



Insights into growing segments in P&C

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Agenda

1 Structured Reinsurance

2 Cyber business

somewhat
different

1

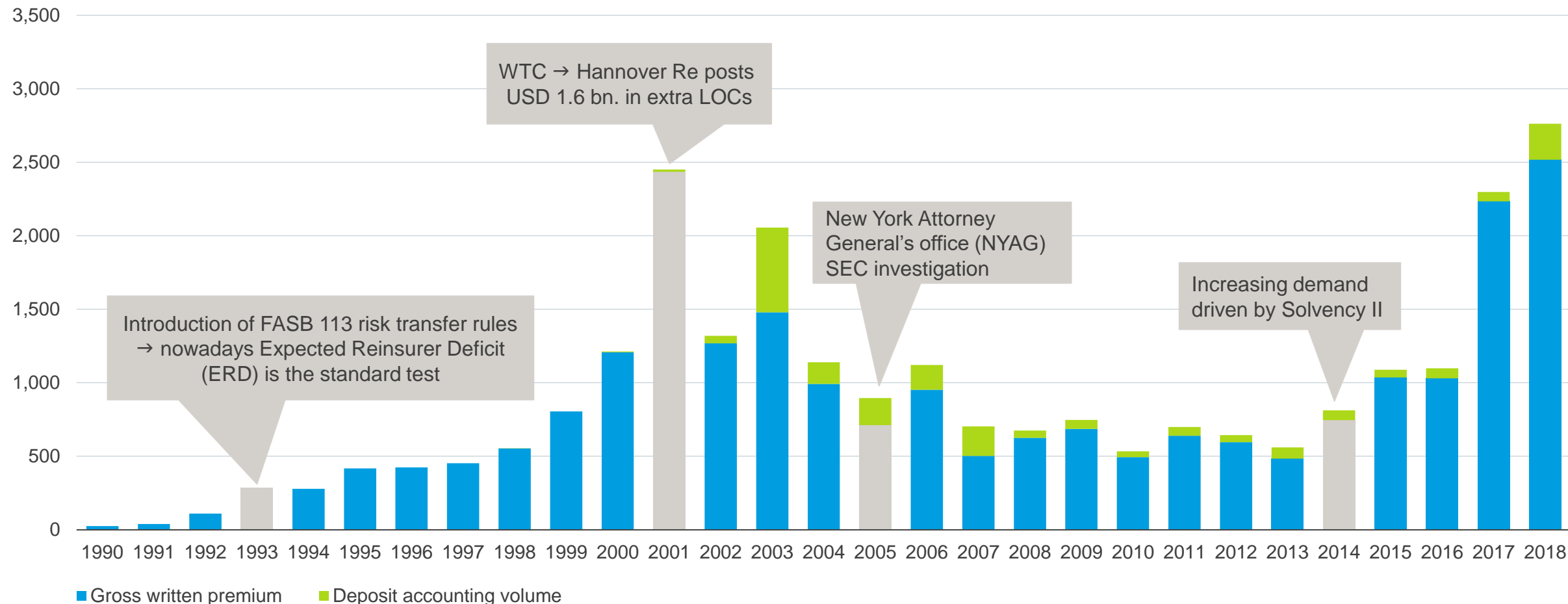
Structured Reinsurance

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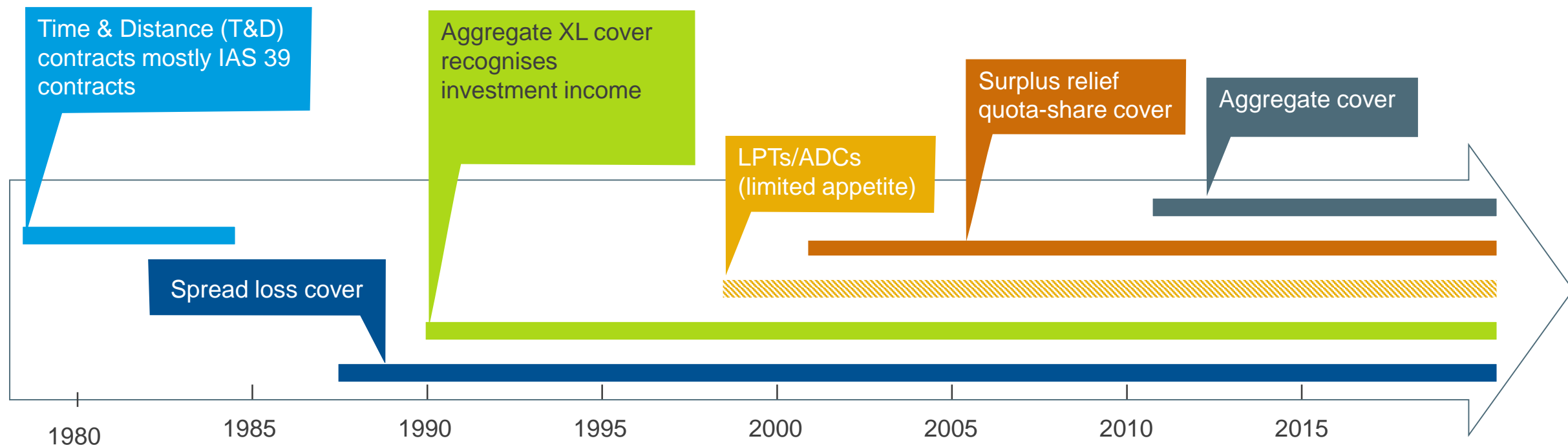
Structured Reinsurance: generation of business strongly opportunity-driven

