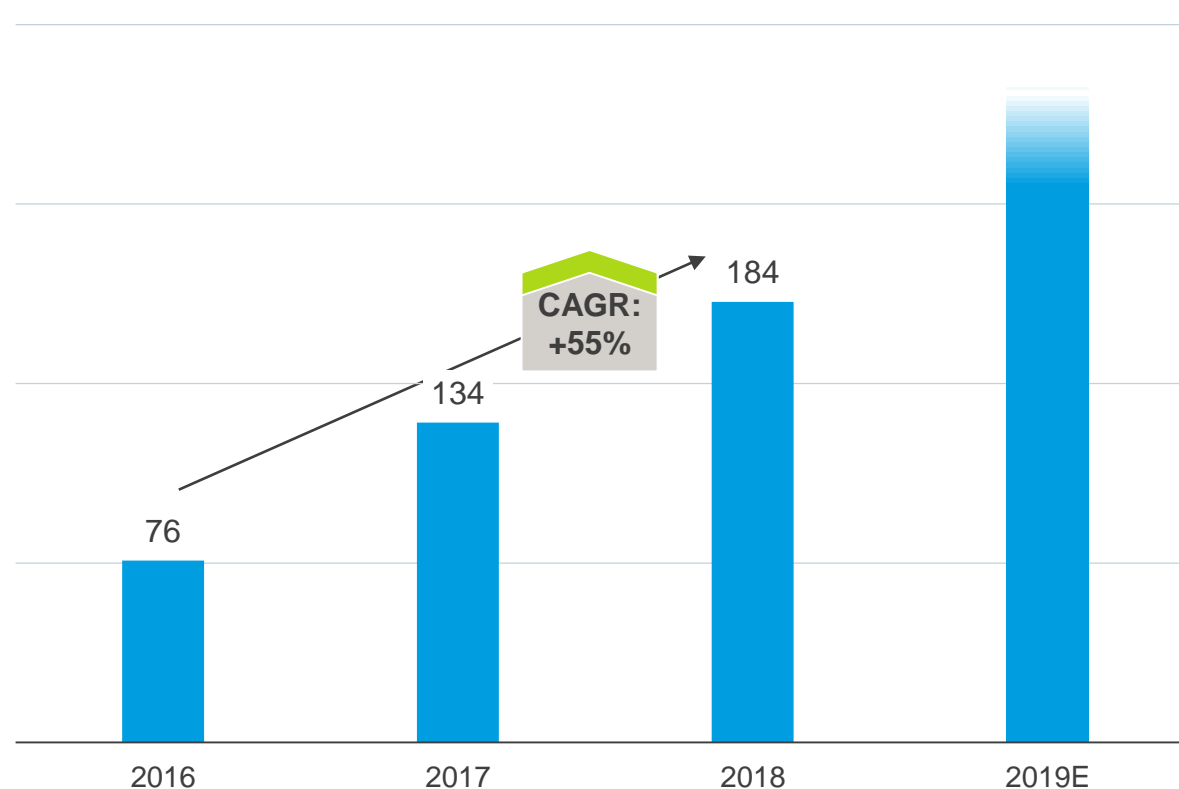
Cyber: policies in demand, potential for growth

Estimated global cyber insurance market GWP¹⁾ in bn. USD



Hannover Re cyber GWP (U/Y)

in m. EUR



U/Y = Underwriting Year

1) Source = own calculation, interpolation on the basis of surveys from PWC, KPMG, Deloitte, Zion, AON, ABI, Munich Re, Orbis, AGCS, LBBW, Hiscox

Underwriting cyber: risks and opportunities

We have an average loss ratio of ~19% (2016 - 2018)

Risk strategy

- Closely monitor our exposure to Fortune 500/1,000 risks
- Include loss caps or event limits on quota share
- Avoid cover on natural perils and bodily injury
- Continue developing our existing data base leading to better risk assessment and pricing capabilities

Risk monitoring

- Bordereaux reviews for Fortune 1,000 risks and highly exposed industries
- Realistic Disaster Scenarios (RDS) for cyber specific scenarios including silent cyber exposure
- Balance overall portfolio

Opportunities

- Specific coverage with separate and additional premium
- Diversification, i.e. no/or limited direct correlation with other coverages
- Service proposition in respect of risk mitigation and claims handling
- Future development of event definitions will bring new reinsurance opportunities for event coverages

Conclusion: Hannover Re's approach towards cyber

- Demand for cyber (re-)insurance will continue to increase
- Demand is becoming more diversified from a geographical perspective and in terms of industry type
- Various initiatives in the industry to move away from the situation of silent exposures (i.e. exclude or affirmatively include)
- Data now accumulated over a meaningful period which is allowing more precise pricing and risk evaluation
- We work in partnership with our clients to develop cyber products for their markets – especially for SME business
- We are already well positioned in the market and will continue to grow with our clients

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Growth opportunities in Asia

Hannover Re's view

Sven Althoff / Claude Chèvre, Members of the Executive Board
22nd International Investors' Day
Frankfurt, 23 October 2019

