

Image: Getty Images/iStock

# Shaping change in insurance

Analysts' conference 2017

Munich, 15 March 2017

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# Munich Re delivers financial stability

IFRS net income

€2.6bn

Meeting guidance

HGB distributable earnings

€4.2bn

Safeguards  
capital repatriation

Dividend per share<sup>1</sup>

€8.60

▲ +4.2%

Solvency II ratio

267%

Well above  
target capitalisation

Debt leverage

12.6%

One of the lowest in the  
insurance industry

Goodwill

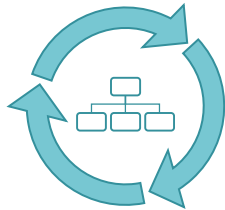
8.9%

Moderate in relation to  
shareholders' equity

# Shaping change in insurance – Seizing long-term opportunities while managing short-term pressure

## Changing competitive landscape

- Emergence of new players and business models
- Proliferation of “alternative” capital
- Transformation of traditional value chain



GOAL

Agile business model

## Digitalisation

- New technologies and partnerships
- Dramatically enhanced availability of data and analysis tools
- Changing customer expectations



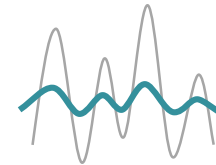
Source: Shutterstock [M]

GOAL

Fostering innovation

## Macroeconomic/political risks

- Persistently low interest rates
- Reflation
- Global political uncertainty



GOAL

Dampening volatility

# Was 2016 the turning point for interest rates and inflation? – Uncertainty remains, while Munich Re is well positioned for all scenarios

Political uncertainty  
a major driver of ...

UK

Brexit negotiations

USA

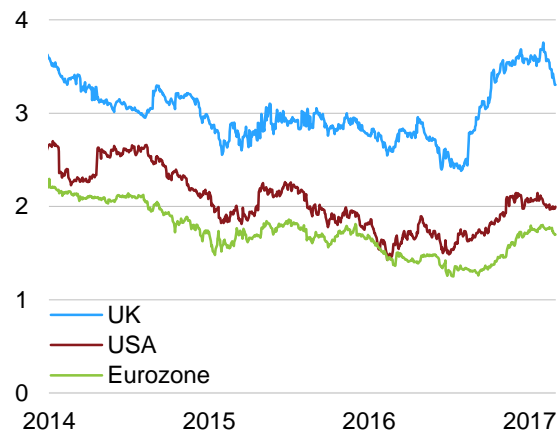
Fiscal stimulus, shift towards  
protectionism

Eurozone

Several elections in 2017  
with uncertain outcome

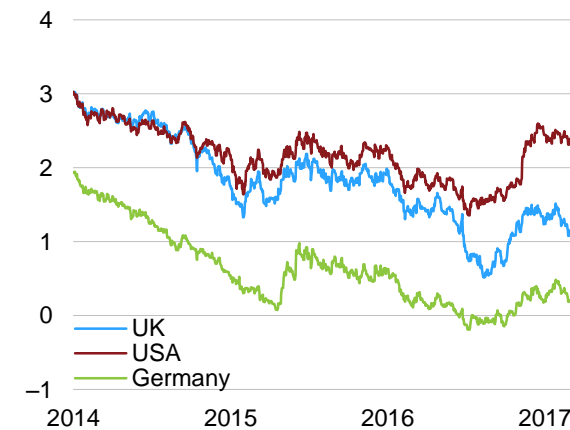
Limit downside – diversification  
and strict risk management

... recent pick-up in  
inflation expectations<sup>1</sup> ...



Prudent reserving approach  
safeguards resilience

... which have pushed up  
government bond yields<sup>2</sup>



Positive for economic risk capital  
and reinvestment yields

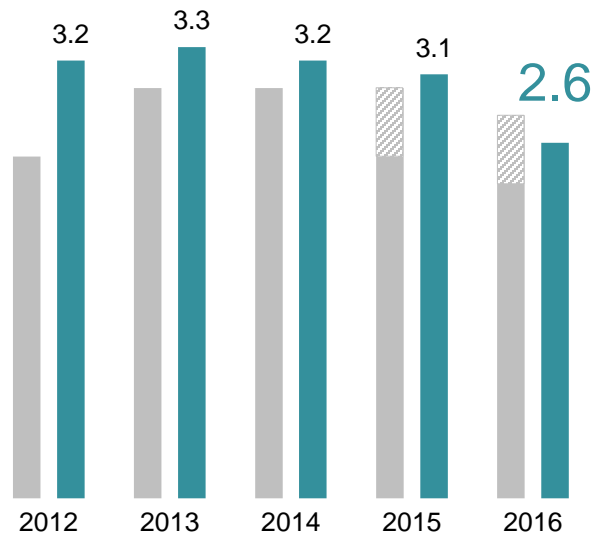
# Predictable results despite underlying earnings pressure

## Predictability

Actual net result vs. guidance

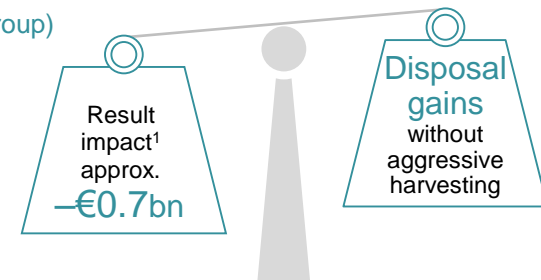
€bn

■ Guidance ■ Actual



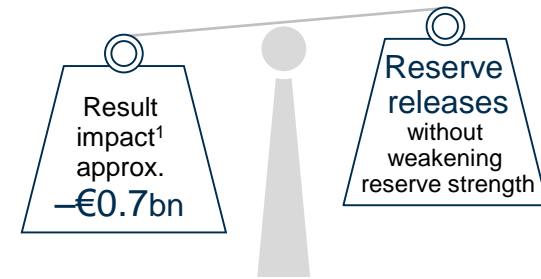
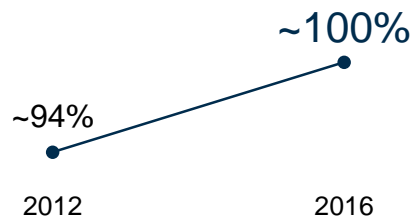
## Low interest rates

Attrition of running yield – Munich Re (Group)



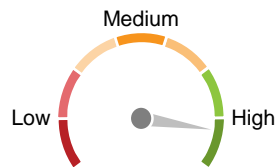
## Competition in P-C reinsurance

Increasing normalised combined ratio



1 Impact on IFRS net result from 2012 until 2016. Rough estimate based on simplified assumption on policyholder participation and tax effects.

# Strong balance sheet supports sound profitability, ...



Strong capitalisation  
according to all metrics

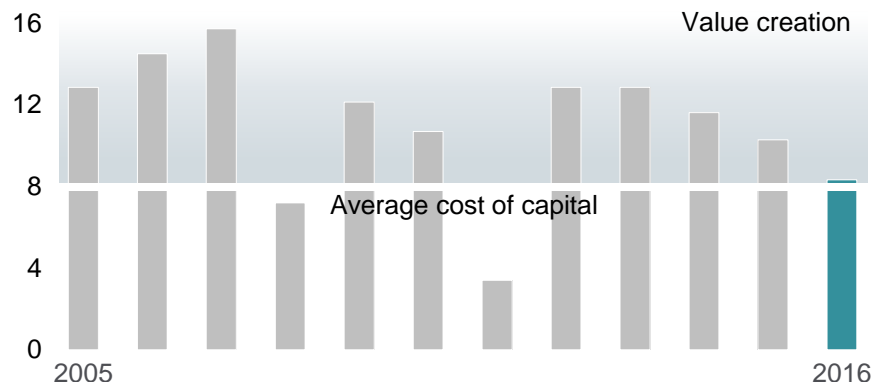


Rock-solid  
reserving position



€28bn  
unrealised investment gains<sup>1</sup>

RoE exceeds cost of capital



~10.7% > ~8%

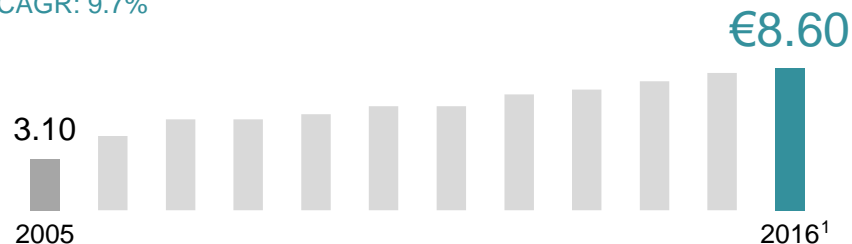
12-year average RoE      Average cost of capital

# ... facilitating attractive shareholder returns

Further dividend increase, continuation of €1bn buy-back until AGM 2018

## Continuous growth of dividend per share

CAGR: 9.7%

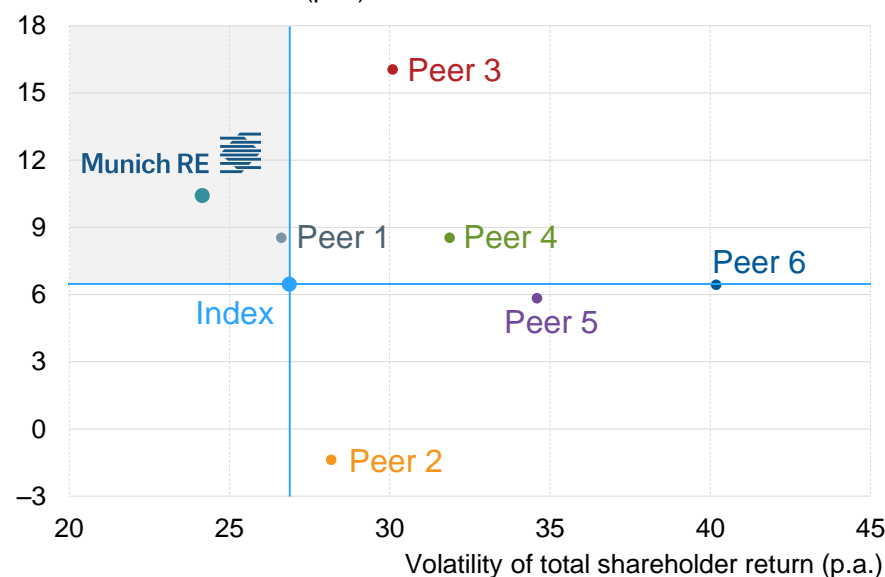


**>€23bn**  
Total pay-out since 2005  
(dividend and share buy-back)

**74 million** > **50.9 million**  
Shares repurchased since 2006      Shares issued in 2003 (capital increase)

## Outperforming major peers and insurance index<sup>2</sup> %

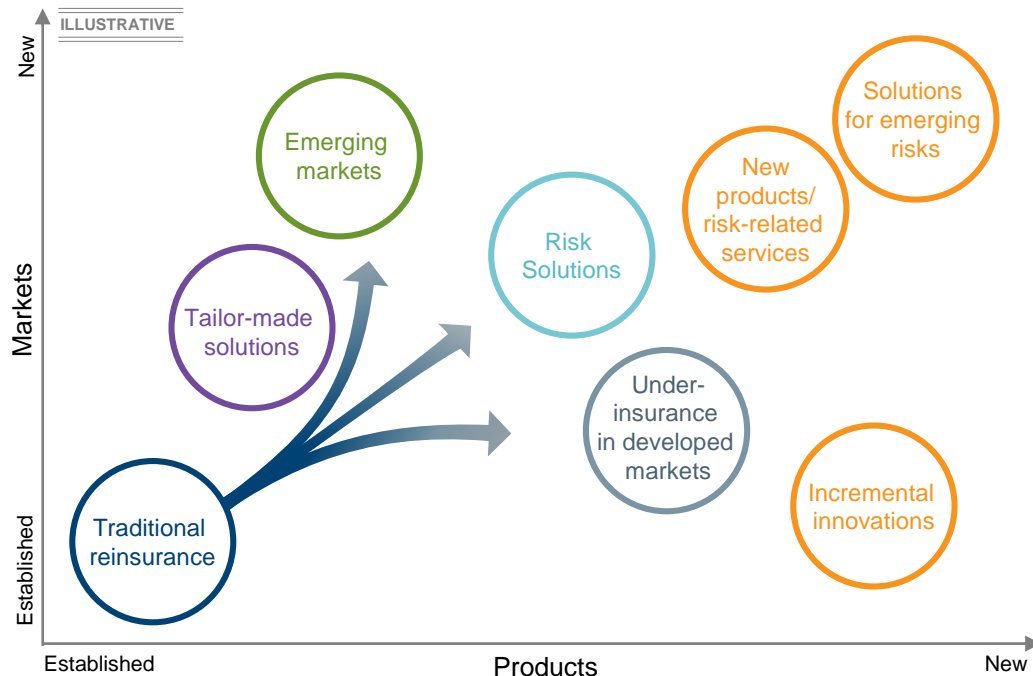
Total shareholder return (p.a.)



<sup>1</sup> Subject to approval of AGM. <sup>2</sup> Annualised total shareholder return defined as price performance plus dividend yield over the period from 1.1.2005 until 28.2.2017; based on Datastream total return indices in local currency; volatility calculation with 250 trading days per year. Peers: Allianz, Axa, Generali, Hannover Re, Swiss Re, ZIG, Stoxx Europe 600 Insurance ("index").



# Reinsurance – Well positioned to manage the current market environment and drive innovative solutions



**Traditional reinsurance**  
Successfully managing the soft cycle



**Risk Solutions**  
Continuous growth in specialty and niche business



**Innovation**  
Steady expansion of innovative products/solutions



# ERGO – Turnaround initiated, well on track to become a significant earnings contributor

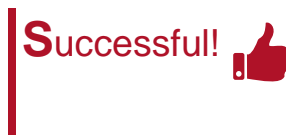
## ERGO Strategy Programme/International Strategy



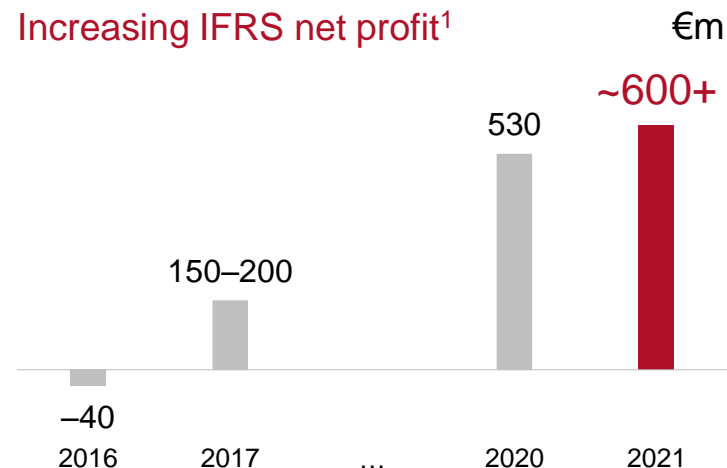
Leaner and  
more efficient  
structures



Transforming  
the business  
model



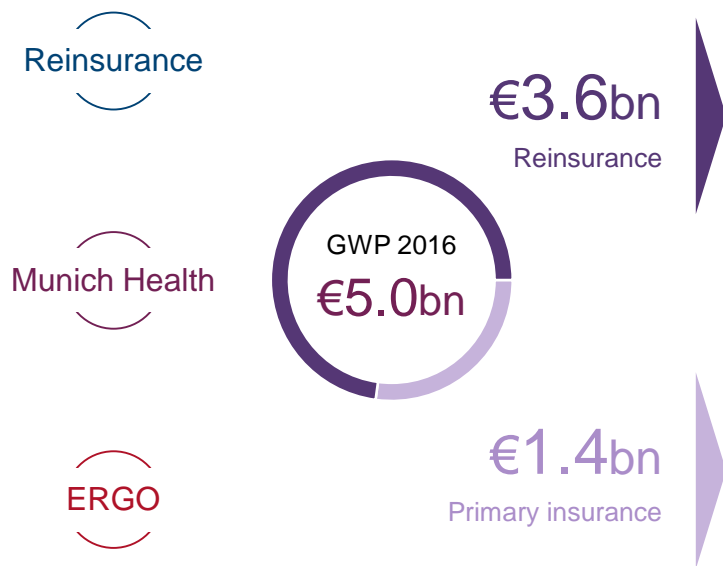
Convincing solutions,  
committed to  
profitable growth



<sup>1</sup> From 2017, figures include primary insurance business of Munich Health.

# Munich Health – Reallocation of health primary insurance and reinsurance business

## Munich Re – Group structure until 2016



## Health insurance business will retain its strategic importance

### Life and Health Reinsurance

Anticipating changing market conditions and client needs

- Clients distinguish less between health and life solutions
- Reinsurance increasingly important for capital management – business segments play minor role for transactions

### ERGO International

Strategic reorganisation of ERGO International

- Opportunity to integrate MH's primary insurance business ...
- ... to provide full range of products in international health markets

# Innovation – Munich Re establishing a strong position to tap opportunities – Focus on tangible business impact

Munich Re has successfully laid the groundwork ...

## Innovation strategy

- Defined innovation areas
- Corporate venturing and partnering
- Innovation infrastructure

## Group-wide approach

- Intensive know-how and resource sharing
- Joint business development

## Leveraging core competencies

- Data analysis
- Agile IT
- Cooperation models

... to seize opportunities from digitalisation

## Business model

- Provide digital infrastructure
- Digitalise insurance offerings
- Improve process efficiency

## Products/services

- Improve customer experience
- Expand offering for online customers (e.g. “nexible”)
- Customised products and tailor-made solutions
- Foster customer-centric support

# Group Finance

2

# Munich Re continues to deliver reliable earnings

IFRS net income

€2.6bn

Sound underlying result without  
dilution of strong balance sheet

HGB result

€3.4bn

Substantial increase –  
Safeguards capital repatriation

Economic earnings

€2.3bn

Positive operating performance in  
reinsurance compensating for ERGO

Reinsurance

€2,484m

FX gains, strong life result,  
healthy p-c reserves

ERGO

–€40m

Meeting expectations –  
Investments in Strategy Programme

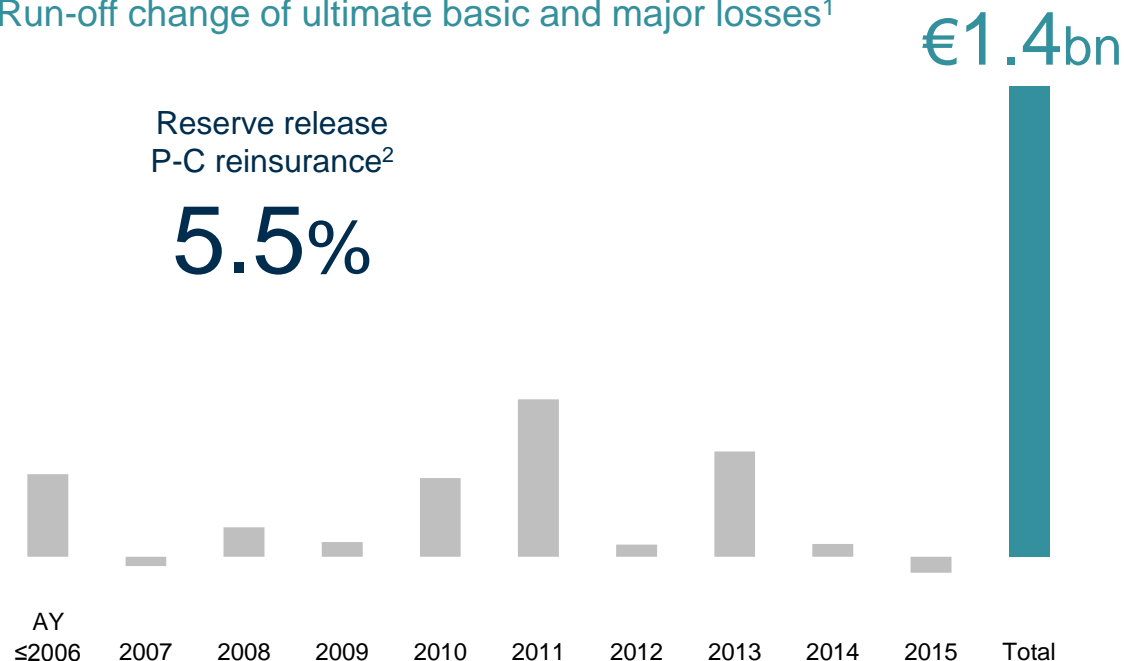
Munich Health

€137m

Above guidance – Release  
of prior-year conservatism

# Prudent approach allows for reserve releases without weakening resilience against future volatility

## Run-off change of ultimate basic and major losses<sup>1</sup>

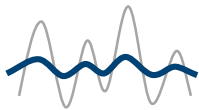


- Prudent reserving approach
- Cautious initial loss picks for new underwriting year
- Positive run-off responds to benign loss emergence, ...
- ... while at least preserving confidence level
- Strong reserving position mitigates underlying earnings pressure

<sup>1</sup> Accident year split is partly based on approximations. <sup>2</sup> Basic losses (€1,148m), adjusted for commission effects (–€128m), FX effects (different reference date between accident-year triangle and financial statements) and minor effects from reclassification of Munich Health business (both in total –€96m).