Gross written premium and deposit accounting volume

FY in m. EUR



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

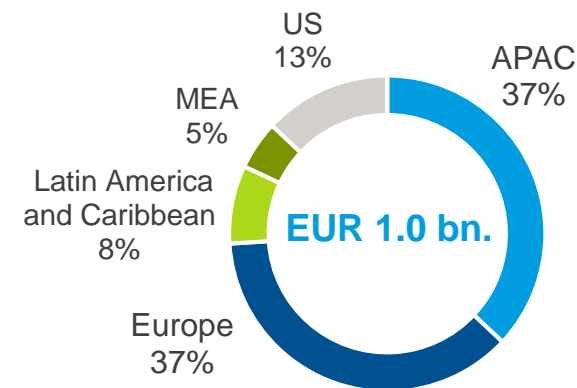
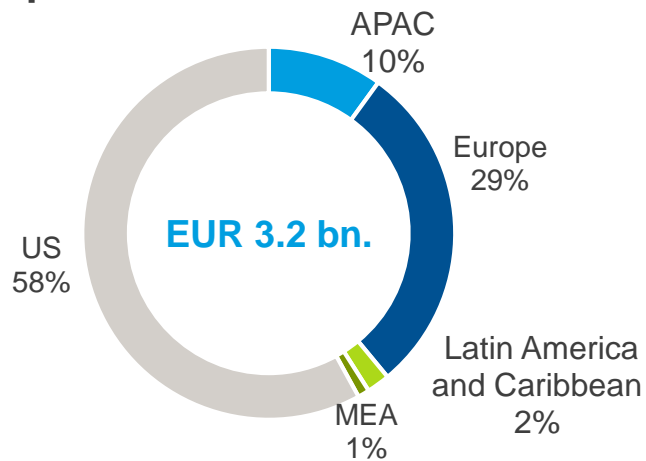


Portfolio overview Structured Reinsurance: geographical breakdown

Gross written premium

U/Y 2018

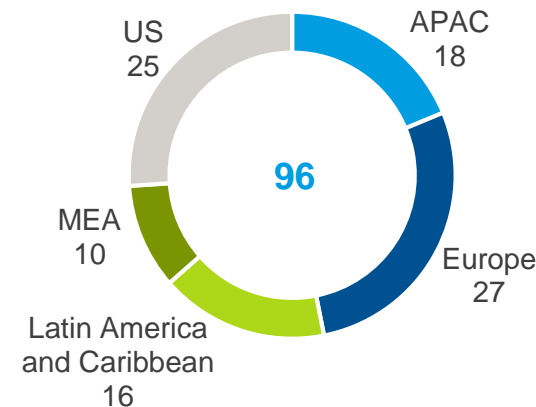
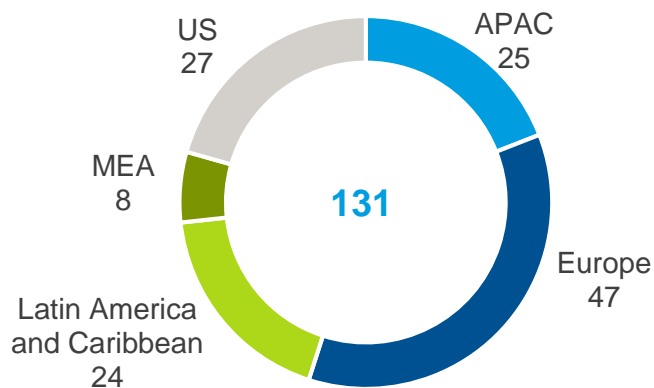
U/Y 2014