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Agenda

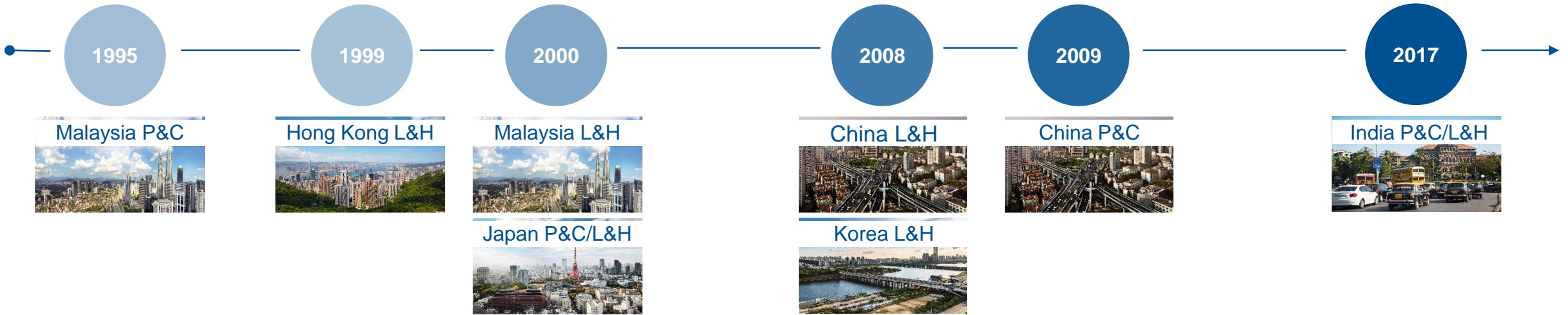
1 It's all about Asia

1.1 Past and present activities of Hannover Re

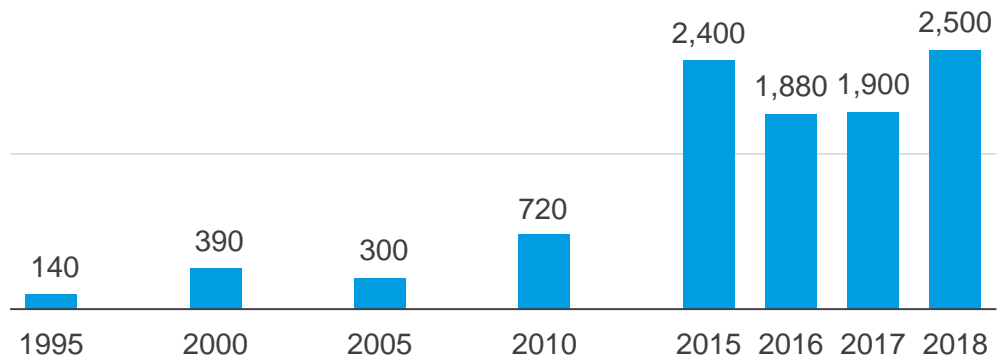
1.2 Economic and (re-)insurance market development at a glance

1.3 An attractive investment opportunity and the way of getting things done

Asia: development



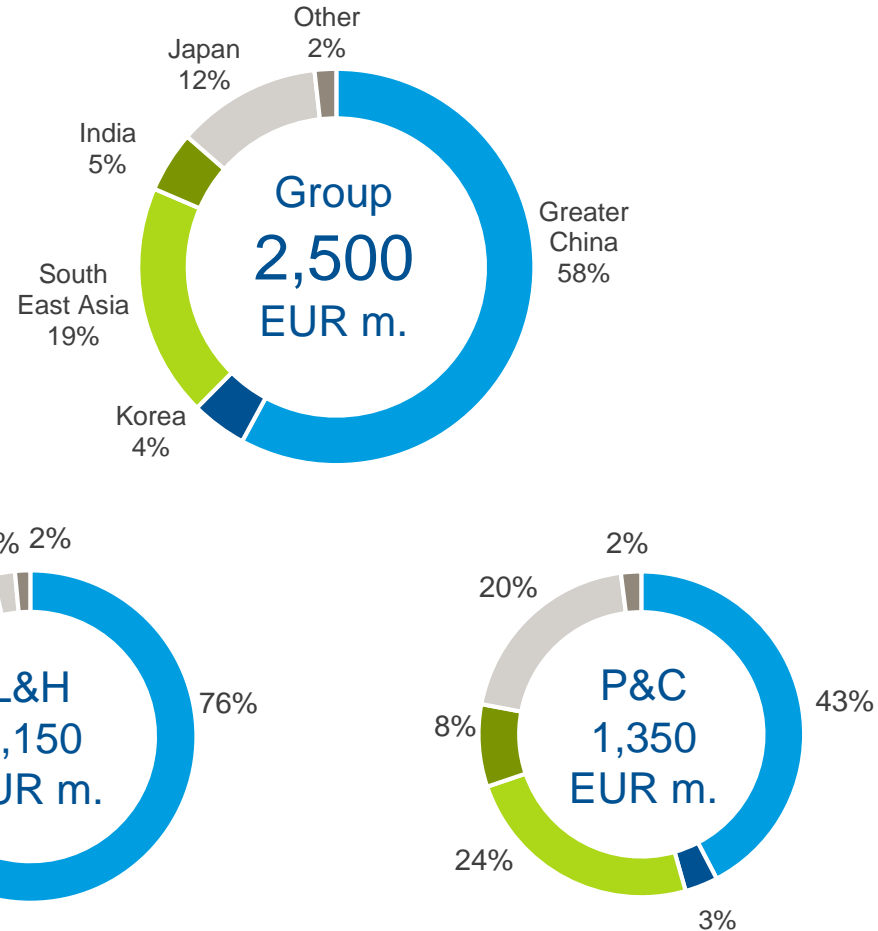
Premium – P&C and L&H in EUR m.