# Holistic approach mitigates the risk of an unexpected increase in claims inflation

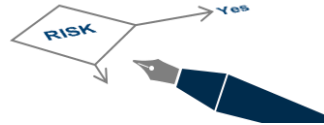
Uncertainty ...



Claims inflation

- Increase of insurers' claims severity and frequency due to different drivers, e.g. construction cost, medical or wage inflation
- CPI is a poor proxy

... well controlled by Munich Re



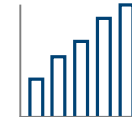
Underwriting

- Risk selection: Limit amount of business with high inflation uncertainty
- Pricing: Incorporate expected future inflation over contract tenure
- Wording: Incorporate index clauses



Reserving

- Prudent assessment of most recent contract years
- Take sophisticated, claims-specific inflation forecasts into account when setting reserves
- Short liability duration of ~4 years<sup>1</sup> allows for timely adaption to inflation up-tick



Investments

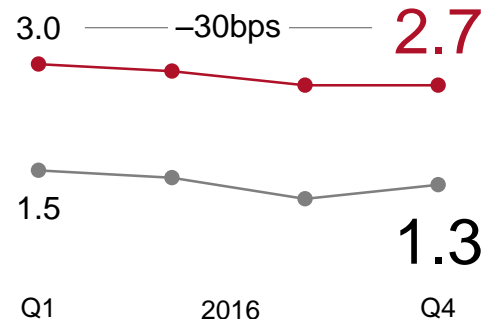
- Identify hedgeable part of claims inflation
- Manage hedgeable inflation exposure within investment process
- Inflation-sensitive assets<sup>2</sup>: ~25%



# Rising interest rates benefit reinsurance investments –

## Attrition of running yield in 2016: 30bps – Expectation for 2017: ~20bps

### ERGO



—●— Running yield  
—●— Reinvestment yield

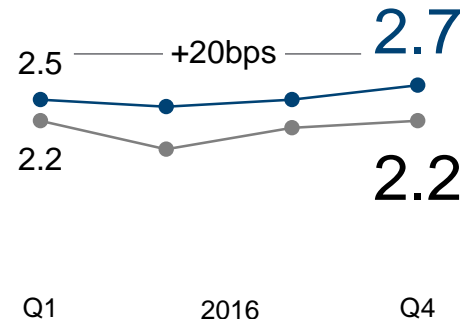
**95%**  
Euro

**1%**  
US\$

**9.3 years**  
Duration

Ongoing attrition given high exposure to Germany

### Reinsurance



—●— Running yield  
—●— Reinvestment yield

**46%**  
US\$

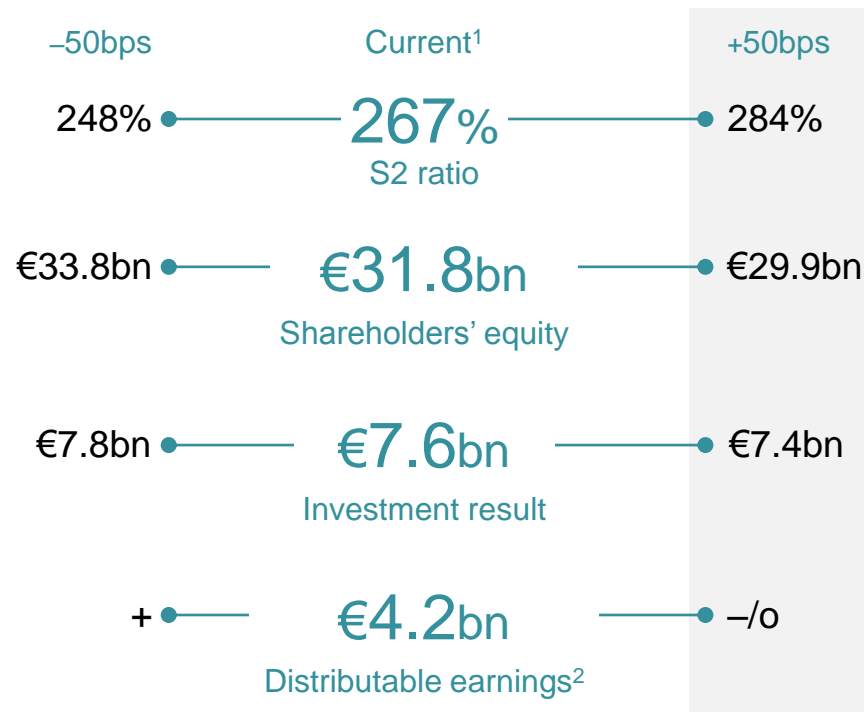
**23%**  
Euro

**5.9 years**  
Duration

Benefit from US\$ overweight and shorter duration

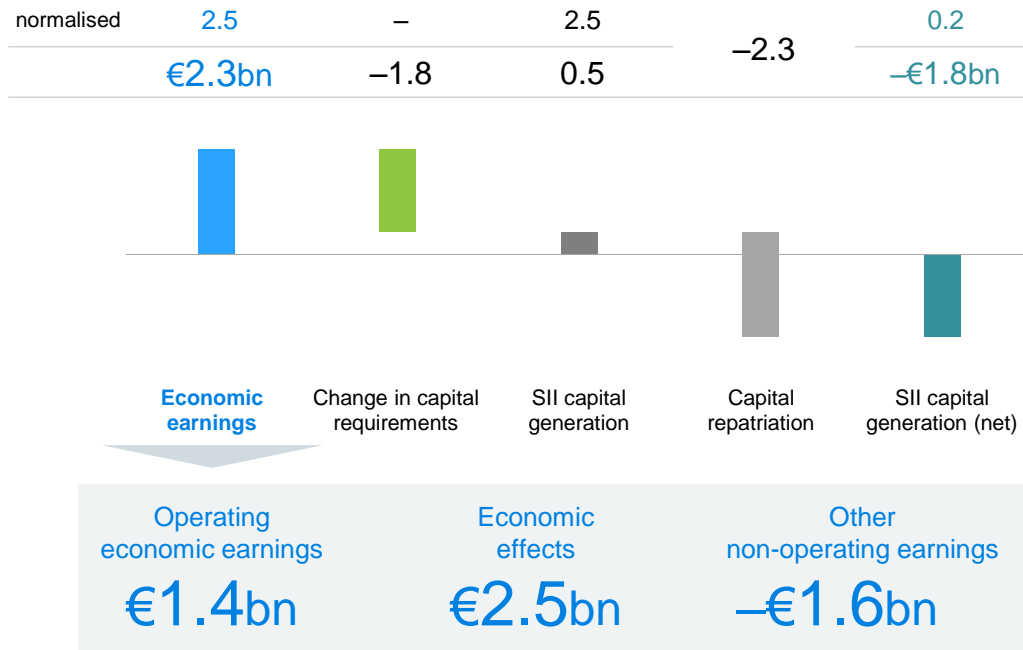
# Interest-rate sensitivity – Impact from rising interest rates

## positive overall , manageable short-term effects



- Reduction of capital requirements
- Decline of unrealised gains
- Short-term: Slight reduction (interest-rate derivatives, less disposal gains)
- Medium-/long-term: Increasing (rising reinvestment rate)
- Decline (write-downs) due to lower-value principle
- Immunisation possible through reclassification from available-for-sale to held-to-maturity

# SII capital generation reflecting largely capital-market-driven change in capital requirements



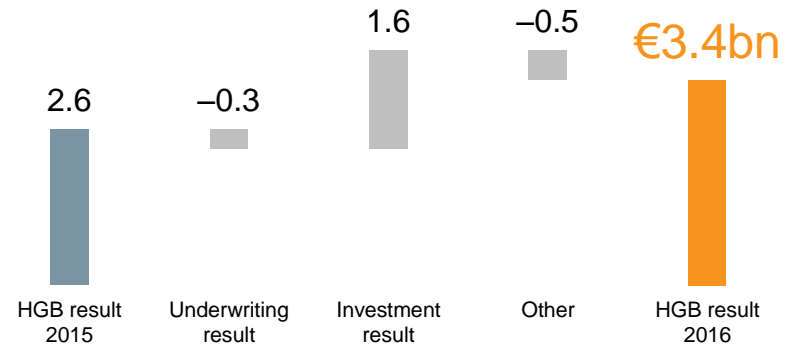
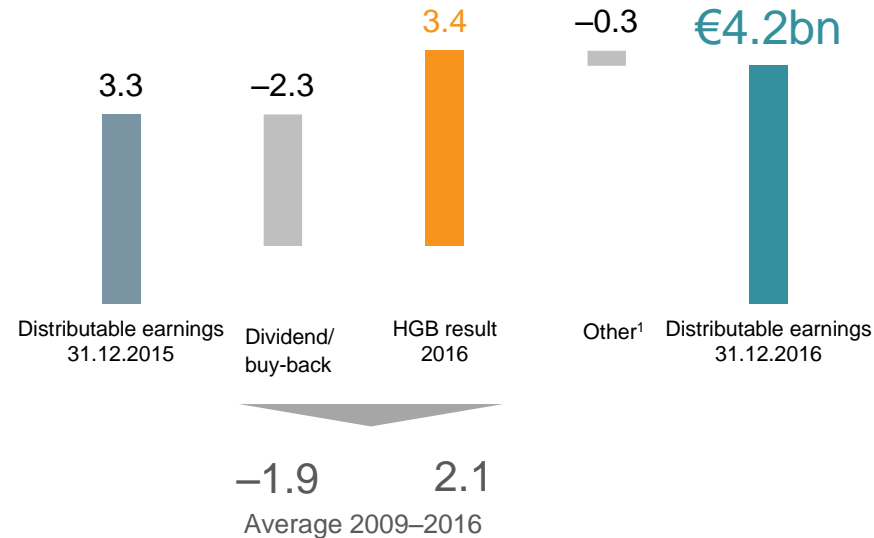
## Pleasing economic earnings (EE)

- Strong operating EE in reinsurance compensate for negative ERGO contribution
- High economic effects – Impact of capital markets differs across segments
- Normalised economic earnings of €2.5bn close to 2016 IFRS profit, supporting current level of capital repatriation

## Good financial flexibility

- SCR-weighted average solo solvency ratio of ERGO German life units<sup>1</sup> ~140%, substantially higher including transitional measures ...
- ... hence, no capital injection by Munich Re currently necessary

# Significant increase in local result of parent company safeguards financing of capital repatriation



- Higher major losses, lower reserve releases
- Intragroup disposal gains (2016) vs. write-down on ERGO (2015)
- Relief in equalisation provision expected in 2017

<sup>1</sup> Changes in restrictions on distribution.

# Outlook 2017

## Group

Gross premiums written

€48–50bn

Net result

€2.0–2.4bn

Return on investment

~3%

## Reinsurance

Gross premiums written

€31–33bn

Net result

€1.8–2.2bn

Combined ratio<sup>1</sup>

~97%

## ERGO

Gross premiums written

€17–17.5bn

Net result

€150–200m

Combined ratio

~99%      ~98%  
Germany      International

<sup>1</sup> ~100% on a normalised basis (12%-pts. major losses, 4%-pts. reserve releases). Expectation for reserve releases in 2017 ~6%.

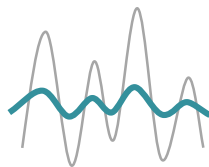
# Risk management

3

# Current global risk landscape leads to perception of great uncertainty

## Preparedness and resilience

- Risk assessment based on forward-looking scenarios
- Active exposure management, e.g. for financial sector, country risk and emerging markets
- Review of hedging strategy, e.g. FX and inflation risks



GOAL

Dampening volatility

## Business-enabling with attractive risk-return profile

- Increasing risk appetite for complex and large risks
  - Property-casualty single risks
  - Emerging risks (e.g. cyber)
  - Structured, tailored solutions



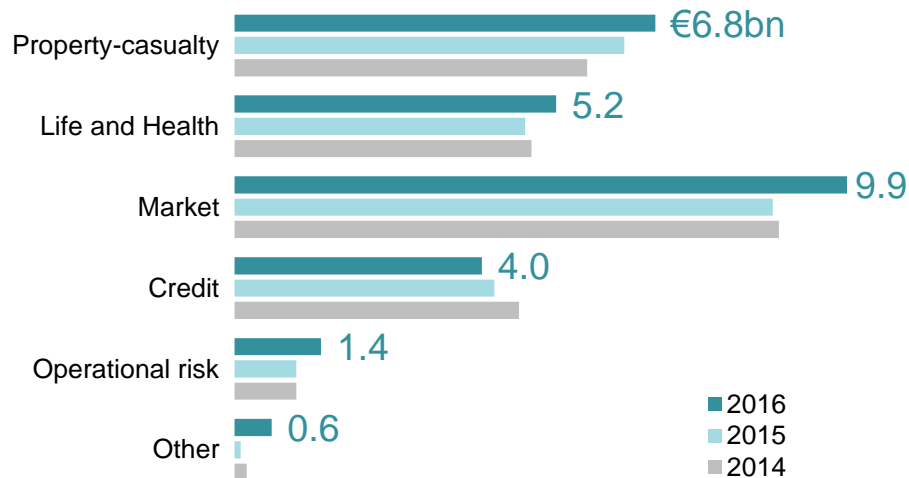
Source: Shutterstock [M]

GOAL

Turning uncertainty into business opportunities

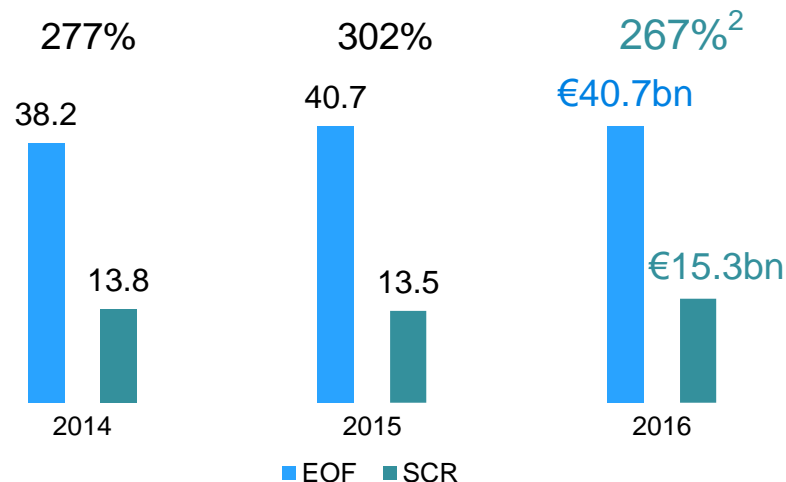
# Given high levels of uncertainty, risk profile remains relatively stable

## Breakdown of solvency capital requirement (SCR)



Increase largely driven by FX, low interest rates, business growth in Life Reinsurance and model refinements

## Munich Re's SII ratio<sup>1</sup>



SII ratio in a very comfortable range, with flexibility for additional risk taking

<sup>1</sup> All figures do not include effects of transitionals or long-term-guarantee (LTG) measures, e.g. volatility adjustment.

<sup>2</sup> Ratio after dividend of -€1.3bn for 2016 to be paid in April 2017: 258%. SII ratio considering transitionals for ERGO Leben and Victoria Leben: 316%.



# Modelling of negative interest rates – Safeguards

## consistency between business management and risk model

### Recognition of negative interest rates

- Reflect negative interest rates in valuation models – in particular, when valuing options and guarantees
- Capitalise further drop in interest rates in risk model

#### Benefits

- Rethink business model, e.g. reinvestment rules
- Safeguard market-consistency of SII balance sheet
- Fulfil requirements of regulators and auditors

### Adaption of valuation models

- Ensure market-consistent projection of risk-free interest rate over simulation horizon<sup>1</sup> – models now allow for negative interest rates
- Extend management rules to reflect behaviour in negative interest-rate environment

### Impact on eligible own funds (EOF)

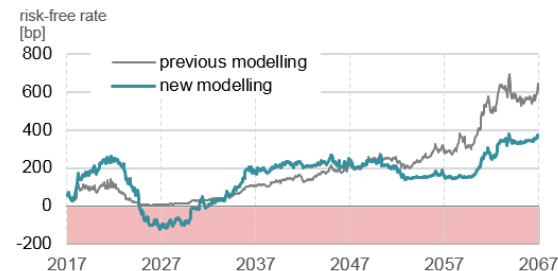
Decrease mainly due to increased economic value of options and guarantees

### Adaption of risk model

- Ensure real-world forecasts fully reflect existence of negative interest rates within internal model
- Safeguard that pricing models are capable of negative interest rates

### Impact on solvency capital requirement (SCR)

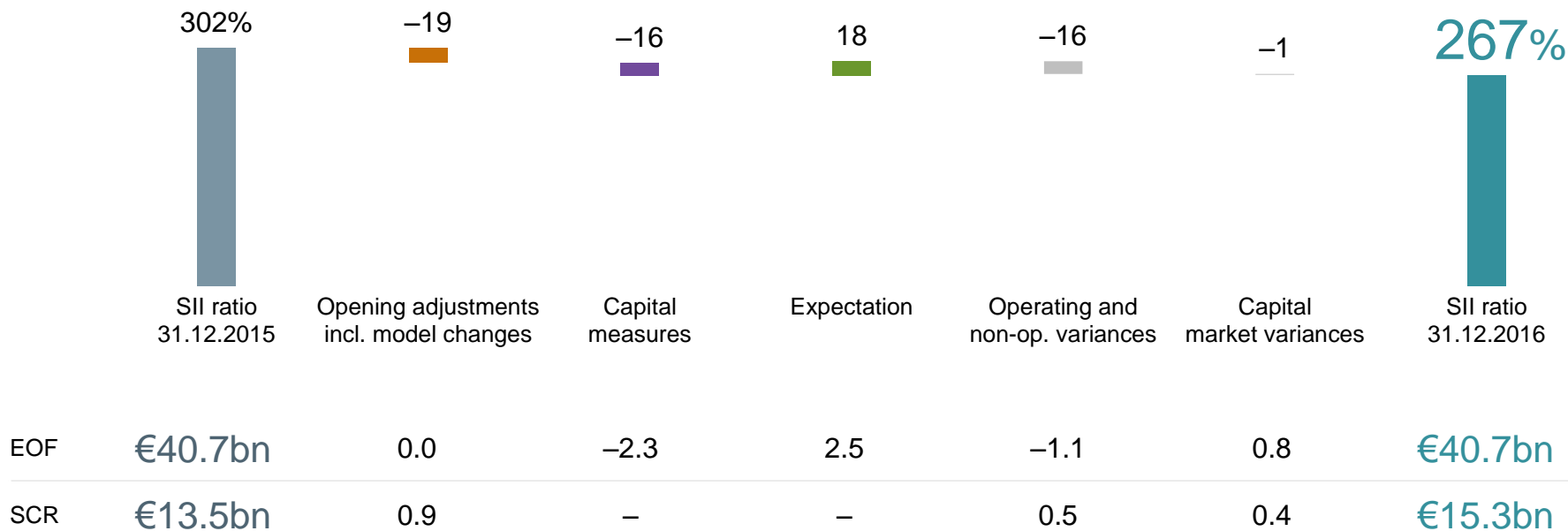
Increase driven by notable rise in market risk (interest-rate risk)



<sup>1</sup> Right-hand chart shows an example of 10-year euro interest rate. Comparison of one realisation of market-consistent projection.