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



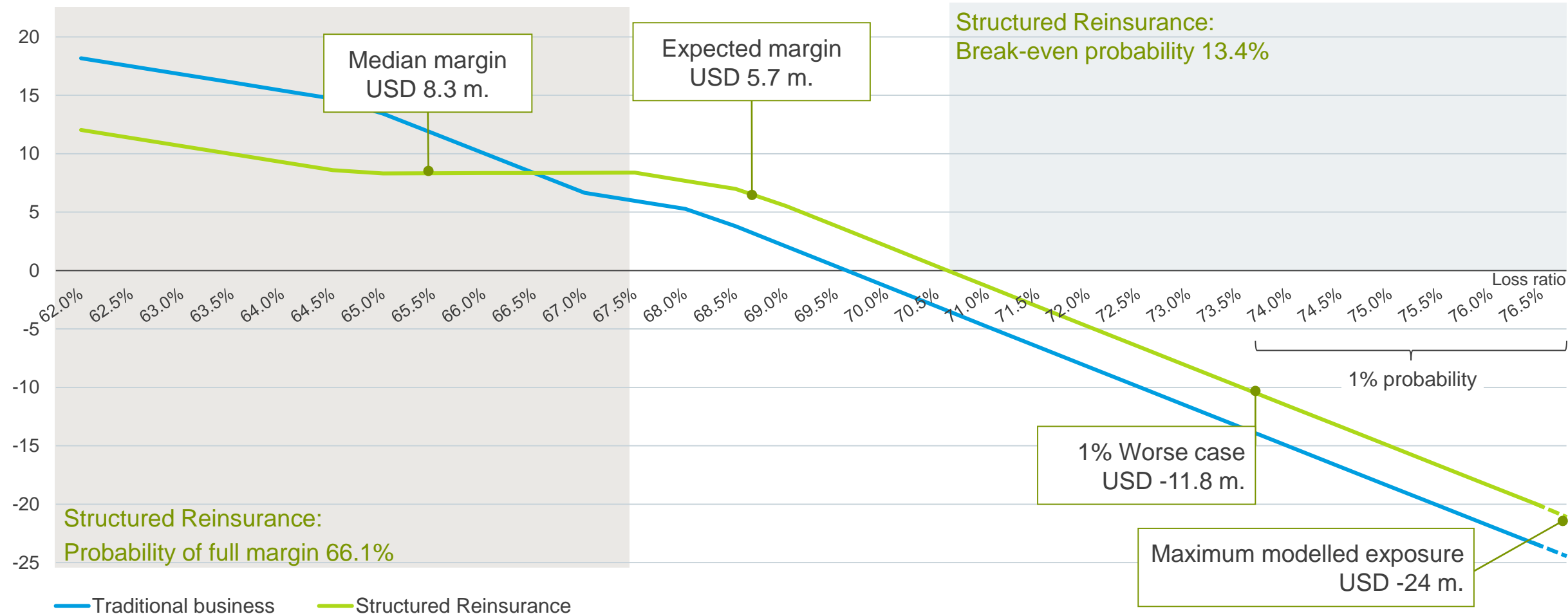
Ceded premium in the region of USD 350 m. per annum at a 2% margin

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

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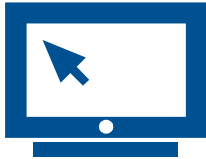
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Cyber business

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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