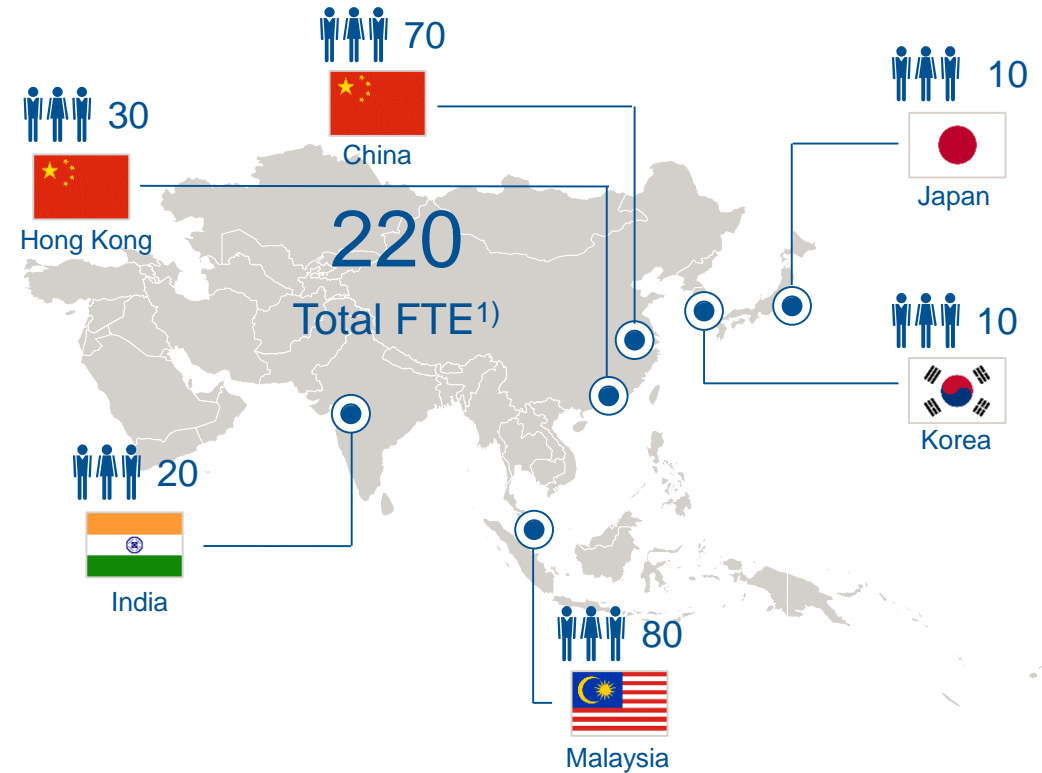
Constantly expanded positioning

Asia: today

Premium – P&C and L&H per region



Staff – P&C and L&H per location



Figures as at 31 December 2018 / 1) Full-time equivalent

The world's economic centre will gravitate towards Asia

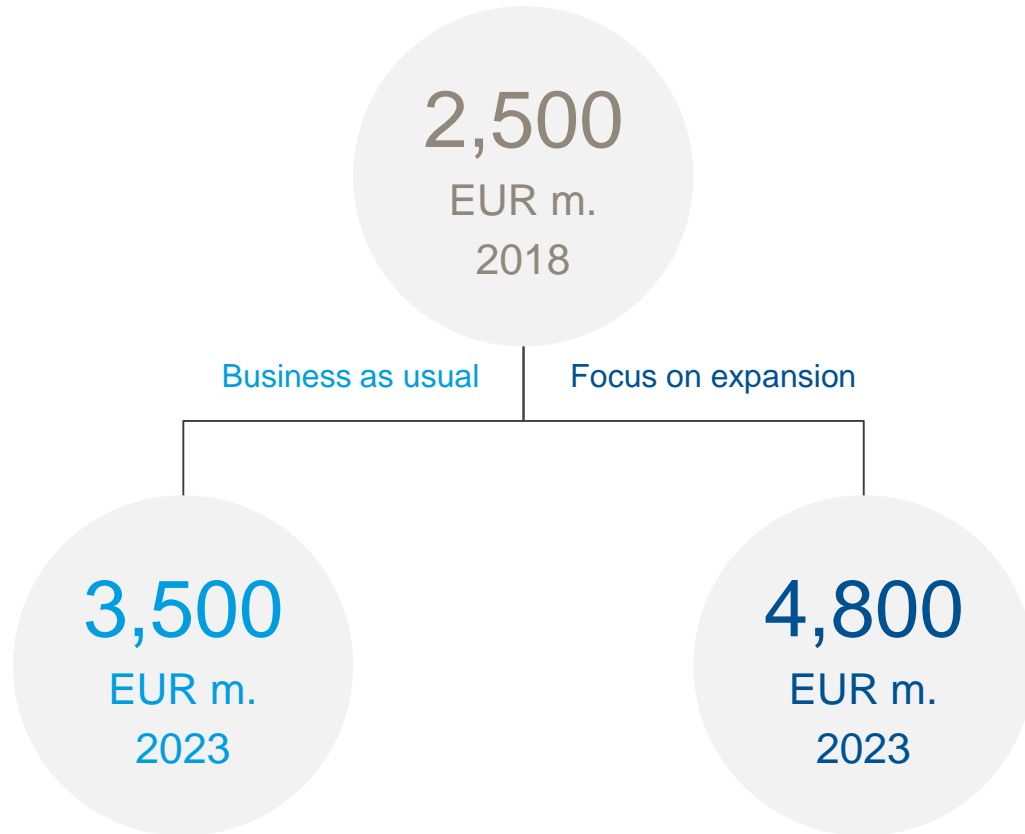


- 1 Growth potential: higher than for other continents
- 2 Expected global GDP¹⁾ share: 36% in 2029 (28% in 2018)
- 3 Expected insurance penetration rate: > 3.0% (medium term)
- 4 Expected average nominal premium growth: ~7% p.a. (medium term)
- 5 Expected global insurance share: 43% in 2029 (31% in 2018)
- 6 Expected reinsurance cession rate: > 5% p.a. (medium term)

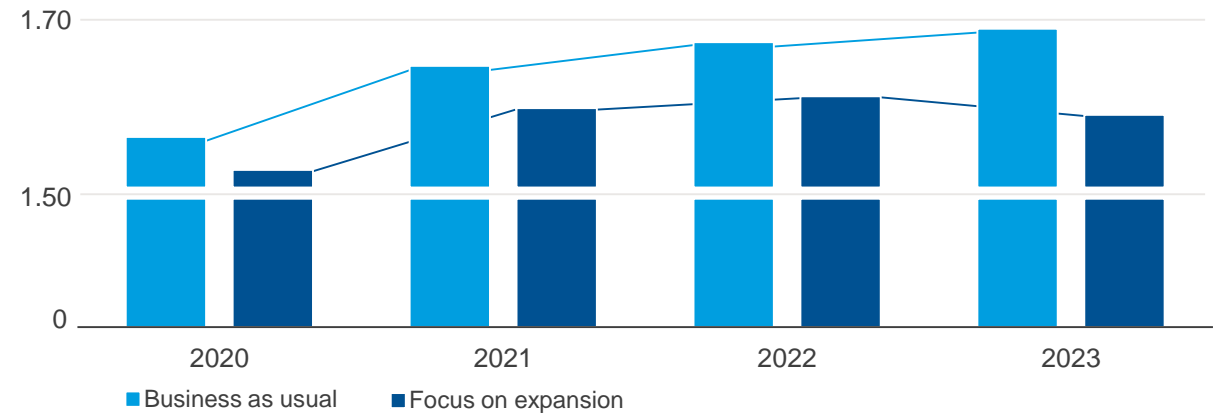
1= Gross Domestic Product / Source: Axco, IMF, own research