# Strong SII ratio

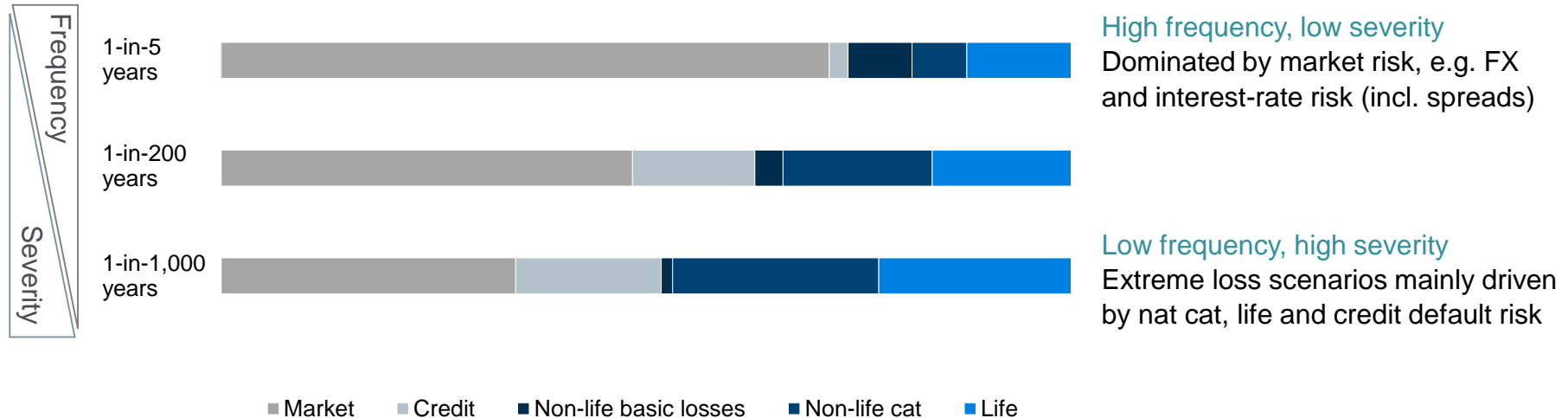
## SII ratio development<sup>1</sup>



<sup>1</sup> Expected EOF change refers to normalised economic earnings; all figures including tax effect.

# Risk profile reflects Munich Re's business model – Focus on insurance risks

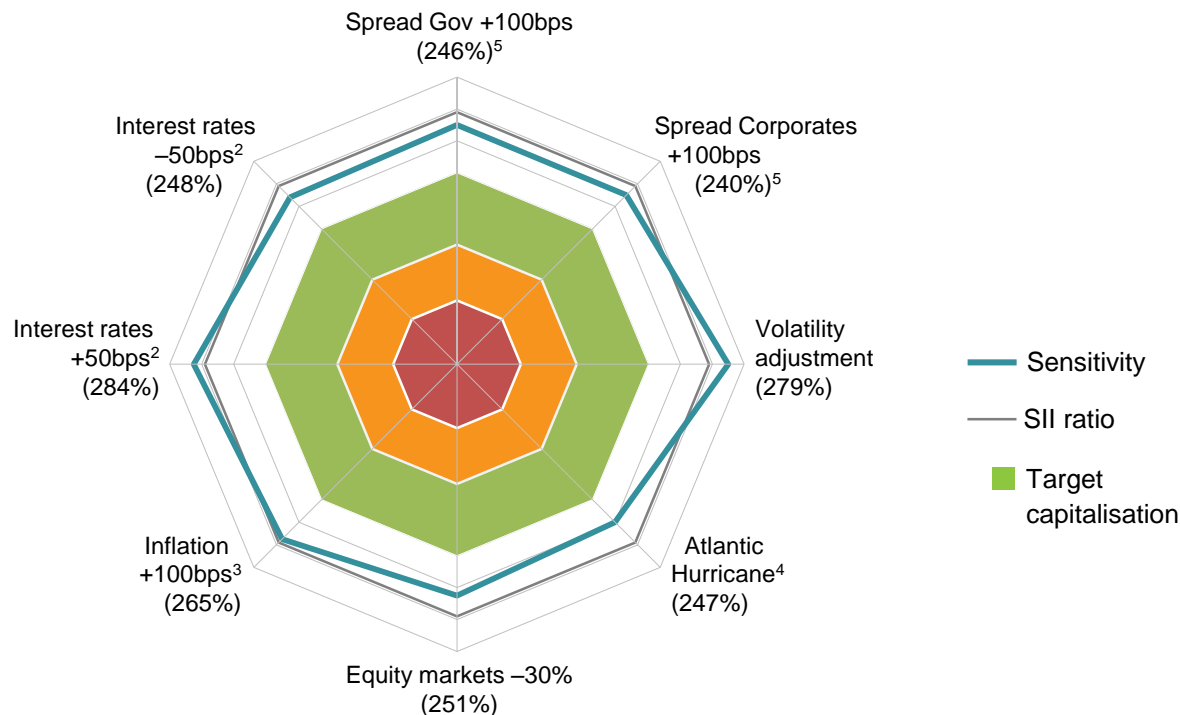
Relative SCR contributions, given the occurrence of a stress scenario of varying magnitude



# SII ratio remains comfortable in typical stress scenarios

## SII ratio sensitivity<sup>1</sup>

- Reduced interest rates and recognition of negative interest rates in internal model contribute equally to increased interest and spread sensitivity
- Use of LTG measures would additionally reduce other sensitivities (e.g. spread, equity sensitivity)



<sup>1</sup> All shown figures do not include transitionals or long-term-guarantee (LTG) measures. As at 31.12.2016. <sup>2</sup> Parallel shift until last liquid point, extrapolation to unchanged UFR.

<sup>3</sup> Based on CPI inflation. <sup>4</sup> Based on 200-year event. <sup>5</sup> Due to diversification, spread sensitivity simultaneously stressing GOV and CORP spreads (226%) is lower than sum of separate sensitivities shown.

ERGO

4

# ERGO Strategy Programme (ESP) fully on track seven months after announcement

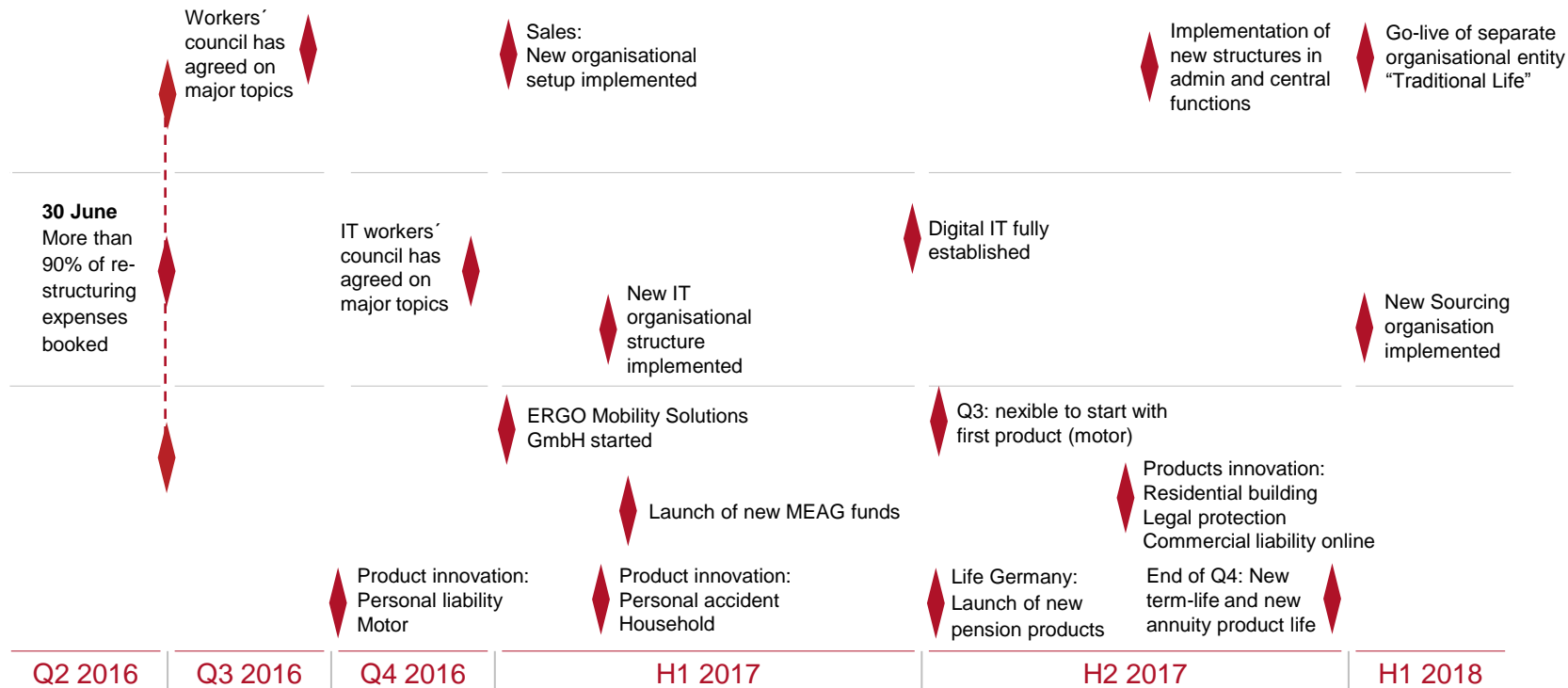
	Actual 2016	ESP guidance as at 1 June 2016		
		2016	2017	2020
Total premiums <sup>1</sup>	13,202	13,180	–	13,460
Net profit	–40	Slightly negative	130	~450
Investments <sup>2</sup> ( <i>net</i> )	–247	–302	–259	–1,008 <sup>3</sup>
Total cost savings ( <i>net</i> )	30	30	96 <sup>3</sup>	279 <sup>3</sup>
Combined ratio P-C Germany	97.0	98	99	92

# ESP – Timeline

Fit

Digital

Successful!



# Life and Health Germany – Status 2016

Gross premiums written

**€9.2bn**

Successful launch of new risk-type product (“Solo-BU”) –  
24,000 policies sold

Discontinuation of traditional life

Positive development in  
supplementary health

Net result

**€114m**

Above expectation, given  
restructuring expenses

Exceptionally high  
technical result in Q4

ROI

**3.6%**

High investment result – Positive  
contribution from derivatives  
and disposal gains offset lower  
regular income



# Life Germany – New organisational setup to support comprehensive management of back book

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## Organisational changes

---

- Separation of traditional life back book (approx. €3.7bn in premium volume and >5m policies)
- Establishment of an effective, separate organisational entity with optimised processes (from 2018)
- Focus on administration
- Realisation of significant management advantages, e.g. reduced resource conflicts or faster decision-making and improved transparency

## Comprehensive management

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- Long duration of fixed-income portfolio keeps average yield at relatively high level
- Asset and liability duration difference <1 year
- Low bonus rates: 2.25% vs. market average 2.59%
- Interest-rate hedging programme: protection against reinvestment risk via receiver swaptions since 2005
- Cash flow matched for 40 years

# Property-casualty Germany – Status 2016

Gross premiums written

**€3.2bn**

Profitable growth  
in almost all lines of business

Product innovations – Launch of  
cyber protection

Net result

**–€72m**

Impacted by strategic investments  
and restructuring charges –  
In line with expectations

Combined ratio

**97.0%**

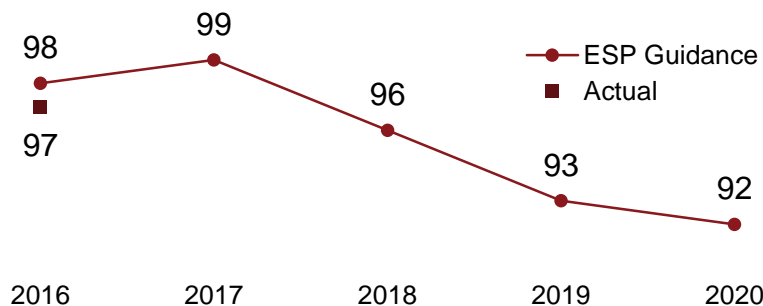
Better than ESP<sup>1</sup> guidance  
(–1%-pt.)

Strategic investments impacted  
combined ratio ~1%-pt.

Confidence level of reserves increased

# Property-casualty Germany – Attractive portfolio for customers, consistent cost reduction

## P-C Germany – Combined ratio



- P-C Germany to maintain and strengthen balanced portfolio
- Significant cost reduction in the medium term – improvement of expense ratio as main driver of higher profitability

## Product innovations

- Launch of new cyber product in 2016
- Start of new modular product concept in H2 2016 (motor and private liability)
- Further products consistent in look and feel (e.g. personal accident, household contents, homeowners' insurance) will follow in 2017

# International – Status 2016

P-C – Gross premiums written

€2.5bn

Strong new business growth,  
driven by Poland

Life – Gross premiums written

€1.2bn

De-risking classical life business –  
Italy, Belgium

P-C – Combined ratio

99.0%

Improvement in Poland –  
Recovering results and reduction  
of losses in UK and Turkey

Net result

–€82m

Restructuring of Belgian  
life entity planned

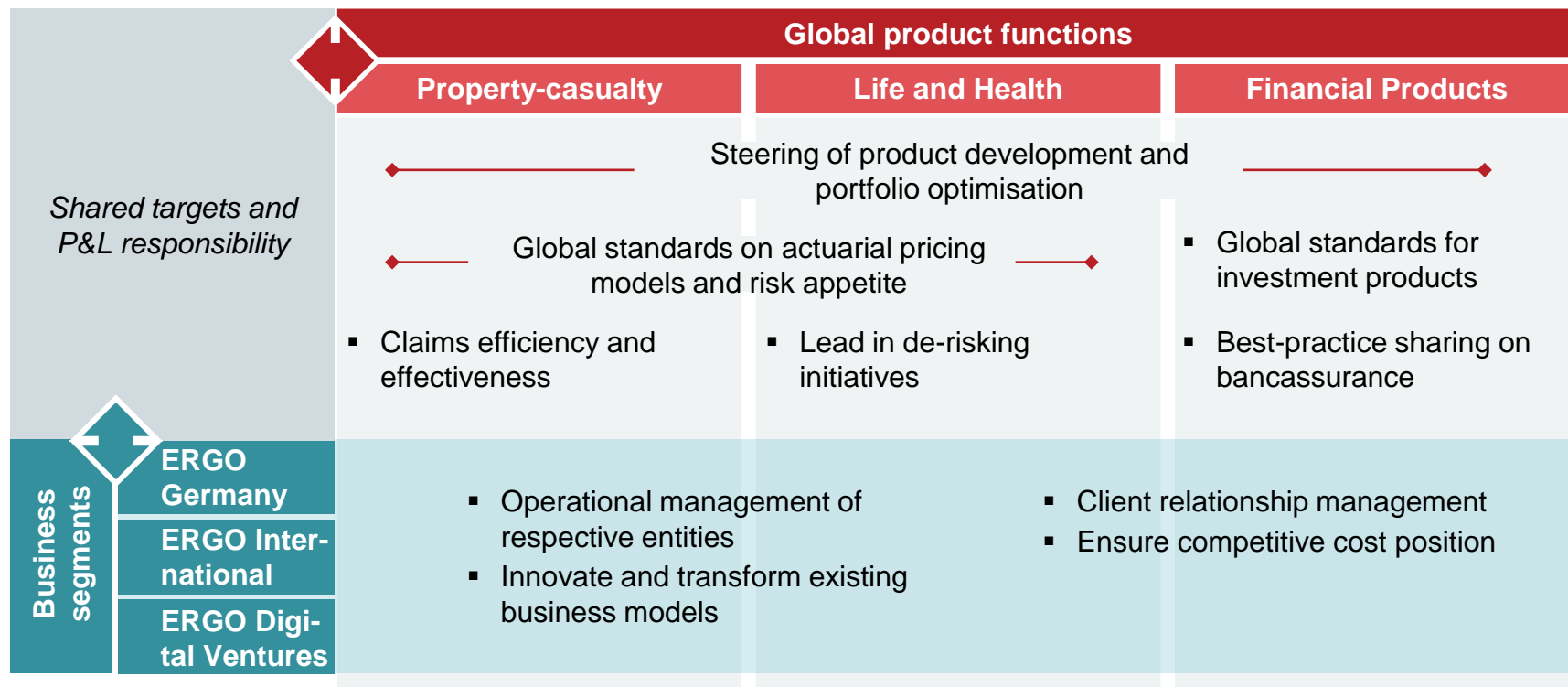
Several one-offs, e.g. goodwill  
impairment, strategic investments

# International strategy embedded in ERGO Strategy Programme (ESP) to achieve ambitious goals

Further detailed

Fit	Digital	Successful!
<b>Governance</b> <p>1 ▪ Central steering with dedicated responsibilities</p>	<b>Best practice exchange</b> <ul style="list-style-type: none"> <li>▪ Interregional transfer of capabilities, e.g. implementation of adapted iMonitor from Poland in Turkey</li> </ul>	<b>Interlocked business model reinsurance/primary insurance</b> <p>3 ▪ Identify value drivers in an interlocked business model between ERGO entities and MR</p>
<b>Portfolio</b> <p>2 ▪ Foster strong market positions</p> <p>▪ Establish efficient global business models</p> <p>▪ Exploit growth market exposure</p>	<b>Regional cooperation</b> <ul style="list-style-type: none"> <li>▪ Integration of back offices, e.g. in Baltics and Poland</li> </ul> <b>Accelerated innovation</b> <ul style="list-style-type: none"> <li>▪ Digital delivery, e.g. via omni-channel communication to customers in India</li> </ul>	<b>Commercial business</b> <ul style="list-style-type: none"> <li>▪ Strengthen commercial business internationally</li> </ul> <b>Pure digital player</b> <ul style="list-style-type: none"> <li>▪ Roll-out of nexible in attractive markets</li> </ul>
<b>Establishing leaner and more effective structures to ensure swift execution</b>	<b>Laying the foundations for transforming the business model</b>	<b>Committing to profitable growth</b>
<p>4 <b>Munich Health (MH) primary insurance business to be managed by ERGO in 2017</b></p>		