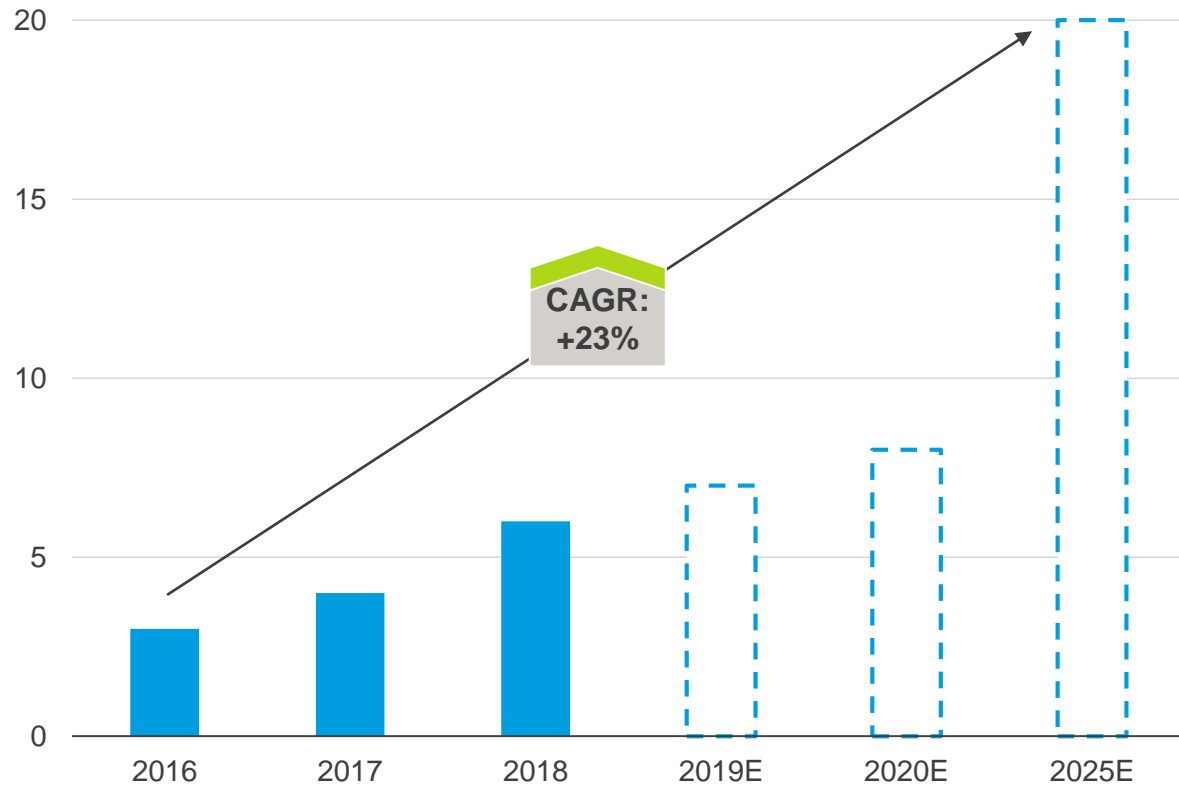
Third party

- 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

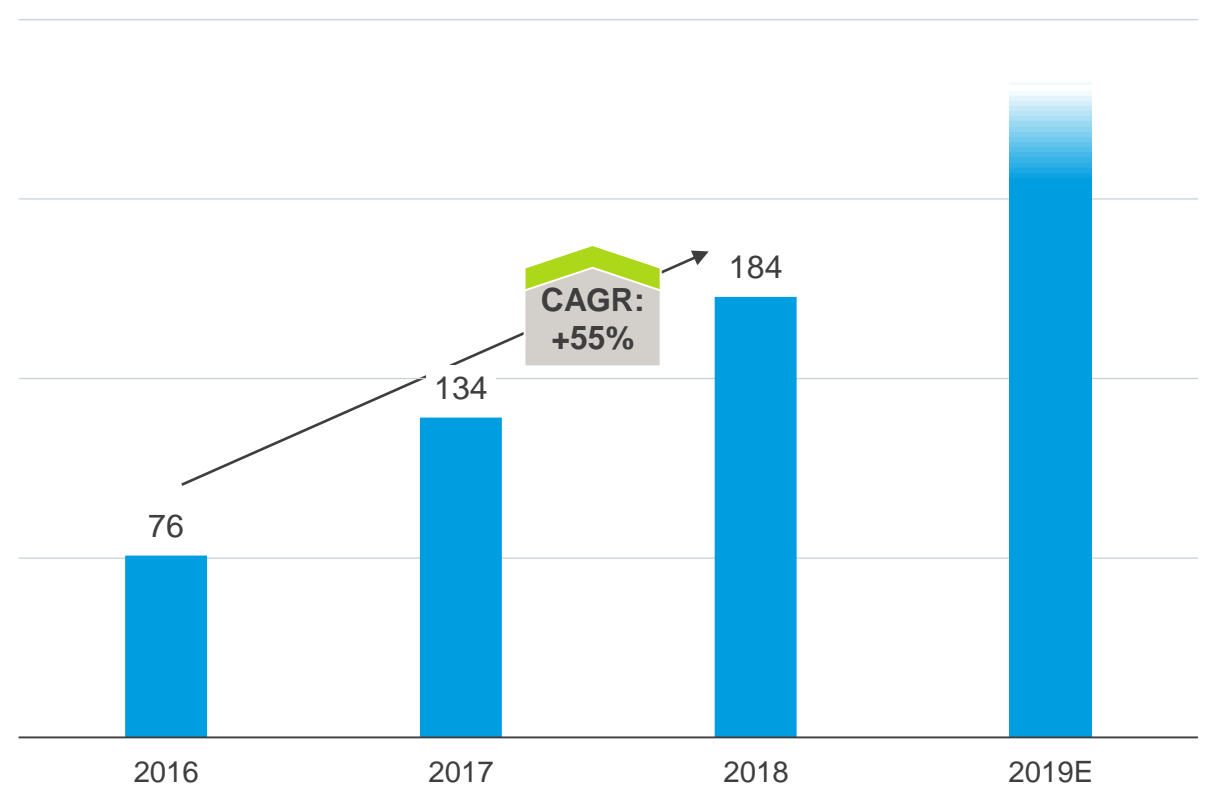
Cyber: policies in demand, potential for growth

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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