Asia: an attractive investment opportunity

Expected premiums – Asia P&C and L&H



Expected cost ratio – Asia P&C and L&H



Asia: the way of getting things done

Build on existing infrastructure

- No additional office locations
- Fully decentralised underwriting
- Local capital in line with business
- Headcounts in line with potential

Strengthen client centricity

- Fast decision-making process
- Enhanced local expertise
- Improved service proposition
- Access to decision makers

Invest in growth areas

- Specific strategic business initiatives
- Bundling services, data analytics and expertise
- Broader product spectrum
- Attractive risk/reward profile



Focussed approach

Asia: a perfect fit with our global approach

Somewhat different

- Client proximity
- Client centricity
- Asian network approach instead of Asia hub
- Local empowerment & global steering

Cost leadership

- Avoid costly infrastructure
- Optimise network interaction
- Balance local set-up and central services / controls
- Implement gradual funding plan



Asia: our targets

| Business group | Key figures | Group (extract) | Asia |
|-------------------------|---|-----------------|------------|
| Property & Casualty R/I | Gross premium growth ¹⁾ | 3 - 5% | 10 - 11% |
| | Combined ratio ²⁾ | ≤ 97% | ≤96% |
| | EBIT margin ³⁾ | ≥ 10% | ≥ 10% |
| Life & Health R/I | Gross premium growth ⁴⁾ | 3 - 5% | 7 - 9% |
| | EBIT growth ⁵⁾ | ≥ 5% | ≥ 9% |
| | Value of New Business (VNB) ⁶⁾ | >220 EUR m. | >80 EUR m. |

1) On average throughout the R/I cycle at constant f/x rates

3) EBIT/net premium earned

5) Annual average growth over a 3-year period

2) Incl. large loss budget

4) Organic growth only; target: annual average growth over a 3-year period, at constant f/x rates

6) Based on Solvency II principles; pre-tax reporting

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*somewhat
different*



Financial Solutions & support in the digital age

Usual risks with unusual RoE potential - US market

Dr. Klaus Miller, Member of the Executive Board
22nd International Investors' Day
Frankfurt, 23 October 2019

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Agenda

- 1 Latest developments: US mortality business

- 2 At a glance: US life insurance market

- 3 Some facts: US Financial Solutions business

- 4 Brief insight: digital age

Security Life of Denver (SLD) YRT rate increase

Latest developments



101

Company groups



778

Treaties



332 m.

Recaptures 2018
IFRS losses



Up to 45 m.

Expected recaptures 2019
IFRS losses¹⁾

The vast majority did not challenge SLD's right to increase rates.

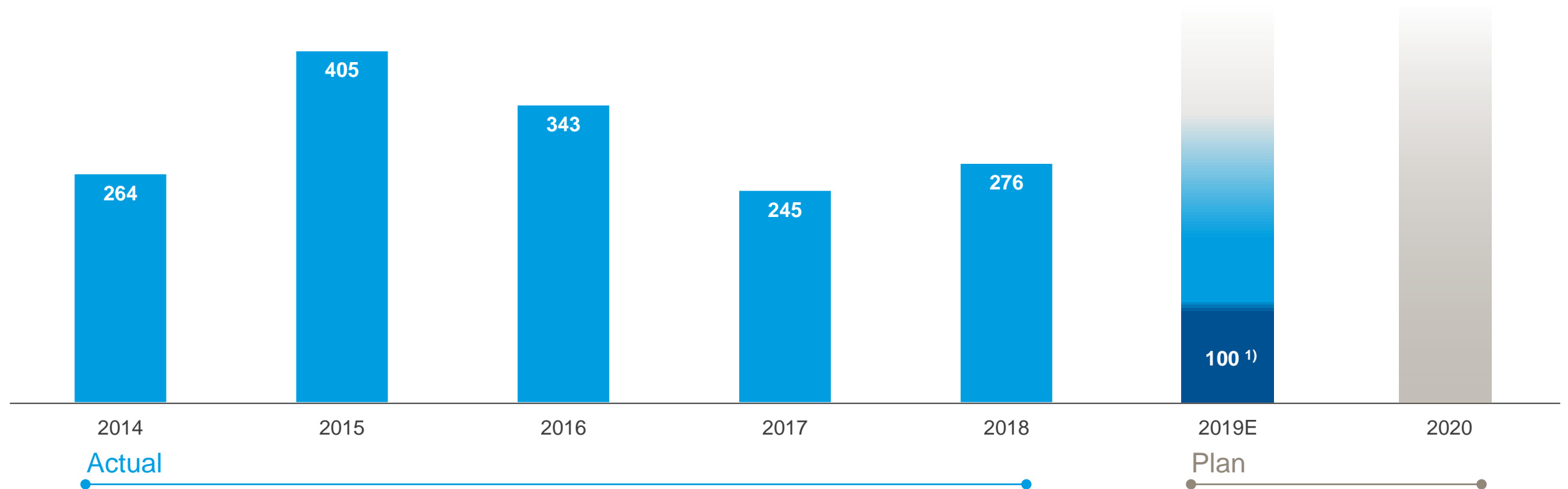
No more than a handful of potential disputes.

1) As at F2/2019

Resolving the issue of legacy US mortality business... ... will have a significant positive effect on L&H EBIT in the future

L&H EBIT

in m. EUR



1) One-off effect Viridium as of Q2/2019 / E = Estimated

Did we miss anything...