# 1 ERGO governance system ensures effective application of technical excellence in all business segments











## 2 ERGO International portfolio focuses on three pillars

Rank



Share

### Strong presence in selected developed markets

Country	GWP, 2016 €m	Focus segment	Market position <sup>5</sup>
 Poland	1,178	Non-life	
 Austria	627	Life	
 Baltics	206	Non-life	
 Greece <sup>1</sup>	194	Non-life	




 **Leverage existing scale to strengthen organic growth**

### Specialised global business expertise

Existing global businesses <sup>2</sup>	GWP, 2016 €m
 Legal protection <i>Market presence in 18 countries</i> 	1,146 <sup>6</sup>
 Travel <i>Market presence in 24 countries</i> 	452 <sup>7</sup>
Launch new global businesses	
 Pure Digital Player	
 Mobility Solutions	

 **Efficient management and expansion of global businesses**

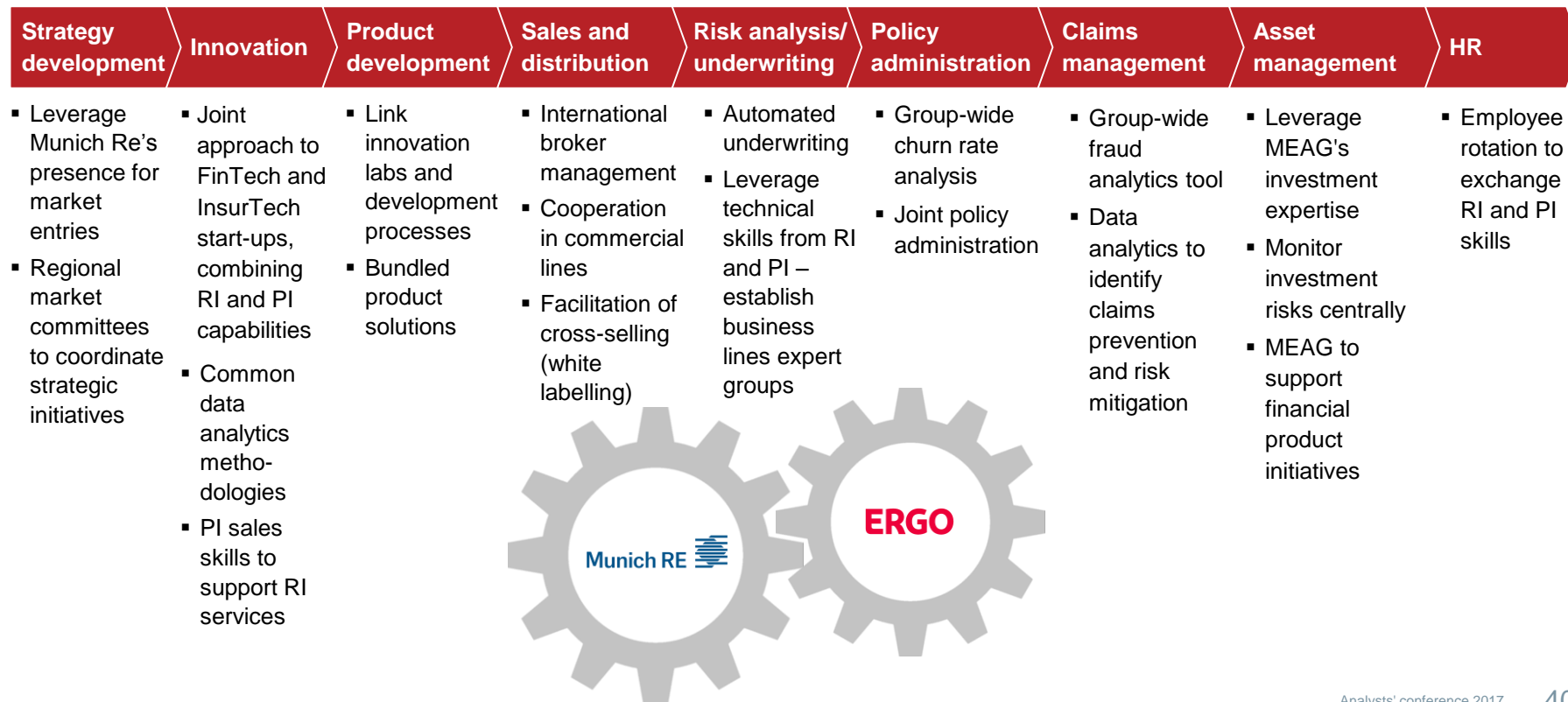
### Promising exposure in prioritised growth markets

JVs	GWP <sup>3</sup> , 2016 €m	Segment	Expected CAGR, 2016-20, %
 China	25	Life	70
 India <sup>4</sup>	270	Non-life	21
 Vietnam	11	Non-life	16
 Thailand	21	Non-life	8
Subsidiaries			
 Turkey	249	Non-life	10

 **Capture opportunities in growth markets**

<sup>1</sup> ATE acquisition effective 1 June 2016; hence, only half year of ATE premium included. <sup>2</sup> Respective German and international business; D.A.S. including Italian JV. <sup>3</sup> ERGO share. <sup>4</sup> Step-up during 2016; premiums based on average share during the year. <sup>5</sup> In focus segment  
<sup>6</sup> Thereof German LPI business: €401m. <sup>7</sup> Thereof German travel business: €182m.







### 3 ESP facilitates an interlocked business model between primary insurance and reinsurance





# 4 The primary health insurance business of Munich Health will be managed by ERGO in 2017

**Munich Health  
primary  
insurance  
business**

Countries	Total premiums 2016 <sup>1</sup> , €m	JV	Market position	
 Spain	710		4	7%
 Belgium	515		2	21%
 Abu Dhabi	258 <sup>5</sup>	✓	1	50%
 India	77	✓	7	3%
 Scandinavia	33	✓	2 <sup>2</sup> /5 <sup>3</sup>	23 <sup>2</sup> /5 <sup>3</sup> %
 IPMI business <sup>4</sup>	63			

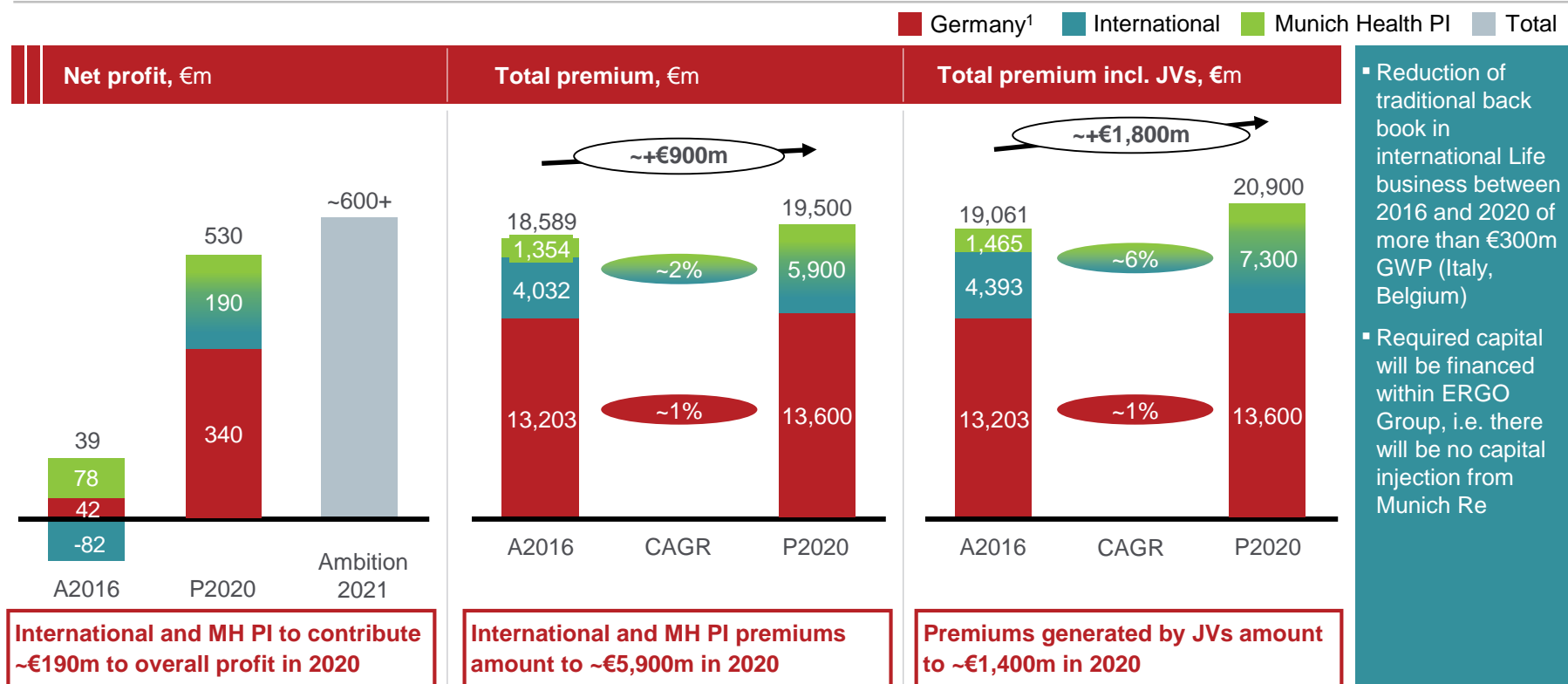
Rank

Share



**Exploitation of synergies in primary insurance,  
e.g. joint product development, incl. Germany**

# International business to contribute substantially to ERGO's results by 2020



<sup>1</sup> Includes segments "Life and Health Germany" as well as "Property-casualty Germany", hence including German share of LPI business as well as German and international travel business

Reinsurance  
Property-casualty

5

# Strong 2016 result at the upper end of guidance – Reinsurance P-C remains profitable core of our business

Gross premiums written

**€17.8bn**

Active cycle and  
portfolio management

Net result

**€2.0bn**

Strong technical result –  
major losses less benign

Rol

**2.5%**

No active harvesting –  
Positive FX impact

Combined ratio

**95.7%**

Below average  
major loss activity

Reserve releases

**5.5%**

At least preserved  
confidence level

# Munich Re in good position to manage the soft cycle – and well prepared to shape tomorrow's challenges

## Traditional reinsurance p-c

€13bn

Diversified portfolio,  
stringent cycle management

## Risk Solutions

€4.8bn

Continuous growth in  
specialty and niche business

## Innovation

€650m<sup>1</sup>

Steady expansion of  
innovative products/solutions

# Resilient January renewals – Client-centric approach pays off

## Market developments

- Abundant reinsurance capital, but signs of price stabilisation
- Flattening alternative capital growth
- Continued tiering – increasing discipline for Tier 1 reinsurers
- Hardly any pressure on wordings

## January renewals

Price change

–0.5%

Decline slowed down further

Exposure change

–4.4%

Cycle management reduction mitigated by new business opportunities

## Munich Re

- Well positioned to counter-balance regional rate differences and flexibly shape the portfolio
- Scale and financial strength provide competitive advantage
- Value proposition as strategic partner strongly valued
- Tailor-made solutions meet client demand

# Best-in-class solutions in mature markets – Dynamic growth and opportunities in emerging markets

Structured, holistic 3-year programme  
for regional US client

Flood Re: One of Europe's largest  
natural hazard RI programmes

National Flood Insurance  
Program (NFIP) in the US

Northern Marmara Motorway –  
world's longest suspension bridge

First foreign reinsurer to establish branch in  
India – Highly dynamic insurance market

Nat cat schemes to mitigate  
extreme weather events,  
e.g. Pacific catastrophe RAFI<sup>1</sup>

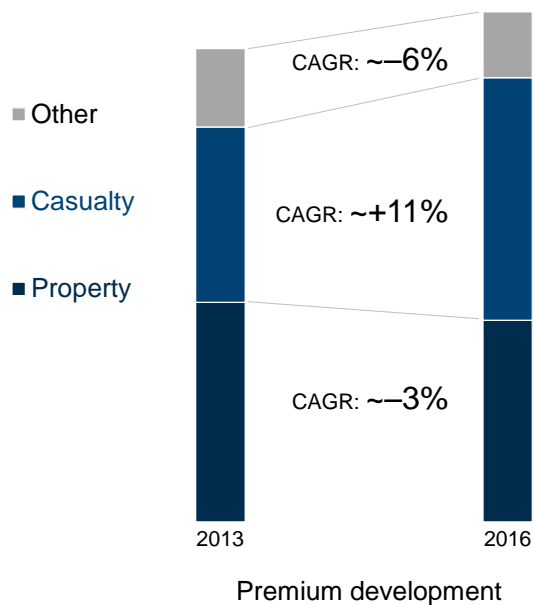
Rating solution South Africa  
Sovereign rating-triggered  
transaction for regional player

Product development for digital  
business models in Asia together  
with insurers and internet giants

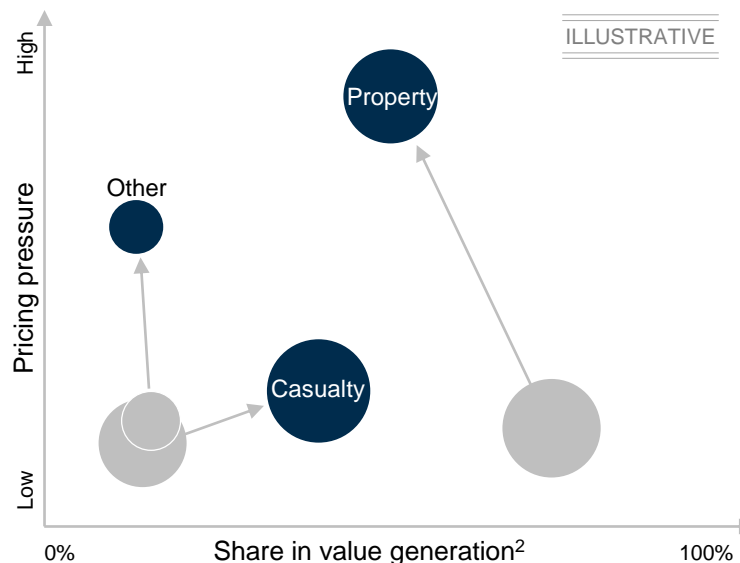


Sample  
deals/opportunities

# Rigorous portfolio and cycle management ensures portfolio profitability above cost of capital



## Portfolio management based on economic management principles<sup>1</sup>



- **Property**  
Continuous reduction as economic profitability declined
- **Casualty**  
Less pricing pressure – increased relative contribution to value generation

<sup>1</sup> Bubble size reflects gross premiums written in 2013 (grey) – 2016 (blue). <sup>2</sup> Economic profit.



# Preferred partner for large, customised transactions – Strong deal pipeline in all markets

Profitability<sup>1</sup> %

● Tailor-made  
● Traditional RI

— Cost of capital

Property

2013 2016

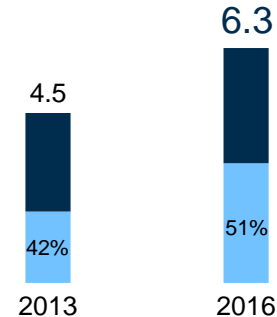
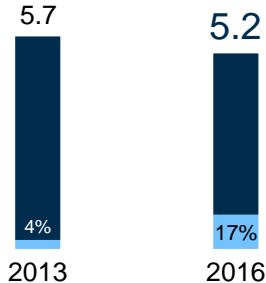
ILLUSTRATIVE

Casualty

2013 2016

Premium €bn<sup>2</sup>

■ Traditional RI  
■ Tailor-made



- Highly structured treaties with lower risk-capital consumption – competitive advantage due to diversification benefits in our internal model
- Mid double-digit number of active, customised deals
- Deep risk expertise and capital management know-how represent perfect fit for insurers seeking capital-triggered solutions – high consulting quality and capacity

# Ongoing investments in underwriting excellence and in innovation strengthen our position as premium provider

Investments<sup>1</sup>

200

100

0

2013

2014

2015

2016

€m

Average admin ratio<sup>2</sup> ~6% – Rather stable over time

- Understand clients steering metrics from a regulatory, accounting and rating perspective to support clients in traditional and tailor-made solutions
- Enhanced service excellence
- Improved broker focus
- Stronger risk selection
- Investment of ~€500m since 2013 in underwriting quality and innovation – corresponding to ~20% of admin expenses
- High achievements in efficiency and shift of capacities

# Risk Solutions – Active portfolio management and investments to secure strong earnings contribution

Gross premiums written

€4.8bn

Topline consolidation following strong growth in past years – Exit from financial institutions business at American Modern

Combined ratio

95.4%

Hartford Steam Boiler with highest result contribution – Burdening effect from run-off business, IT investments and outlier losses

Strategic focus

Active portfolio  
management

Investment in systems  
for future growth

Organic growth

M&A activities

Mid-term ambition confirmed

# Munich Re fosters innovation throughout the global organisation – Strong focus on tangible business impact

## Significant focus on innovation ...

### Innovation infrastructure

Innovation scouting  
Innovation labs  
Ideation  
Corporate partnering

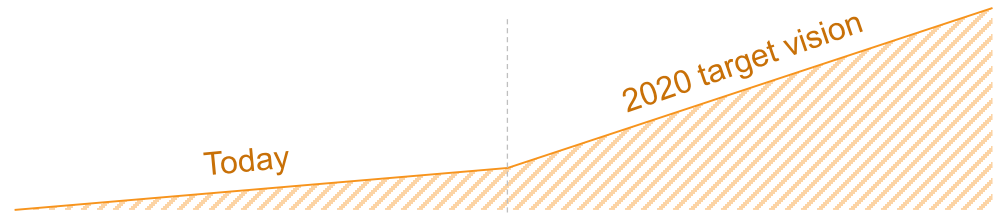
### Innovation areas

- 1 New (re)insurance products
- 2 New business models
- 3 New clients and demands
- 4 New risk-related services

### Innovation enabler

Data analytics  
Agile IT  
Collaboration

## ... with significant impact on business already today



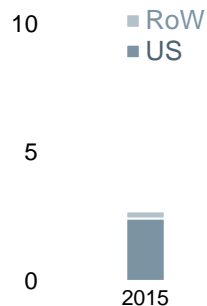
- Innovation-related business already generating premium volume of ~€650m<sup>1</sup>

- Risk carrier for established and new (digital) insurance and non-insurance companies
- Provider of integrated risk services (e.g. sensor-based)
- Tailored risk solutions and white-label products
- Data analytics-based services

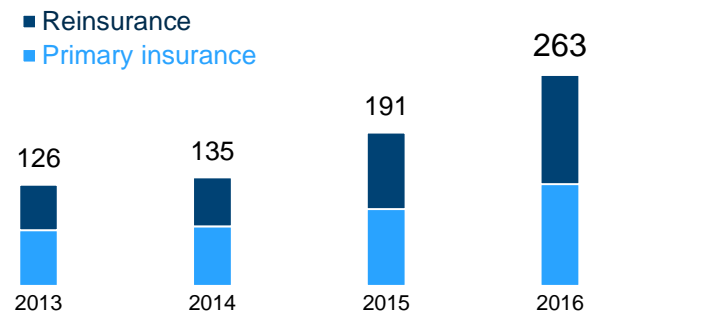
# Strong long-term growth in cyber (re)insurance expected – Munich Re with leading-edge expertise and market presence

## 1 New (re)insurance products

GWP global cyber insurance market<sup>1</sup> US\$ bn



GWP Munich Re cyber portfolio US\$ m



### Reinsurance: First mover and global market leader

- Dynamic growth through joint projects with cedents
- Steady growth in the US
- Strong accumulation models

### Primary insurance: Specialised single-risk taker

- Hartford Steam Boiler: Established player in US for SMEs and individuals
- Corporate Insurance Partner: Focus on larger corporate clients – Cooperation with IT providers and Beazley

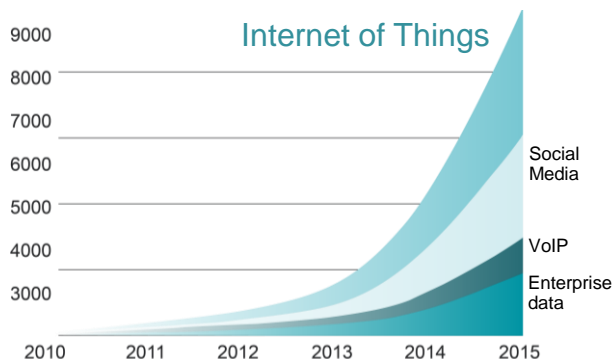
<sup>1</sup> Estimates based on different external sources (Marsh & McLennan, Barbican Insurance, Allianz).