... where things could go wrong in the future

Critical issues in the US L&H market

- Long Term Care
- Reduced mortality improvements
- Post Level Term



All are manageable for Hannover Re



US life insurance market

Top US life reinsurers by life insurance in force, 2018

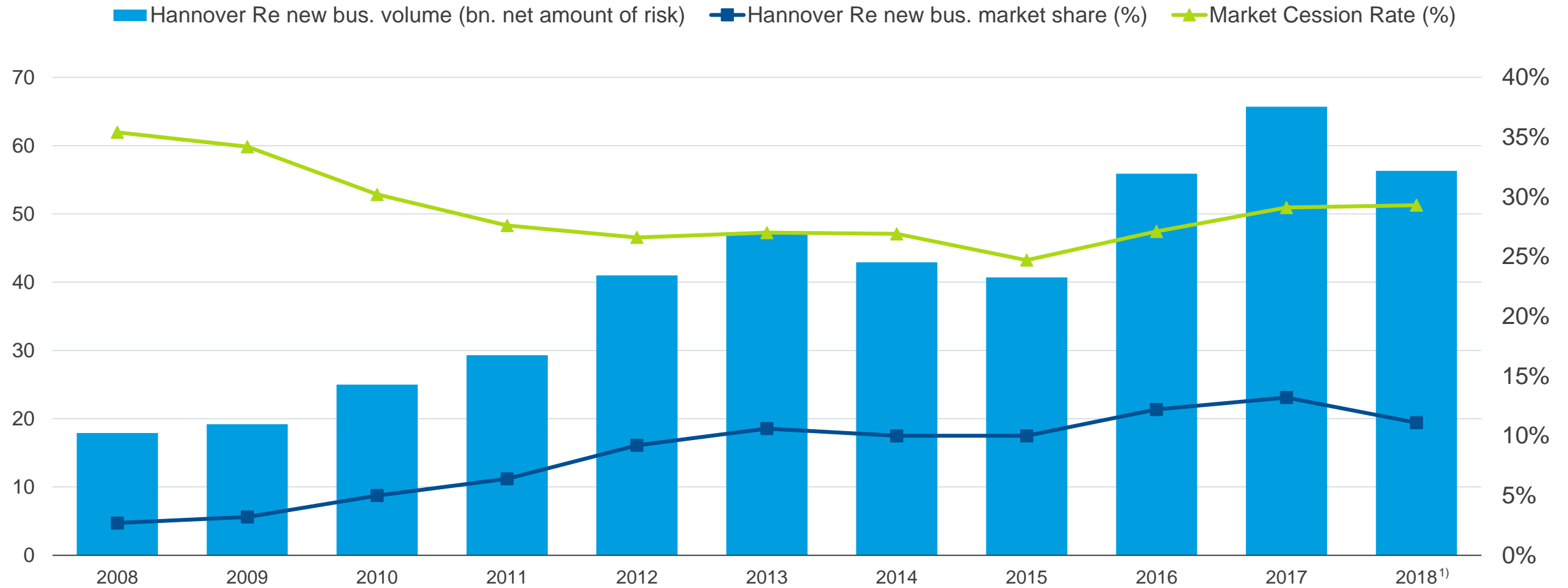
| Company group | Total amount in force (USD 000s) | % of total individual | Group |
|--|-------------------------------------|--------------------------|-------|
| Canada Life | 3,138,651,962 | 9.2 | 90.8 |
| RGA Reinsurance Co. | 1,875,293,276 | 94.9 | 5.1 |
| SCOR Life US Group | 1,840,027,921 | 98.2 | 1.8 |
| Swiss Re L&H America Inc. | 1,405,276,831 | 91.7 | 8.3 |
| Munich American Reassurance Co. | 1,354,817,191 | 72.1 | 27.9 |
| Hannover Life Reassurance of America | 1,307,947,537 | 99.9 | 0.1 |
| General Re Life Corp. | 187,945,000 | 93.4 | 6.6 |
| Employers Reassurance Corp. | 108,918,728 | 100.0 | 0.0 |
| Wilton Reassurance Co. | 75,429,161 | 100.0 | 0.0 |
| Optimum Re Insurance Do. | 70,089,090 | 100.0 | 0.0 |
| PartnerRe Life Reinsurance Co of America | 58,225,149 | 100.0 | 0.0 |

Despite the growth potential in Asia, Latin America and other areas, the US will remain the largest market for L&H business.

Source: AM Best data and research, 12 April 2019

Traditional Mortality Risk Business Development

2009 - 2018



SOA Life Reinsurance Surveys 2008-2018

1) 2018 cession rate direct face amount estimated at this time, and based on 1% actual growth in 2018 direct premiums