# Focus areas: Internet of Things (IoT), corporate partnering and data analytics

## 2 New business models

IoT is expected to disrupt the (re)insurance industry – Munich Re well positioned

Data volume in exabytes



## 3 New clients and demands

Digital Partners – Partnering with start-ups to digitalise insurance

Digital distribution

Making insurance like the rest of the internet

For example:



Digital economy

Insuring the sharing and gig economies

For example:



Digital data

Using new sources of data to price risk better

For example:



## 4 New risk-related services

Most advanced data analytics platform



Early Loss Detection System



Digital Risk Management Platform



Sales analytics

# Reinsurance Life

6

# Very pleasing operating economic performance – Strong IFRS technical result exceeding benchmark

Gross premiums written

€10.0bn

Reduction of large deals, increasing  
contribution from initiatives

Technical result

€487m

Well above guidance – North America,  
Europe and Asia contributing strongly

Net result

€459m

Sound result contribution

Economic earnings

€1.7bn

Operating variances in the  
normal range of volatility

New business value (NBV)

€1.2bn

Outstanding – driven by large portfolio  
transactions, FinMoRe and strong  
traditional business in NA and Asia

Fee income

€41m

Established as additional  
profit source



# Unchanged strong positioning in all major markets – Two large portfolio transfer transactions

## Canada

- Stabilising volumes and margins pressure – profitability still sound
- Leading market position allows for one-off opportunities
- IFRS profits continue to be strong

## USA

- High NBV with attractive risk-return profile
- Legacy block with below-target profitability continues to limit earnings growth

## Continental Europe

- Sound but not growing traditional business
- Solvency II generated demand for tailor-made solutions
- Pleasing IFRS profit from healthy portfolio

## UK

- Unattractive margins in protection business
- Promising proposition for FinMoRe and longevity
- Results from in-force portfolio continue to be strong

## Asia

- Very satisfactory development of new and in-force business
- Main markets: China, Hong Kong, Singapore, Japan, Korea
- Substantial demand for FinMoRe and successful offering of asset protection

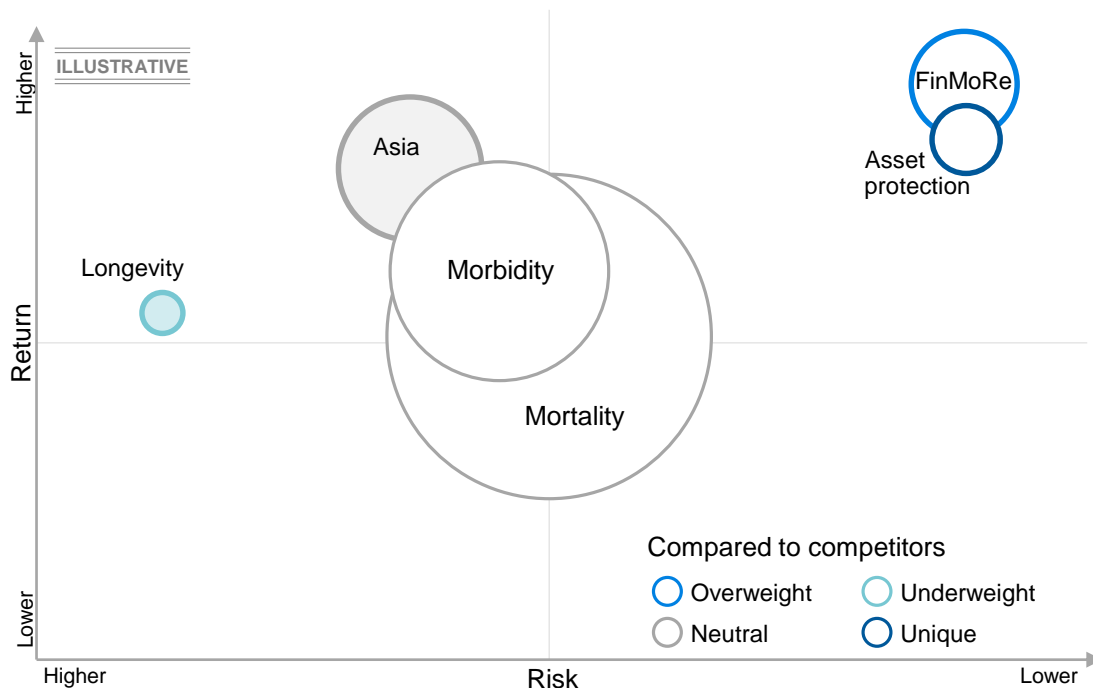
## Australia

- Disability market rehabilitation ongoing but slowing down
- New business boosted in 2016 through one large transaction; positive impact on diversification

## Major portfolio transactions in Australia and the US

- Closing of two major transactions ...
- ... based on financial strength, in-depth expertise in biometric risk assessment and execution credibility

# Initiative portfolio – Important IFRS profit pool and significant contribution to economic earnings



## Initiative portfolio

### FinMoRe

Well established value proposition

### Asia

Sustained growth supported by services

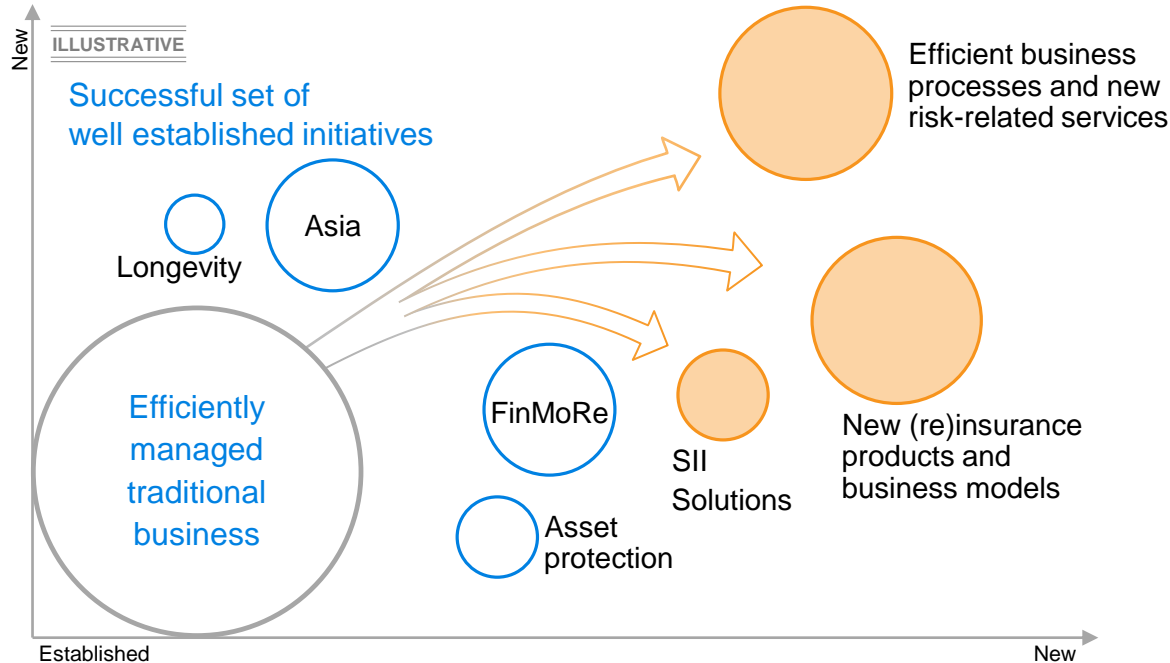
### Longevity

Book developed carefully

### Asset protection

Gaining significance

# Innovation has top priority – Concrete projects underway

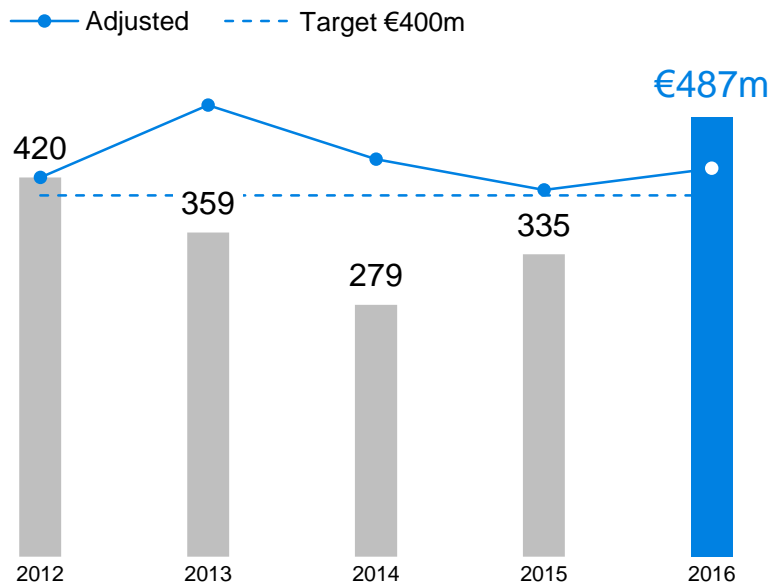


## Focus on innovation projects

- Clients outsource parts of services to us
- Clients engage us for our broader scope, lack of legacy and channel conflicts
- Clients share data to benefit from benchmarking services and predictive capabilities

# Financial outlook 2017

## IFRS technical result



## Outlook 2017

Technical result plus  
fee income of at least

**€450m**



- USA
- Australia
- Asia



- Canada
- Africa/Latin America
- Longevity
- Asset protection
- FinMoRe



- Europe
- Technical interest

Additional  
information

# Turning risk into sustainable value – Company success through responsibility

## Commitments...

## ... implementation ...

## ... external recognition



### Environmental, Social, Governance (ESG)

Group-wide carbon-neutrality since 2015; shared-value projects closely related to our core business; high corporate governance standards

### Corporate responsibility in insurance

Integration of ESG aspects into core business (process, guidelines, tools); prudent Group-wide control, support and training

### Corporate responsibility in investment

Sustainability one criterion for investment decision; incorporated in our Group-wide investment guideline



We actively embrace ESG factors along the value chain in our insurance business operations and asset management

# Innovation: Munich Re has established a strong position to tap opportunities – focus on tangible business impact

## Munich Re has successfully laid the groundwork ...

### Innovation strategy

- **Defined innovation areas**  
e.g. cyber, IoT, mobility, hybrid customers, white-labelling
- **Corporate venturing, innovation partnering**  
7 deals with >€25m total investment in 2016
- **Innovation infrastructure**  
Global setup with >175 FTEs<sup>1</sup>, incl. scouts, labs, and dedicated innovation teams

### Group-wide approach

- **Intensive know-how and resource-sharing**
- **Joint business development**  
e.g. AutoTech, Digital Health, BlockChain

### Leveraging core competencies

- **Data analysis**  
>150 FTEs, using high-performance analytics tools<sup>2</sup>
- **Agile IT**  
Fast and flexible, bi-modal IT operating model
- **Cooperation models**  
Various partnerships with digital players/start-ups

## ... to seize opportunities from digitalisation

### Business model

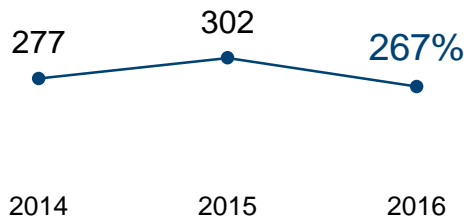
- Provide risk capacity and infrastructure for established and new (digital) companies
- Improve process efficiency (e.g. higher automation rates, claims-handling efficiency)

### Products and services

- Improve customer experience
- Expand offering for online customers (e.g. “nexible”)
- Customised products and tailor-made solutions
- Foster customer-centric support

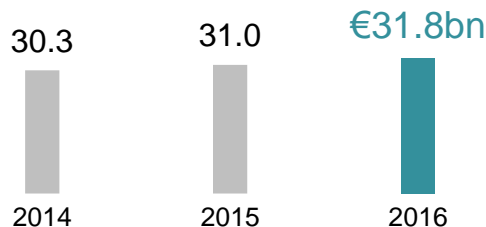
# Strong capital position according to all metrics facilitates financial flexibility, including high shareholder distribution

## Solvency II



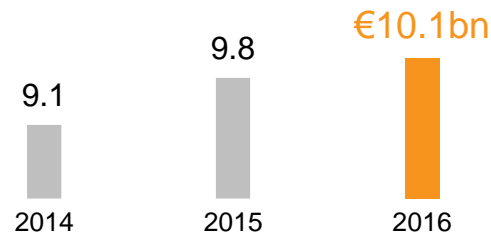
SII ratio well above target capitalisation

## IFRS

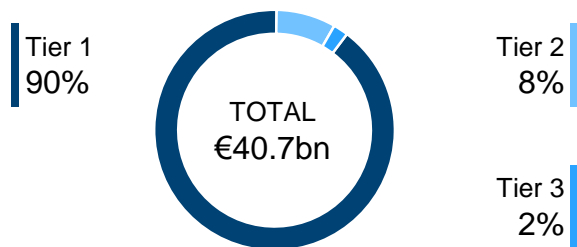


Strong shareholders' equity

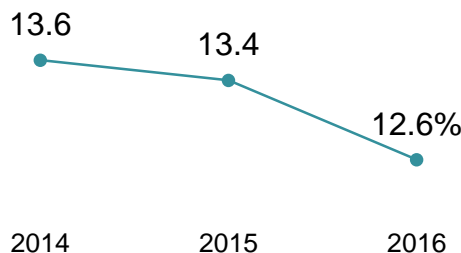
## German GAAP/Rating



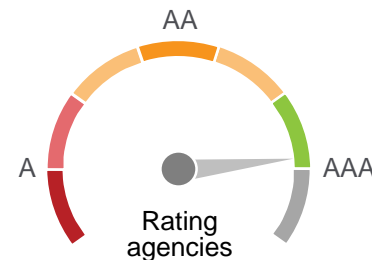
Strengthened equalisation provision largely protects HGB earnings



High-quality eligible own funds



Debt leverage<sup>1</sup> among the lowest in the insurance industry

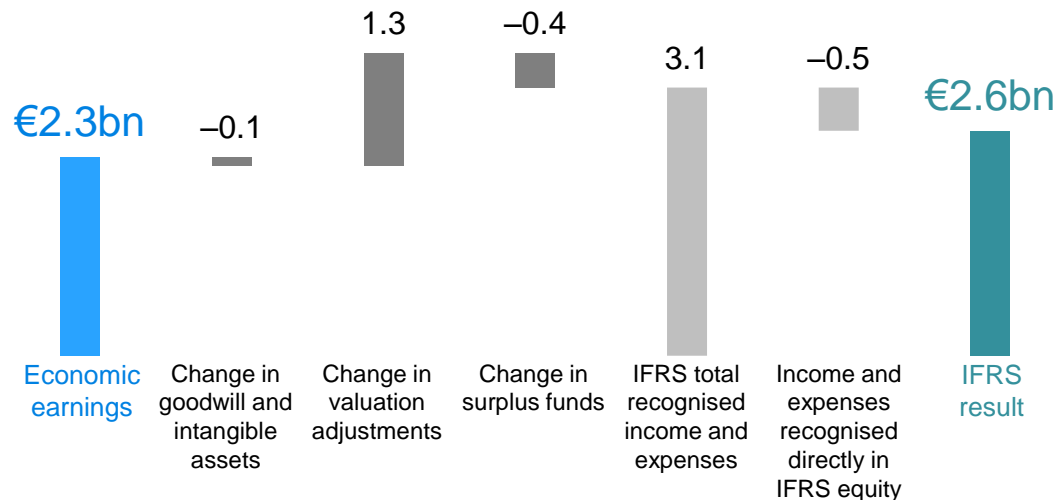


Substantial capital buffer<sup>2</sup> supports AA rating

<sup>1</sup> Strategic debt (senior, subordinated and other debt) divided by total capital (strategic debt + equity). <sup>2</sup> S&P capital.



# Reconciliation of economic earnings to IFRS result 2016



## Goodwill/intangibles

Not recognised in Solvency II – IFRS result burdened by minor negative effects of other intangible assets as well as ERGO goodwill impairment of €25m, partially offset by currency effects on goodwill in reinsurance

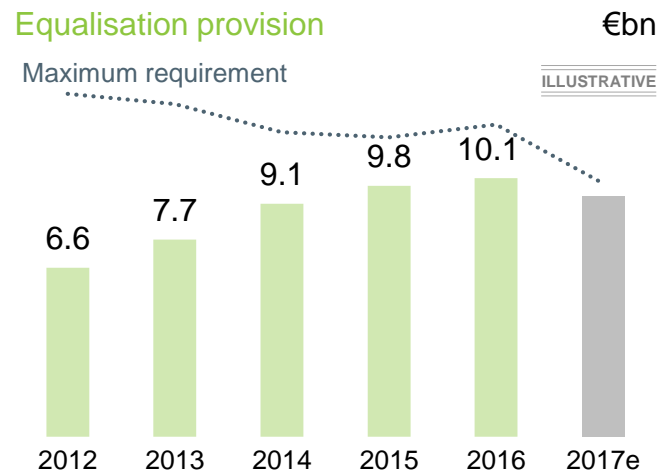
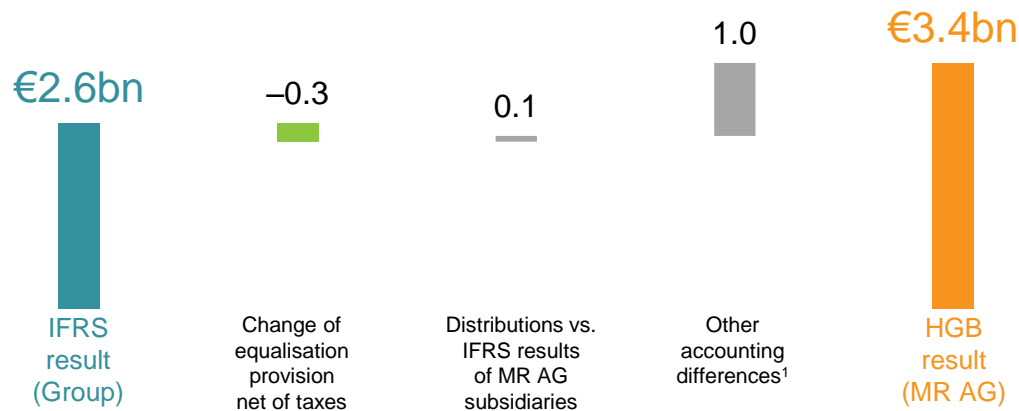
## Change in valuation adjustments

Assets and liabilities not measured at fair value in IFRS, e.g. loans, technical provisions

## Change in surplus funds

Recognised in Solvency II as own funds, in IFRS as liabilities

# Reconciliation of IFRS (Group) to German GAAP (HGB) result (Munich Reinsurance Company)



- 2012–2016: Strengthening of reserve – ~85% of max. requirement achieved
- 2017e: Relief due to drop-out of WTC loss

<sup>1</sup> E.g. intragroup disposal gains.

# Economic earnings 2016 – Munich Re (Group)

## Outlook 2017: In the range of IFRS result target

€bn	Actual	Normalised
<b>Operating economic earnings</b>	<b>1.4</b>	<b>2.0</b>
Expected return existing business	0.6	
New business value	1.0	
Operating variances existing business	–0.2	
<b>Economic effects</b>	<b>2.5</b>	<b>1.6</b>
Interest rate	0.0	
Equity	0.3	
Credit	0.9	
Currency	0.8	
Other <sup>1</sup>	0.5	
<b>Other non-operating earnings</b>	<b>–1.6</b>	<b>–1.1</b>
<b>Total economic earnings 2016</b>	<b>2.3</b>	<b>2.5</b>
Total economic earnings 2015	5.3	2.6

### Operating economic earnings

- High operating economic earnings in reinsurance compensate for negative ERGO contribution; normalised for reinsurance P-C prudency margin of €0.7bn, new business value amounts to €1.7bn
- Normalisation: Operating economic earnings adjusted for variances in new and existing business

### Economic effects






- Effects from development of capital market parameters very pleasing overall, however diverse across segments:
- Reinsurance with high economic gains on risk-free interest rates, credit spreads, FX and equities; economic losses at ERGO driven by further interest-rate decline over the year
- Normalisation: Adjusted to lower expectation in reinsurance and higher at ERGO

### Other non-operating earnings

- Normalisation: Other non-operating earnings adjusted to expected tax rate (all other line items pre-tax) and other items

<sup>1</sup> Primarily related to illiquid investments: Property, infrastructure, forestry, hedge funds, private equity.

# Change in eligible own funds (EOF)

EOF 31.12.2015		€40.7bn	Closing balance subject to SII Day-1 reporting FY2015
Opening adjustments		0.0	Model changes, other offsetting effects, e.g. consolidation group changes
EOF 01.01.2016		40.7	Opening balance after adjustment of prior year's closing balance; determines change in reporting period
Economic earnings		2.3	Economic performance of the period from new and existing business as well as capital-market parameter changes on assets and liabilities
Capital measures		-2.3	Dividend €1.3bn Share buy-back €1.0bn
Change in other own funds items		0.0	Development of non-available own funds items and own funds for FCIIF and IORP <sup>1</sup>
EOF 31.12.2016		€40.7bn	Closing balance without transitional effect; subject to regulatory SII reporting

<sup>1</sup> Own funds for other financial sectors (financial, credit institutions and investment firms and institutions for occupational retirement provision).

# P&L attribution – Pleasing economic earnings overall

## Reinsurance compensates for adverse development at ERGO

Munich Re (Group) 2016 €bn	Reinsurance Life	Reinsurance P-C	ERGO L/H Germany	ERGO P-C Germany	ERGO International	Munich Health	Munich Re (Group)
Operating economic earnings	1.1	0.7	−0.4	−0.1	−0.1	0.1	1.4
Expected return existing business	0.1	0.2	0.1	0.0	0.1	0.0	0.6
New business value	1.2	−0.5	0.2	0.0	0.1	0.1	1.0
Operating variances existing business	−0.2	1.0	−0.7	−0.1	−0.2	0.0	−0.2
Economic effects	0.8	2.0	−0.1	−0.1	−0.2	0.1	2.5
Other non-operating earnings	−0.3	−0.6	−0.5	0.0	−0.2	0.0	−1.6
<b>Total economic earnings</b>	<b>1.7</b>	<b>2.1</b>	<b>−1.0</b>	<b>−0.2</b>	<b>−0.5</b>	<b>0.2</b>	<b>2.3</b>
Capital measures							−2.3
Changes in other own funds items							0.0
Change in SII eligible own funds							0.0

# Reconciliation of IFRS equity to eligible own funds



<sup>1</sup> Foreseeable distributions from share buy-backs (–€0.3bn), foreseeable dividends (€0.0bn) and own shares (–€0.7bn). <sup>2</sup> Deduction of non-available own funds items of (€0.4bn) (e.g. non-available surplus funds) and deduction of own funds from participations in other financial sectors. <sup>3</sup> Own funds for other financial sectors (financial, credit institutions and investment firms and institutions for occupational retirement provision).

# From IFRS to Solvency II excess of assets over liabilities

€bn Assets/Liabilities (clustered) as at 31.12.2016	SII	IFRS	▲	Comments	
Goodwill and intangible assets <sup>1</sup>	0.0	3.6	–3.6	No recognition of goodwill and intangible assets in SII	
Investments, including loans, deposits with cedants, cash	247.0	232.3	14.7	Fair values in SII lead to higher balances (off-balance sheet reserves on investments IFRS: +€16.7bn)	6.9
Technical accounts <sup>1</sup> without surplus funds	–196.3	–190.3	–6.0	SII: Discounted cash-flow based on best estimate calculation; risk margin (–€10.0bn); lower discounting effect due to lower interest rates	
Subordinated liabilities	–4.9	–4.2	–0.7	Fair values in SII lead to higher balances	
Net deferred tax assets/liabilities <sup>1</sup>	–2.8	–1.9	–0.9	Different valuation methods produce difference in deferred taxes	
Other assets and other liabilities <sup>1</sup>	–5.6	–5.4	–0.3	Several opposite effects: higher fair value for property in own use (+€0.5m); own shares (+€0.7bn) eliminated in IFRS; fair values of financial liabilities (–€0.5bn); several entities not consolidated in SII	
Surplus funds	0.0	–2.3	2.3	Surplus funds (“free RfB”) are own funds in SII and therefore not classified as liabilities	
<b>SII EAoL versus IFRS equity</b>	<b>37.4</b>	<b>31.8</b>	<b>5.6</b>		<b>5.6</b>

1 IFRS balances reflect reclassifications in order to facilitate comparison to IFRS equity/eligible own funds reconciliation.

# 2016 net result meets annual guidance

## Munich Re (Group)

### Net result

€2,581m (Q4: €486m)

Sound underlying performance without dilution of strong balance sheet – investments in ERGO strategy programme and FX gains

### Return on investment<sup>1</sup>

3.2% (Q4: 2.7%)

Solid return given low interest rates – prudent asset-liability management once again proved beneficial

### Shareholders' equity

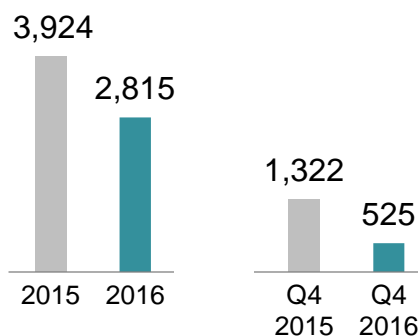
€31.8bn (–1.8% vs. 30.9%)

Strong capitalisation according to all metrics

2016 (Q4 2016)

### Technical result

€m



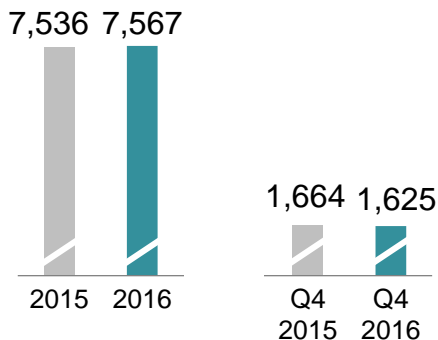
### Reinsurance

Life: Technical result €487m (Q4: €169m)

P-C:  
Combined ratio 95.7% (Q4: 101.9%)  
Major-loss ratio 9.1% (Q4: 14.8%)

### Investment result

€m



### ERGO

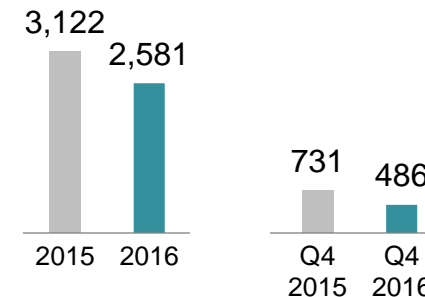
L/H Germany:  
Result impacted technical one-offs

P-C:  
Combined ratio 97.0% (Q4: 100.0%)

International:  
Combined ratio 99.0% (Q4: 100.4%)

### Net result

€m



### Munich Health

Reinsurance:  
Combined ratio 99.5% (Q4: 95.4%)

Primary insurance:  
Combined ratio 94.2% (Q4: 98.8%)



# IFRS capital position

## Equity

		€m	
Equity 31.12.2015	30,966		Change Q4
Consolidated result	2,581	486	
Changes			
Dividend	-1,329	–	
Unrealised gains/losses	265	-2,049	
Exchange rates	345	910	
Share buy-backs	-971	-260	
Other	-71	344	
Equity 31.12.2016	31,785	-570	

## Unrealised gains/losses

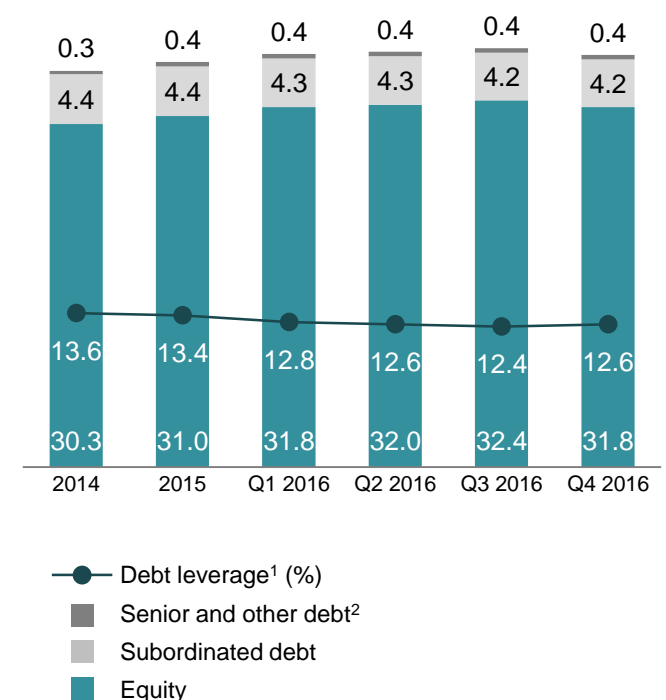
Fixed-interest securities  
2016: -€37m Q4: -€2,390m

Non-fixed-interest securities  
2016: +€304m Q4: +€335m

## Exchange rates

FX effect mainly driven by US\$

## Capitalisation



1 Strategic debt (senior, subordinated and other debt) divided by total capital (strategic debt + equity). 2 Other debt includes Munich Re bank borrowings and other strategic debt.


# Premium development

## Gross premiums written

€m

2015  50,374

Foreign exchange  -912

Divestments/  
investments  -109

Organic change  -503

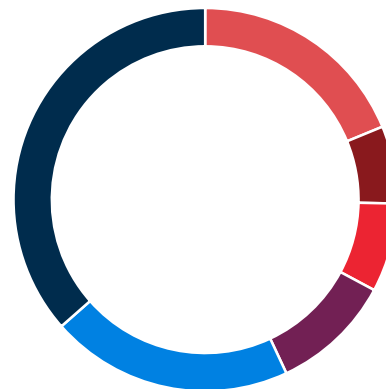
2016  48,851

## Segmental breakdown

€m

Reinsurance  
Property-casualty  
17,826 (36%) (▲ 0.8%)

ERGO  
Life and Health Germany  
9,177 (19%) (▲ -2.7%)



ERGO  
Property-casualty Germany  
3,194 (7%) (▲ 1.0%)

ERGO  
International  
3,664 (7%) (▲ -7.2%)

Reinsurance  
Life  
10,001 (20%) (▲ -5.1%)

Munich Health  
4,990 (10%) (▲ -11.3%)

# Reconciliation of operating result with net result

## Reconciliation of operating result with net result

	2016	Q4 2016
Operating result	4,025	823
Other non-operating result	-437	-123
Goodwill impairments	-28	-19
Net finance costs	-219	-57
Taxes	-760	-137
Net result	2,581	486

## Other non-operating result

	€m	
	2016	Q4 2016
Foreign exchange	485	160
Restructuring expenses	-583	-173
Other	-339	-110

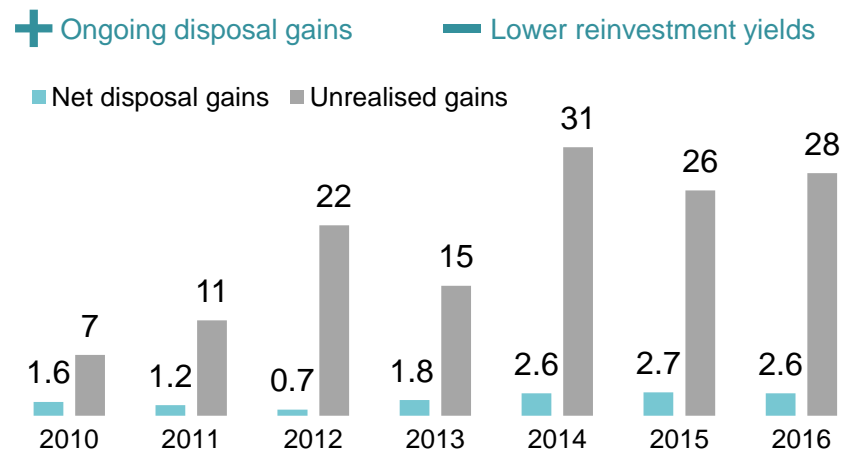
## Tax rates

	%	
	2016	Q4 2016
Group	22.7	22.0
Reinsurance	22.9	38.1
ERGO	29.2	326.1
Munich Health	22.6	26.9

# Short-term earnings pressure mitigated by strong balance sheet

## Investment result

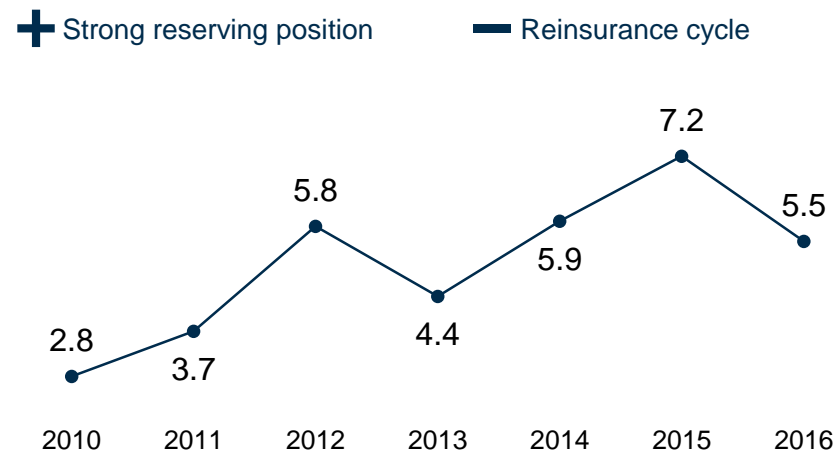
€bn



Part of the valuation reserves realised as a result of usual portfolio turnover

## P-C reinsurance – Release of loss reserves<sup>1</sup>

%



Ongoing releases of loss reserves without weakening resilience against future volatility

Conservative accounting translates into earnings as a result of ordinary business activity

<sup>1</sup> Basic losses, in % of net earned premiums, adjusted for corresponding commission effects.

# Reserving: Global hot spots well controlled – Provisions for risk scenarios adequately set

Motor liability	Industry impact	Munich Re impact	Casualty	Industry impact	Munich Re impact
<b>USA</b> Distracted driving, higher vehicle miles travelled, increase in truck tonnage	Continued increasing loss frequency and severity lead to reserve increases for whole US primary market	Limited impact due to very small market share in US motor	<b>USA</b> Comparatively high litigation risk, late loss emergence	Volatile loss developments; reserve increases for some companies in 2016	Specific IBNR for accumulation risk available – stable reserve situation overall
<b>UK</b> Significant reduction of discount rate for claims settlement (“Ogden”) announced in February 2017	Lower discount rate increases reserves for lump-sum payments; uncertainty about impact on share of lump sums vs. periodical payments and on tail development	Identified as reserve risk for many years; risk mitigation by significant exposure reduction for XL business and external protection for large losses in proportional treaties; reserves for periodical payments held on an undiscounted basis; overall, no material adverse effect on reserve position expected	<b>US workers’ compensation</b> High losses for reinsurers by business underwritten during soft market (late 90s),	Long-tail development with significant late loss emergence	Stringent execution of exit strategy – prudent reserving situation led to small reserve releases
			<b>Asbestos</b> Complex litigation, changes in legal and regulatory environment	Change in projected costs and number of claims	De-risking with settlement of large claim in 2016 – stable survival ratio over time

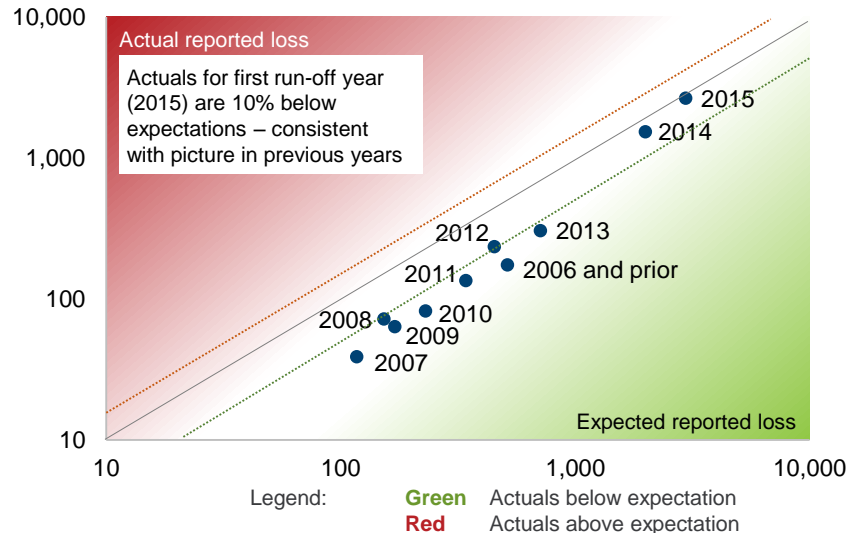
Reserves are set prudently at the level of homogeneous portfolios, independently of clients’ assessments