Capital funding has varying costs

Asset subordination view

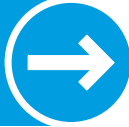


Capital funding requirements

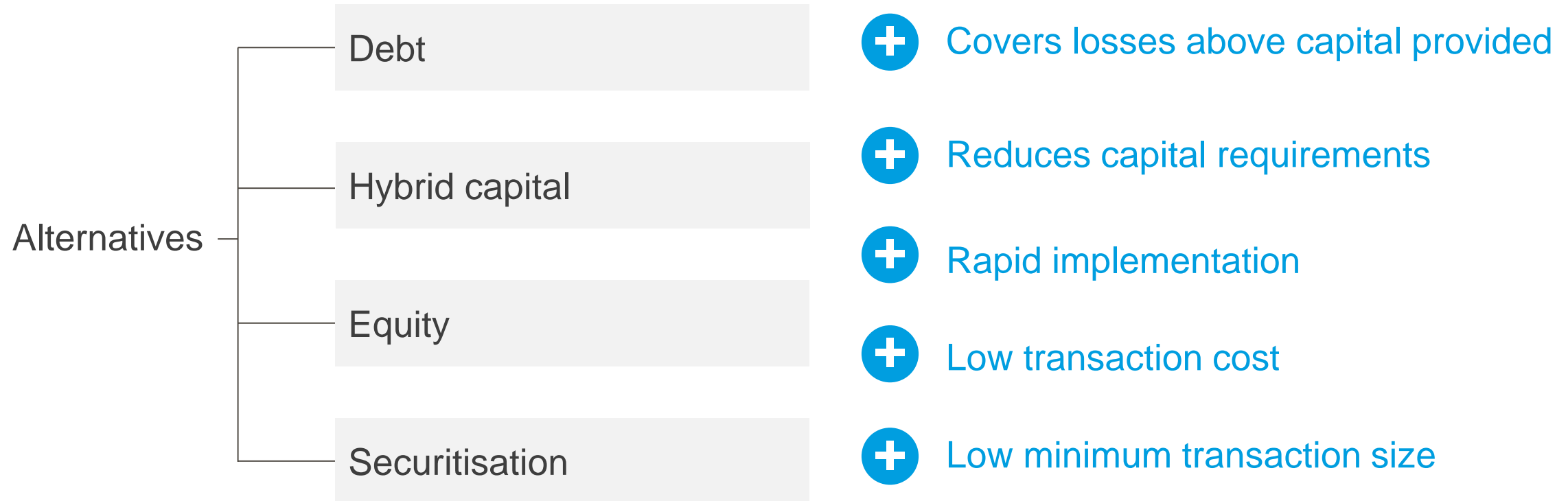
Alternative capital sources

Financial solution repayments are subject to business performance

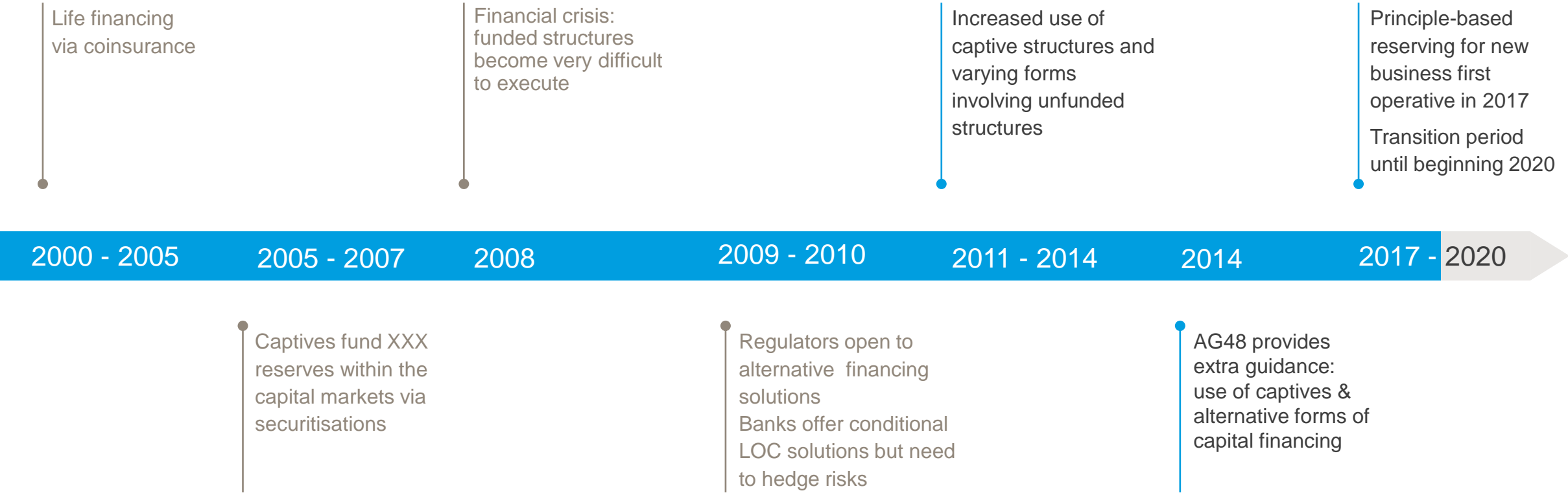
Financial solutions



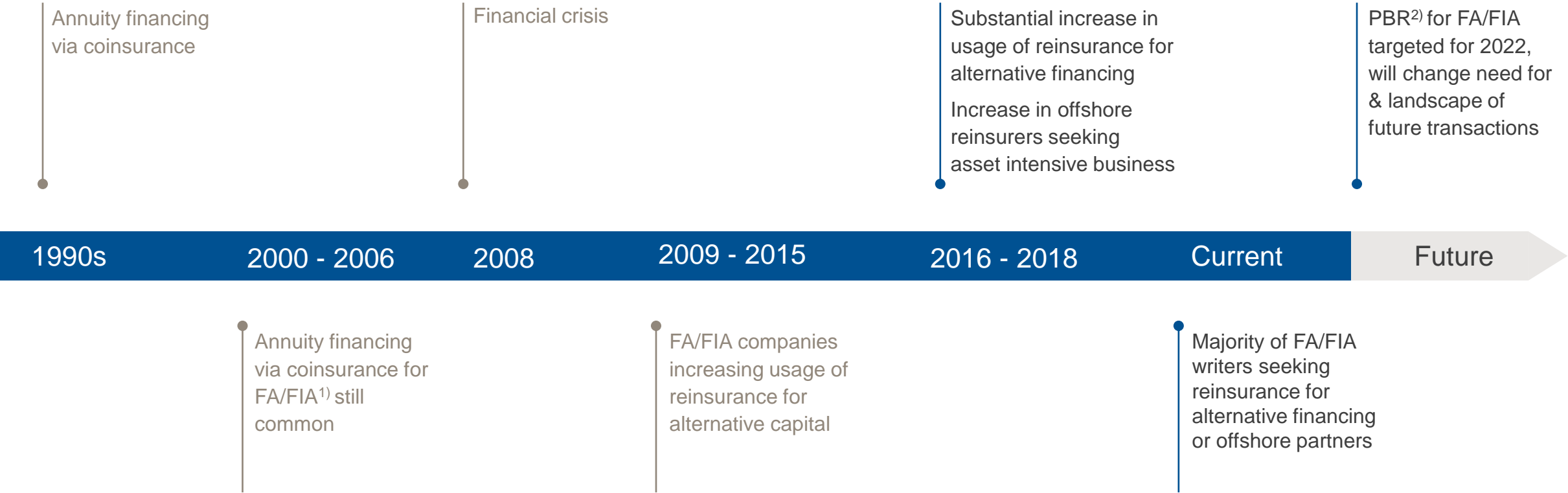
What sets reinsurance apart



US landscape: individual life insurance financing



US landscape: retirement market



1) Fixed annuities / Fixed Indexed annuities

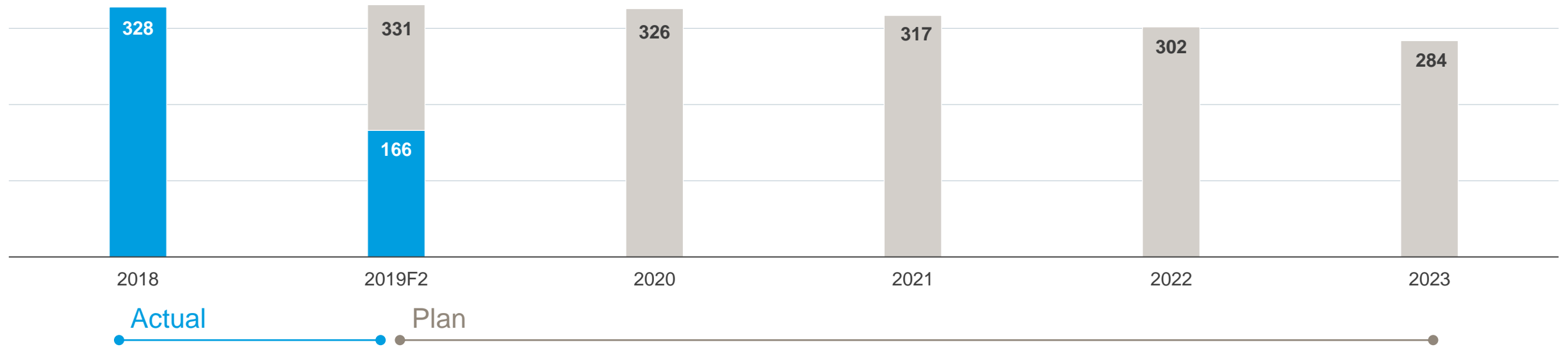
2) Principle-based reserving

Our US Financial Solution business

In-force only

All figures

in m. USD



No new business included

Some facts about Financial Solutions



Underlying risks

Identical for Financial Solutions and Risk Solutions



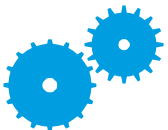
Negative developments

Would hit Risk Solutions earlier than Financial Solutions



Treaty term

Typically between 5 and 20 years



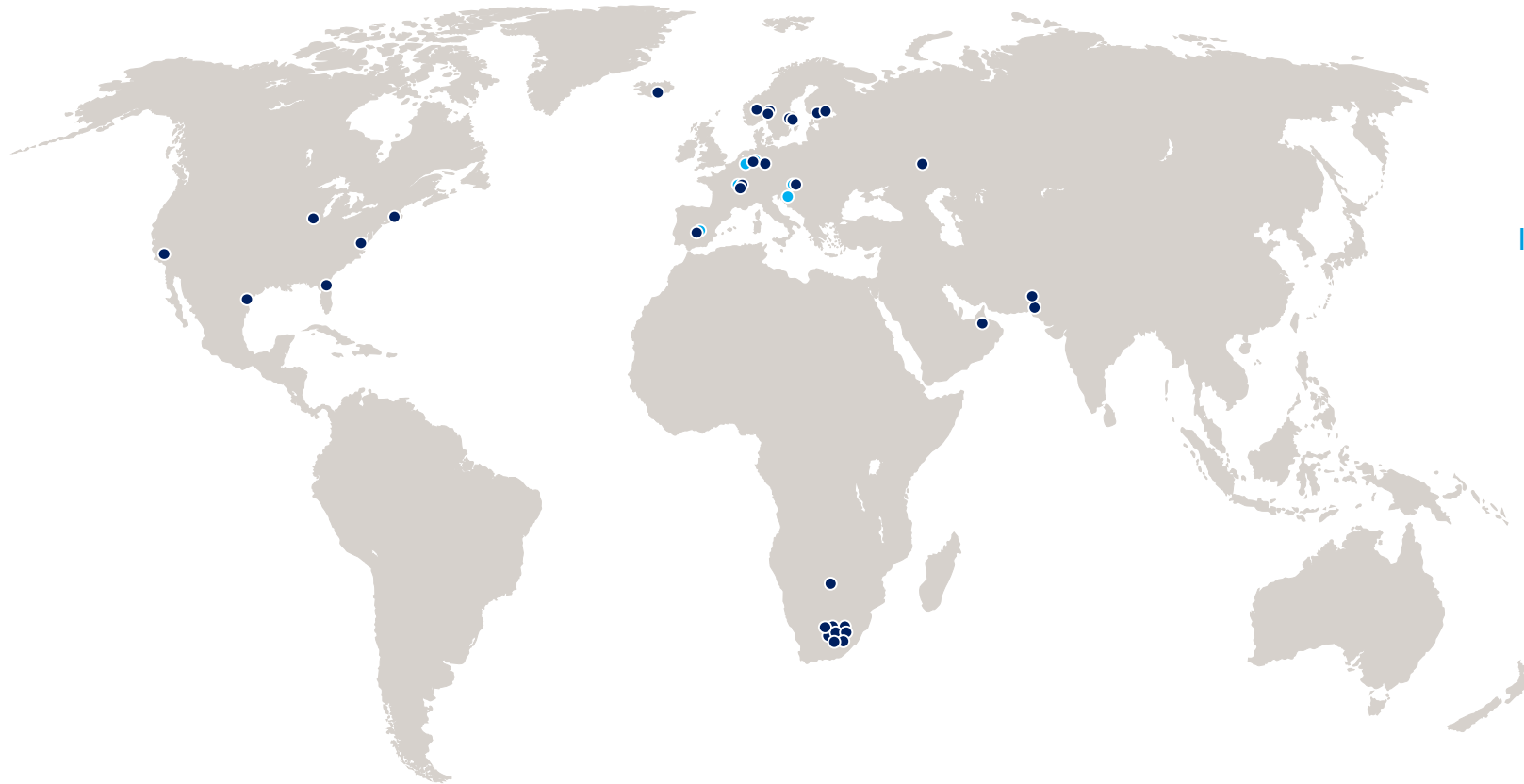
Risk profile

Stable over term; hence stable profit signature



hr|ReFlex & hr|Quirc

Support in the digital age



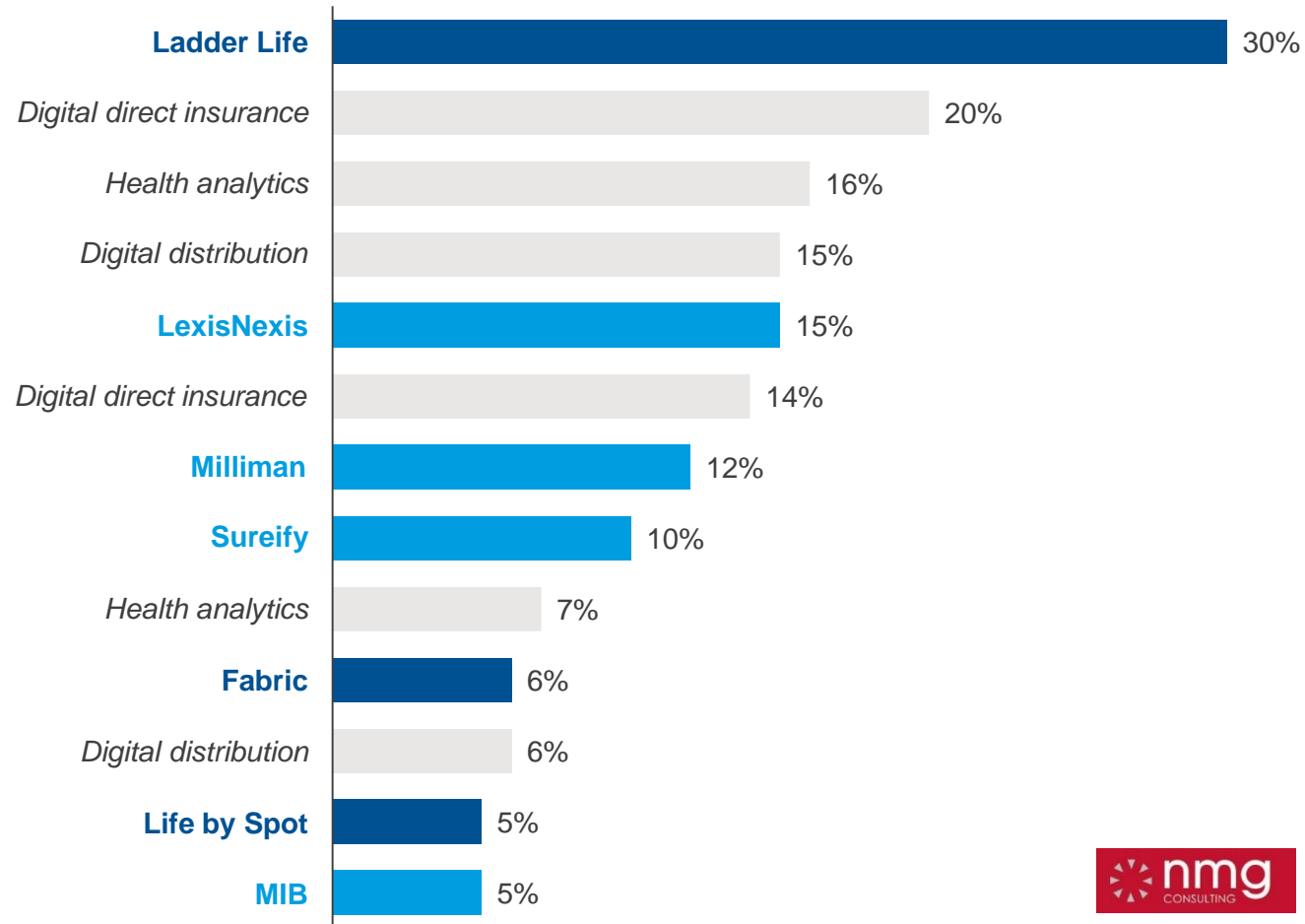
Prospects **40+**

In development