# Actual versus expected comparison – Loss-monitoring yields consistent picture across years

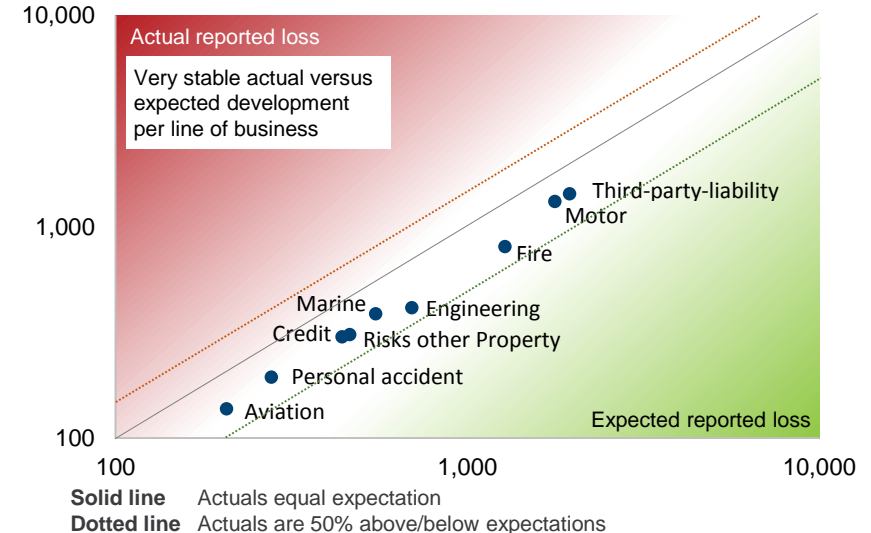
Reinsurance group – Comparison of incremental expected losses with actual reported losses<sup>1</sup>

€m

## By exposure year



## By line of business



Actual losses consistently below actuarial expectations – Very strong reserve position

# Positive run-off result without weakening resilience against future volatility

## Ultimate losses<sup>1</sup> (adjusted to exchange rates as at 31.12.2016)

€m

## Ultimate reduction




Date	Accident year (AY)											Total
	≤2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
31.12.2006	51,505											
31.12.2007	51,659	12,711										
31.12.2008	51,145	12,928	14,191									
31.12.2009	50,478	12,824	14,440	13,936								
31.12.2010	49,900	12,742	14,383	13,891	14,335							
31.12.2011	49,694	12,704	14,083	13,385	14,522	18,544						
31.12.2012	49,193	12,320	13,924	13,243	14,388	18,646	15,168					
31.12.2013	49,125	12,064	13,751	13,216	14,475	18,307	14,972	15,076				
31.12.2014	48,894	11,978	13,471	12,890	14,512	17,901	14,742	15,325	15,089			
31.12.2015	48,588	11,744	13,330	12,663	14,318	17,771	14,519	15,270	15,128	14,361		
31.12.2016	48,339	11,771	13,241	12,618	14,081	17,298	14,482	14,953	15,089	14,408	15,336	
<b>CY 2016 run-off change</b>	<b>248</b>	<b>-27</b>	<b>89</b>	<b>45</b>	<b>237</b>	<b>473</b>	<b>37</b>	<b>317</b>	<b>39</b>	<b>-48</b>	<b>-</b>	<b>1,412</b>
<b>CY 2016 run-off change (%)</b>	<b>0.5</b>	<b>-0.2</b>	<b>0.7</b>	<b>0.4</b>	<b>1.7</b>	<b>2.7</b>	<b>0.3</b>	<b>2.1</b>	<b>0.3</b>	<b>-0.3</b>	<b>-</b>	<b>0.8</b>

Prior-year releases of €1.4bn driven by reinsurance portfolio

- Favourable actual vs. expected comparison facilitates ultimate reductions for prior years
- Reserve position remains strong

Reinsurance<sup>2</sup> €1,268m  
ERGO €144m

# Response to benign emergence of basic losses in line with considered judgement

Actual vs. expected	Changes in projection	Business rationale
Property		<p>Releases follow favourable indications</p> <ul style="list-style-type: none"> <li>▪ Positive actual vs. expected indications</li> <li>▪ Short-tail lines develop relatively quickly</li> <li>▪ Release spread across all property lines of business</li> </ul>
Specialty <sup>1</sup>		<p>Small releases despite favourable indications</p> <ul style="list-style-type: none"> <li>▪ Favourable indications across all lines</li> <li>▪ Reserve release primarily in marine</li> </ul>
Casualty		<p>Favourable loss development leads to release</p> <ul style="list-style-type: none"> <li>▪ Favourable indications across all lines</li> <li>▪ Releases<sup>2</sup> mainly in third-party liability</li> </ul>

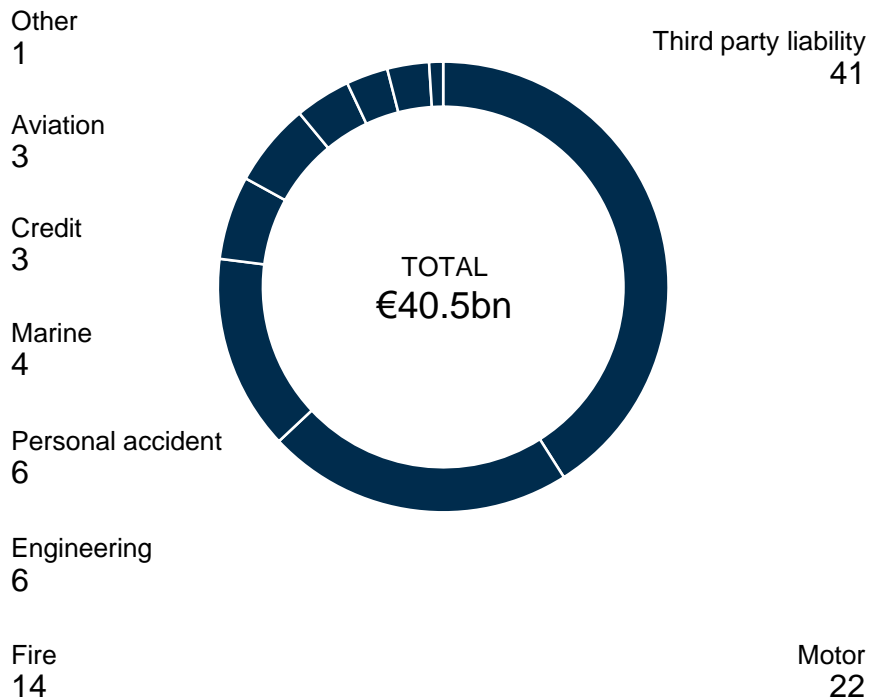
<sup>1</sup> Aviation, credit and marine. <sup>2</sup> Reserve releases shown are adjusted for commission effects (sliding scales in motor).



# Property-casualty provision for outstanding claims

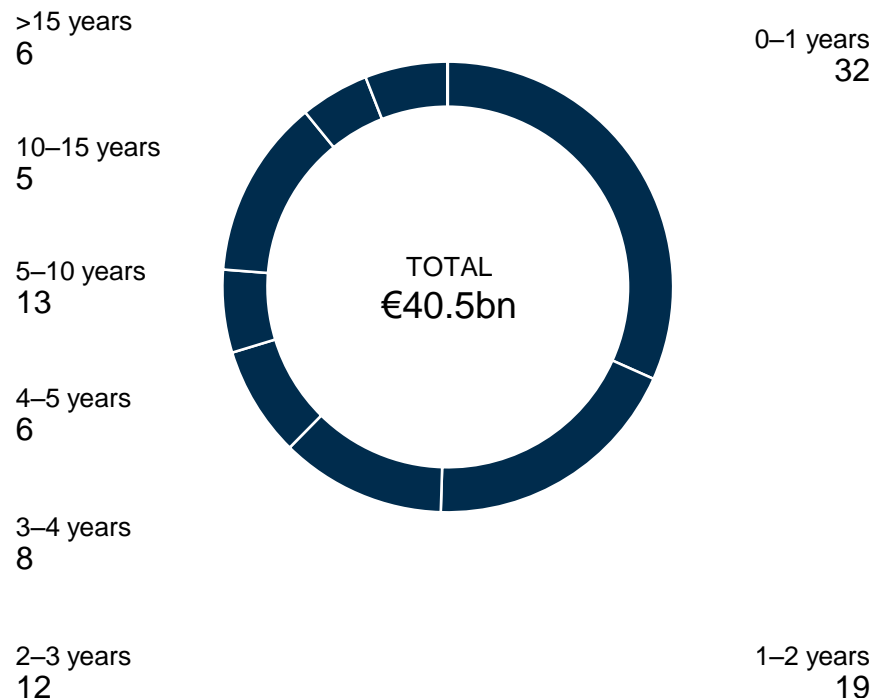
## By line of business

%



## By maturity

%



# Asbestos and environmental survival ratio 31 December 2016

Munich Re (Group) – Net definitive as at 31 December 2016<sup>1</sup>

€m

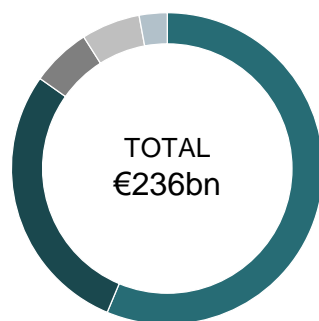
	Asbestos	Environmental	A&E total
Paid	3,353	1,001	4,353
Case reserves	486	148	634
IBNR	821	238	1,059
Total reserves	1,307	386	1,693
3-year average annual paid losses <sup>2</sup>	115	19	135
Survival ratio 3-year average <sup>2</sup> %	11.3	20.0	12.6

<sup>1</sup> Non-euro currencies converted at rate of exchange year-end 2016. <sup>2</sup> Adjusted for a major asbestos claim settlement in 2016.

# Investment portfolio

## Investment portfolio<sup>1</sup>

Land and buildings	2.9 (2.9)
Shares, equity funds and participating interests <sup>2</sup>	6.1 (5.2)
Miscellaneous <sup>3</sup>	6.2 (7.5)
Loans	28.5 (28.7)



Fixed-interest securities  
56.3 (55.7)

%

## Portfolio management in Q4

- Ongoing geographic diversification
- Slight decrease in corporate bonds
- Reduction of cash and bank bonds
- Increase of net equity exposure to 5.0%
- Increase of asset duration in reinsurance

## Portfolio duration<sup>1</sup>

DV01<sup>1,4</sup>

€m

		Assets	Liabilities		Assets	Liabilities	Net
Reinsurance	5.9 (5.4)	<div></div>	4.6 (4.8)		45 (41)	<div></div>	+2
ERGO	9.3 (8.4)	<div></div>	10.6 (9.1)		121 (111)	<div></div>	−22
Munich Re (Group)	8.0 (7.3)	<div></div>	8.1 (7.4)		166 (151)	<div></div>	−20

1 Fair values as at 31.12.2016 (31.12.2015). 2 Net of hedges: 5.0% (4.8%). 3 Deposits retained on assumed reinsurance, deposits with banks, investment funds (excl. equities), derivatives and investments in renewable energies and gold. 4 Market-value change due to a parallel downward shift in yield curve by one basis point-considering the portfolio size of assets and liabilities (pre-tax). Negative net DV01 means rising interest rates are beneficial.

# Investment result

Investment result (€m)	Q4 2016	Return <sup>1</sup>	2016	Return <sup>1</sup>	2015	Return <sup>1</sup>
Regular income	1,662	2.8%	6,663	2.8%	7,370	3.1%
Write-ups/write-downs	–115	–0.2%	–400	–0.2%	–754	–0.3%
Disposal gains/losses	779	1.3%	2,603	1.1%	2,693	1.1%
Derivatives <sup>2</sup>	–517	–0.9%	–713	–0.3%	–1,226	–0.5%
Other income/expenses	–184	–0.3%	–586	–0.2%	–548	–0.2%
<b>Investment result</b>	<b>1,625</b>	<b>2.7%</b>	<b>7,567</b>	<b>3.2%</b>	<b>7,536</b>	<b>3.2%</b>
<b>Total return</b>		<b>–10.5%</b>		<b>4.3%</b>		<b>0.9%</b>

3-month reinvestment yield	Q4 2016	Write-ups/ write-downs	Disposal gains/losses	Derivatives	2016	Write-ups/ write-downs	Disposal gains/losses	Derivatives
Q4 2016 1.8%	Fixed income <sup>3</sup>	–10	643	–286	Fixed income <sup>3</sup>	–23	2,263	70
	Equities	–26	105	–243	Equities	–323	440	–777
Q3 2016 1.8%	Commodities/Inflation	–51		13	Commodities/Inflation	27		–2
Q2 2016 1.6%	Other	–29	31	–1	Other	–69	–99	4

1 Annualised return on quarterly weighted investments (market values) in %. 2 Result from derivatives without regular income and other income/expenses.

3 Thereof interest-rate hedging ERGO: Q4 2016 (–€261m gross/–€34m net) and 2016 (€233m gross/€25m net).

# Breakdown of regular income

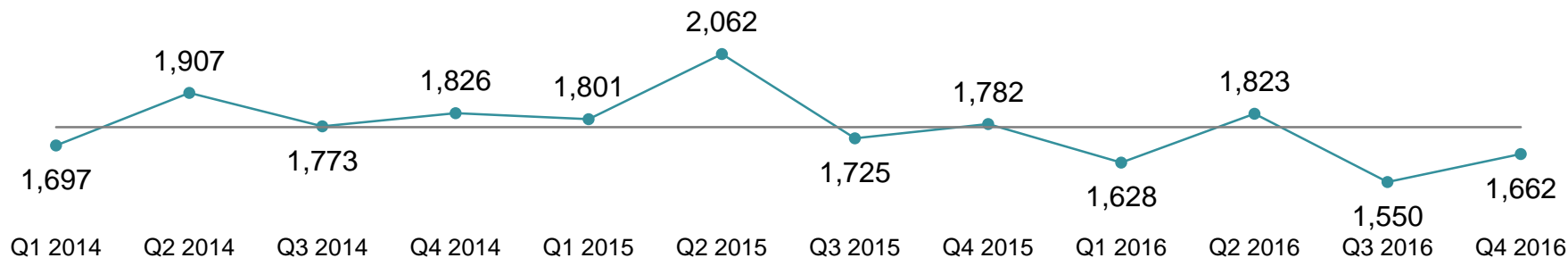
## Investment result – Regular income (€m)

	Q4 2016	2016	2015	Change
Afs fixed-interest	773	3,200	3,528	–328
Afs non-fixed-interest	113	556	618	–62
Derivatives	27	114	137	–23
Loans	548	2,063	2,098	–35
Real estate	103	405	393	12
Deposits retained on assumed reinsurance and other investments	99	325	597	–272
<b>Total</b>	<b>1,662</b>	<b>6,663</b>	<b>7,370</b>	<b>–707</b>

€m

● Regular income

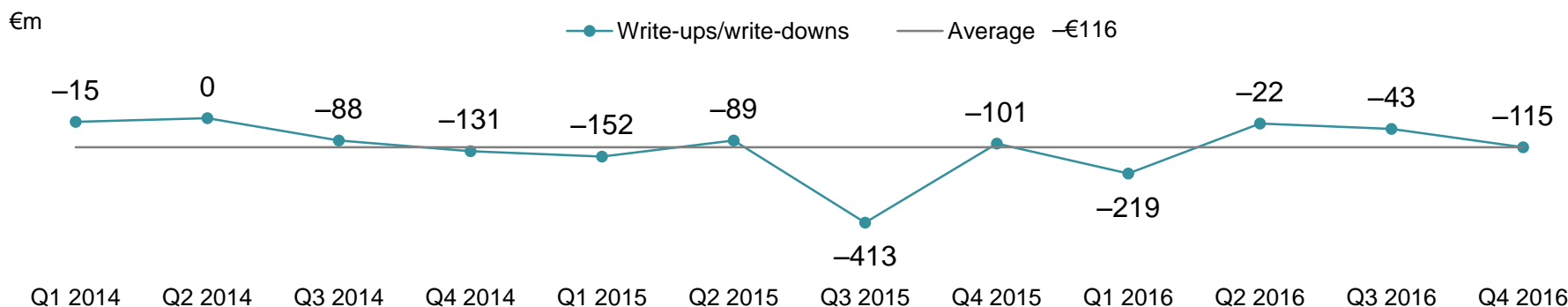
— Average €1,770m



# Breakdown of write-ups/write-downs

## Investment result – Write-ups/write-downs (€m)

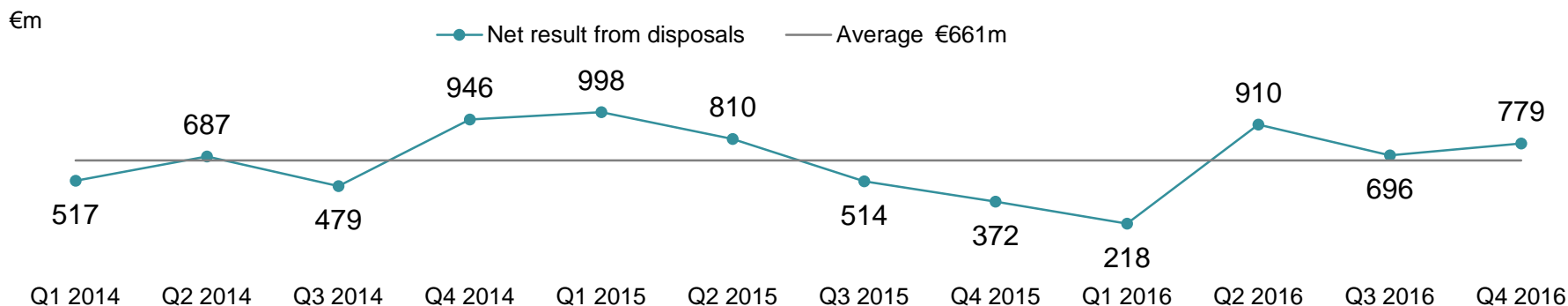
	Q4 2016	2016	2015	Change
Afs fixed-interest	1	1	–51	52
Afs non-fixed-interest	–26	–323	–488	165
Loans	–11	–37	–45	8
Real estate	4	–51	–65	13
Deposits retained on assumed reinsurance and other investments	–83	9	–106	115
<b>Total</b>	<b>–115</b>	<b>–400</b>	<b>–754</b>	<b>354</b>



# Breakdown of net result from disposals

## Investment result – Net result from disposal of investments (€m)

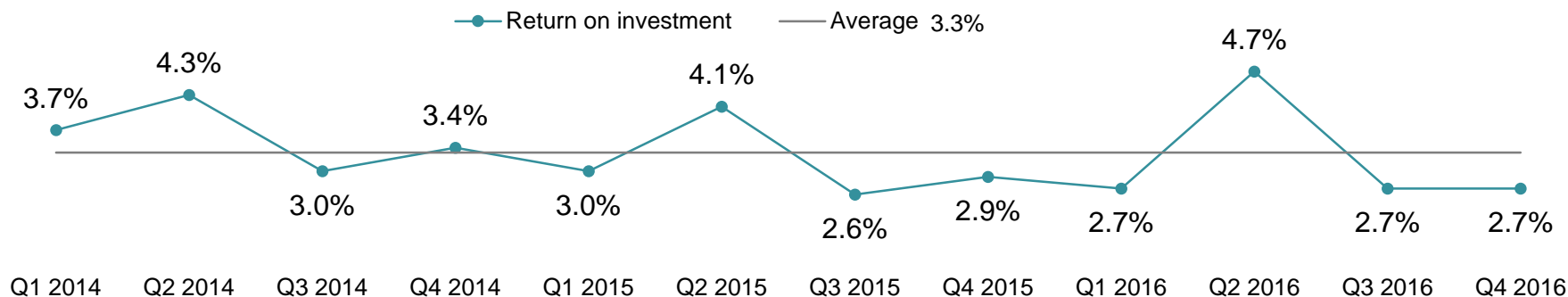
	Q4 2016	2016	2015	Change
Afs fixed-interest	543	1,656	1,413	243
Afs non-fixed-interest	105	440	1,018	–578
Loans	100	606	103	504
Real estate	15	29	5	24
Deposits retained on assumed reinsurance and other investments	16	–128	155	–283
<b>Total</b>	<b>779</b>	<b>2,603</b>	<b>2,693</b>	<b>–91</b>