In production

As at September 2019

Support in the digital age – nominations 2019



■ Exclusive relationship ■ Close relationship

Source: NMG's 2019 US Individual Mortality Program



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We're extremely pleased to partner with an industry-leading innovator. We are deeply impressed by the quality of Hannover Re's risk assessment, their hr|ReFlex underwriting technology platform and the spirit of partnership needed to delight the modern consumer.

Jamie Hale,
CEO & Co-Founder, Ladder



FinTech Breakthrough award 2019

Top company InsurTech innovation

FinTech Breakthrough



Real Simple Smart Money award 2019

Best insurer to get life cover easy

Real Simple



Model insurer of the year award 2018

Innovation and emerging technologies

Celent Model insurance



Most innovative companies award 2018

Revamped life insurance offerings*

Fast company

* In cooperation with Social Finance

Key takeaways

1

Security Life of Denver

- Resolving issue of legacy US mortality business is on track
- Positive effect on future L&H EBIT

2

Financial Solutions

- Minimal exposure to market risks or other non-core risks
- Strong run-off earnings expected paired with promising new business potential

3

Insurtechs

- Will play a major role in (re)insurance value chain
- Hannover Re is an innovative partner



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Concluding remarks and outlook

Jean-Jacques Henchoz, Chief Executive Officer
22nd International Investors' Day
Frankfurt, 23 October 2019

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Pursuing the outperformance journey

We will continuously create value for clients, shareholders and employees

Well positioned in an attractive reinsurance market

Business model continuity is key to further success and outperformance

Additional success factors will be required to secure performance at full potential



P&C

- Underwriting discipline and competitive cost advantage will enable further profitable growth



L&H

- Strong contribution from Financial Solutions
- Active management of in-force book will support profitable growth



Investments

- Ordinary income well supported by alternatives
- Low interest-rate environment is manageable



Risk Management

- Very strong reserving position and capitalisation
- Active management of key exposures (climate change, cyber)

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