# Return on investment by asset class and segment

## 2016

% <sup>1</sup>	Regular income	Write-ups/-downs	Disposal result	Extraord. derivative result	Other inc./exp.	Rol	Market value (€m)
Afs fixed-income	2.4	0.0	1.3	0.0	0.0	3.7	131,623
Afs non-fixed-income	3.9	-2.3	3.1	0.0	0.0	4.7	14,339
Derivatives	4.3	0.0	0.0	-26.8	-0.4	-22.8	2,663
Loans	3.0	-0.1	0.9	0.0	0.0	3.9	68,351
Real estate	6.1	-0.8	0.4	0.0	0.0	5.8	6,604
Other <sup>2</sup>	2.7	0.1	-1.1	0.0	-4.7	-3.0	12,212
<b>Total</b>	<b>2.8</b>	<b>-0.2</b>	<b>1.1</b>	<b>-0.3</b>	<b>-0.2</b>	<b>3.2</b>	<b>235,793</b>
Reinsurance	2.7	-0.2	1.1	-0.8	-0.3	2.5	88,666
ERGO	2.9	-0.2	1.1	0.0	-0.2	3.7	142,637
Munich Health	2.1	-0.1	0.9	0.0	-0.1	2.7	4,491





# Investment result by segment

Reinsurance Life (€m)	Q4 2016	Return <sup>1</sup>	2016	Return <sup>1</sup>	2015	Return <sup>1</sup>
Regular income	189	3.1%	695	2.9%	898	3.4%
Write-ups/write-downs	–18	–0.3%	–35	–0.1%	–68	–0.3%
Disposal gains/losses	18	0.3%	157	0.7%	265	1.0%
Derivatives <sup>2</sup>	–13	–0.2%	–134	–0.6%	–145	–0.6%
Other income/expenses	–15	–0.2%	–54	–0.2%	–53	–0.2%
<b>Investment result</b>	161	2.7%	629	2.6%	898	3.4%
<b>Average market value</b>		24,048		24,044		26,094

Reinsurance Property-casualty (€m)	Q4 2016	Return <sup>1</sup>	2016	Return <sup>1</sup>	2015	Return <sup>1</sup>
Regular income	461	2.8%	1,719	2.7%	1,827	2.8%
Write-ups/write-downs	–94	–0.6%	–133	–0.2%	–312	–0.5%
Disposal gains/losses	72	0.4%	800	1.2%	1,373	2.1%
Derivatives <sup>2</sup>	–46	–0.3%	–578	–0.9%	–636	–1.0%
Other income/expenses	–70	–0.4%	–219	–0.3%	–207	–0.3%
<b>Investment result</b>	323	2.0%	1,589	2.5%	2,046	3.1%
<b>Average market value</b>		65,371		64,621		64,957

# Investment result by segment

## ERGO Life and Health Germany (€m)

	Q4 2016	Return <sup>1</sup>	2016	Return <sup>1</sup>	2015	Return <sup>1</sup>
Regular income	864	2.8%	3,588	2.9%	3,853	3.3%
Write-ups/write-downs	–11	–0.0%	–181	–0.1%	–196	–0.2%
Disposal gains/losses	344	1.1%	1,188	1.0%	753	0.6%
Derivatives <sup>2,3</sup>	–404	–1.3%	77	0.1%	–330	–0.3%
Other income/expenses	–76	–0.2%	–257	–0.2%	–239	–0.2%
<b>Investment result</b>	<b>717</b>	<b>2.3%</b>	<b>4,415</b>	<b>3.6%</b>	<b>3,841</b>	<b>3.2%</b>
Average market value		123,733		122,131		118,427

## ERGO Property-casualty Germany (€m)

	Q4 2016	Return <sup>1</sup>	2016	Return <sup>1</sup>	2015	Return <sup>1</sup>
Regular income	38	2.2%	160	2.4%	195	2.7%
Write-ups/write-downs	10	0.6%	–47	–0.7%	–107	–1.5%
Disposal gains/losses	19	1.1%	31	0.5%	174	2.4%
Derivatives <sup>2</sup>	–7	–0.4%	–42	–0.6%	–58	–0.8%
Other income/expenses	–11	–0.7%	–23	–0.3%	–17	–0.2%
<b>Investment result</b>	<b>48</b>	<b>2.9%</b>	<b>80</b>	<b>1.2%</b>	<b>187</b>	<b>2.6%</b>
Average market value		6,745		6,764		7,305

<sup>1</sup> Return on quarterly weighted investments (market values) in % p.a. <sup>2</sup> Result from derivatives without regular income and other income/expenses.

<sup>3</sup> Thereof interest-rate hedging ERGO: Q4 –€245m/–€23m (gross/net); 12M €228m/€22m (gross/net).

# Investment result by segment

## ERGO International (€m)

	Q4 2016	Return <sup>1</sup>	2016	Return <sup>1</sup>	2015	Return <sup>1</sup>
Regular income	82	2.3%	407	3.0%	506	3.0%
Write-ups/write-downs	2	0.0%	2	0.0%	–69	–0.4%
Disposal gains/losses	311	8.6%	387	2.8%	92	0.5%
Derivatives <sup>2</sup>	–47	–1.3%	–34	–0.2%	–57	–0.3%
Other income/expenses	–10	–0.3%	–29	–0.2%	–26	–0.2%
<b>Investment result</b>	<b>337</b>	<b>9.4%</b>	<b>734</b>	<b>5.3%</b>	<b>447</b>	<b>2.6%</b>
Average market value		14,395		13,742		16,996

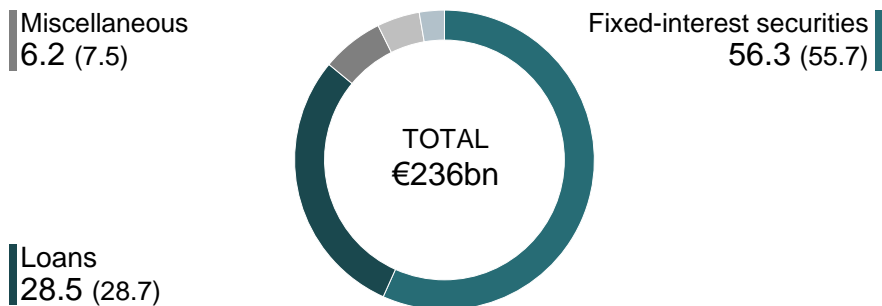
## Munich Health (€m)

	Q4 2016	Return <sup>1</sup>	2016	Return <sup>1</sup>	2015	Return <sup>1</sup>
Regular income	28	2.4%	93	2.1%	90	2.2%
Write-ups/write-downs	–5	–0.4%	–5	–0.1%	–2	–0.1%
Disposal gains/losses	17	1.4%	40	0.9%	36	0.9%
Derivatives <sup>2</sup>	0	0.0%	–2	–0.0%	0	–0.0%
Other income/expenses	–1	–0.1%	–5	–0.1%	–5	–0.1%
<b>Investment result</b>	<b>39</b>	<b>3.4%</b>	<b>120</b>	<b>2.7%</b>	<b>118</b>	<b>2.9%</b>
Average market value		4,698		4,491		4,071

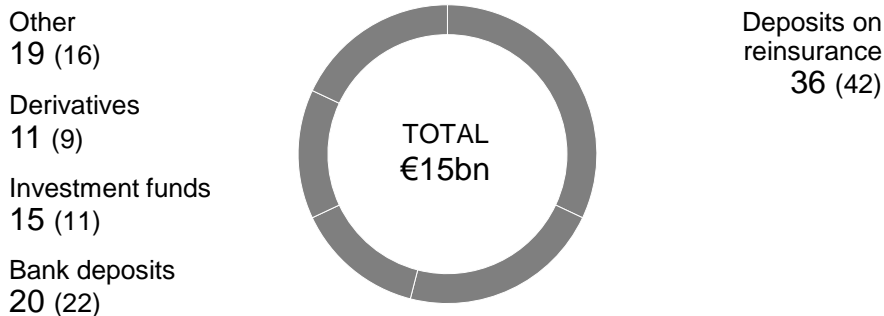
# Investment portfolio

## Fixed-interest securities and miscellaneous

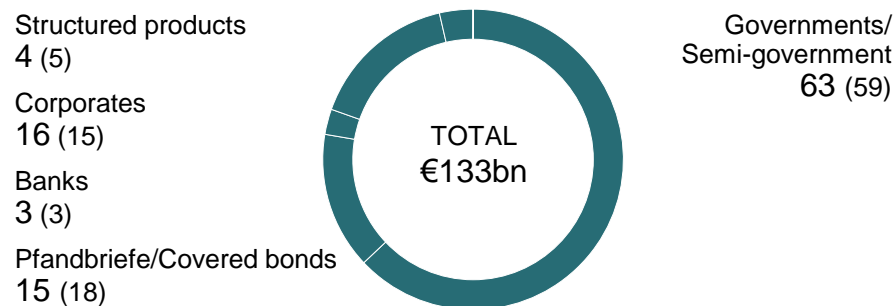
### Investment portfolio



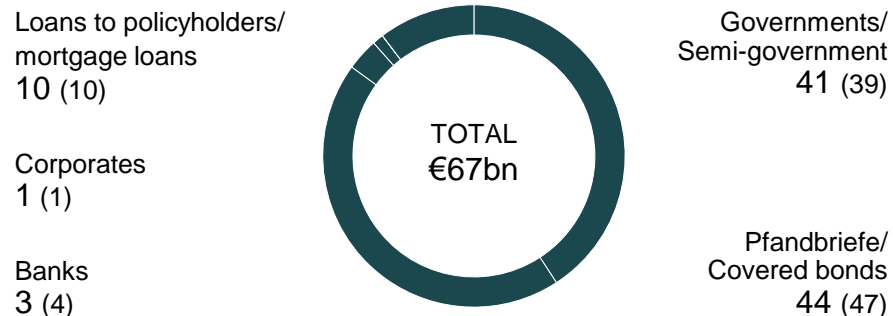
### Miscellaneous



### Fixed-interest securities<sup>1</sup>



### Loans<sup>1</sup>



<sup>1</sup> Approximation – not fully comparable with IFRS figures. Fair values as at 31.12.2016 (31.12.2015).

# Fixed-income portfolio

## Total

### Fixed-income portfolio

%

Loans to policyholders/  
mortgage loans

3 (3)

Governments/  
semi-government

53 (52)

Structured products

2 (2)

Bank bonds

3 (3)

Cash/other

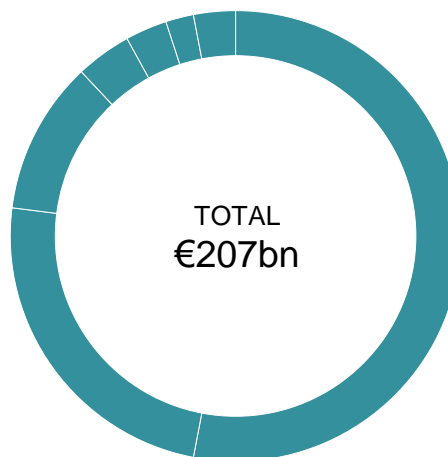
4 (4)

Corporate bonds

11 (10)

Pfandbriefe/covered bonds

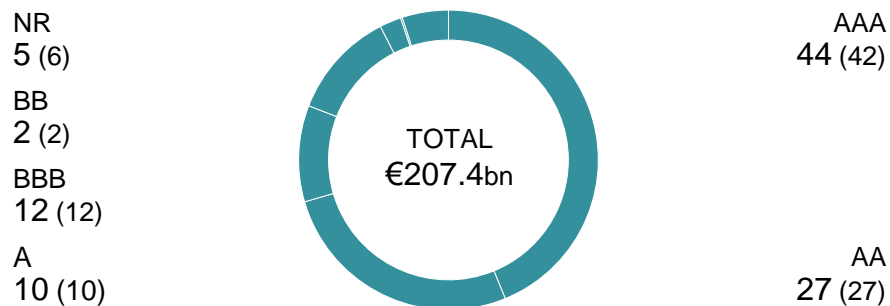
24 (24)



# Fixed-income portfolio

## Total

### Rating structure



### Maturity structure



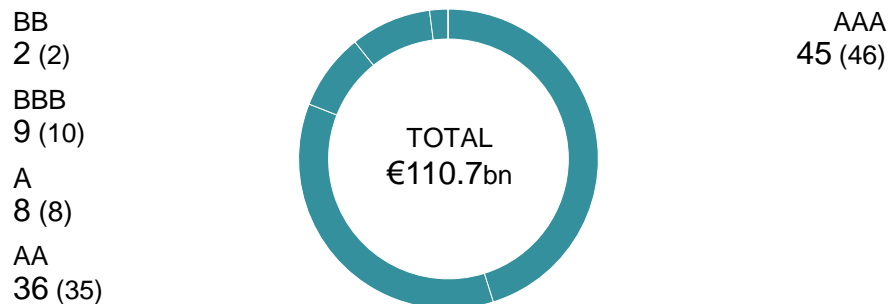
### Regional breakdown

	Without policyholder	With participation	Total 31.12.2016	31.12.2015
Germany	4.3	23.9	28.2	29.2
US	14.7	1.3	16.0	16.4
France	2.3	5.7	8.0	7.3
UK	3.0	2.3	5.3	6.1
Canada	4.1	0.4	4.5	3.8
Netherlands	1.2	3.1	4.3	4.0
Supranationals	0.8	3.2	4.0	3.4
Spain	1.2	1.6	2.8	3.3
Australia	1.9	0.5	2.4	2.5
Italy	0.9	1.5	2.4	2.4
Belgium	0.7	1.7	2.3	1.8
Ireland	0.6	1.5	2.0	2.5
Austria	0.3	1.7	2.0	2.1
Sweden	0.2	1.3	1.6	1.6
Norway	0.3	1.3	1.5	1.6
Other	7.6	5.0	12.6	11.9
<b>Total</b>	<b>44.1</b>	<b>55.9</b>	<b>100.0</b>	<b>100.0</b>

# Fixed-income portfolio

## Governments/semi-government

### Rating structure



### Maturity structure



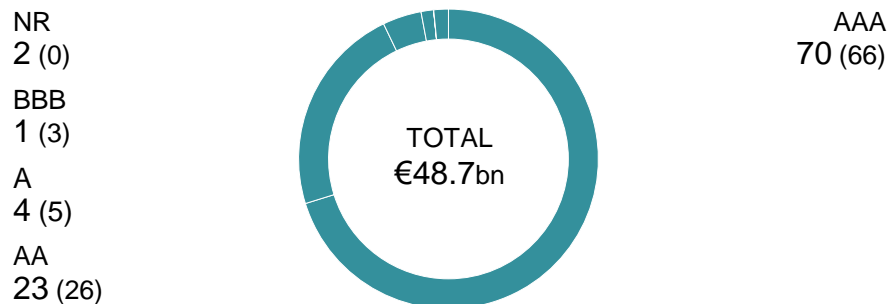
### Regional breakdown

	Without policyholder	With participation	Total 31.12.2016	31.12.2015
Germany	3.7	23.1	26.7	27.4
US	17.2	0.8	18.0	18.9
Supranationals	1.4	6.0	7.4	6.6
Canada	5.8	0.3	6.1	5.2
France	1.6	2.6	4.2	3.5
Belgium	0.9	3.0	3.8	3.1
UK	3.3	0.1	3.4	4.9
Italy	1.2	2.0	3.1	3.1
Spain	1.3	1.8	3.1	3.5
Australia	2.8	0.0	2.8	2.9
Austria	0.4	2.3	2.7	2.6
Poland	1.6	0.7	2.3	1.9
Netherlands	0.7	1.5	2.2	1.7
Finland	0.2	1.5	1.7	1.7
Ireland	0.2	1.4	1.6	1.9
Other	7.5	3.3	10.8	11.0
<b>Total</b>	<b>49.9</b>	<b>50.1</b>	<b>100.0</b>	<b>100.0</b>

# Fixed-income portfolio

## Pfandbriefe/covered bonds

### Rating structure



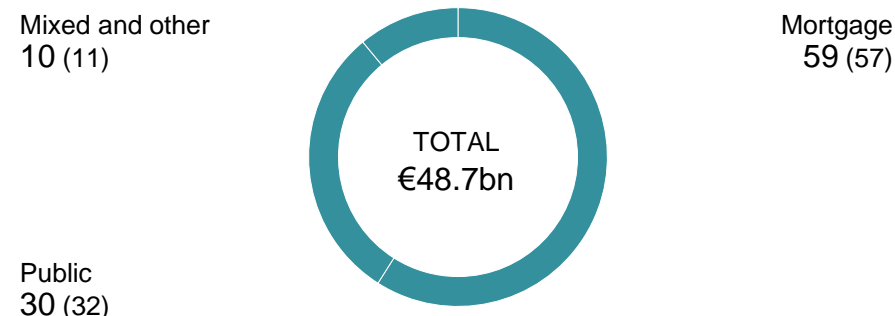
### Maturity structure



### Regional breakdown

	31.12.2016	31.12.2015
Germany	35.2	34.2
France	19.9	18.5
UK	8.6	8.5
Netherlands	7.4	7.1
Sweden	6.0	5.9
Norway	5.9	5.7
Spain	3.4	4.8
Italy	1.0	1.2
Ireland	1.0	2.9
Other	11.6	11.1

### Cover pools



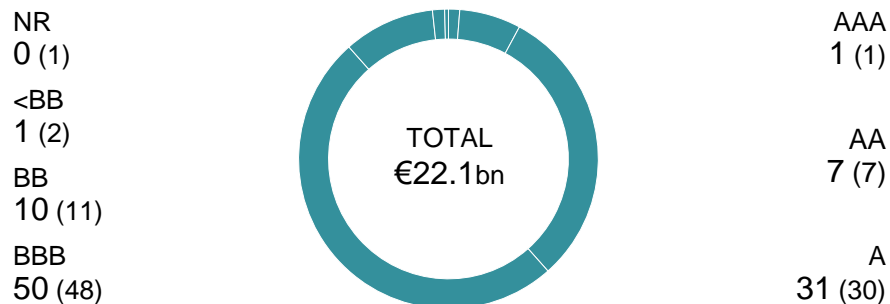




# Fixed-income portfolio

## Corporate bonds (excluding bank bonds)

### Rating structure

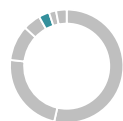


### Maturity structure



### Regional breakdown

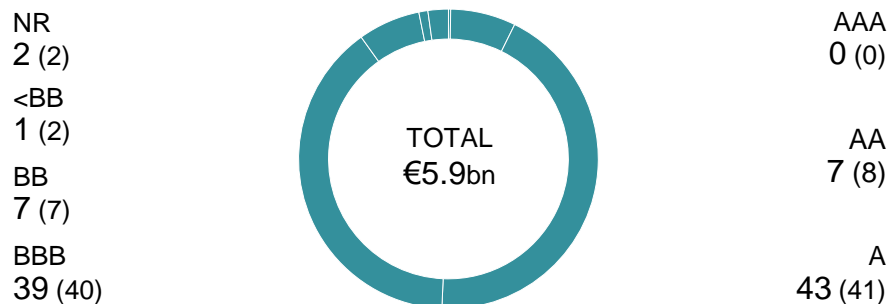
	31.12.2016	31.12.2015
Utilities	18.5	21.1
Industrial goods and services	12.5	12.7
Oil and gas	11.8	10.9
Telecommunications	8.8	8.5
Financial services	7.1	7.9
Healthcare	6.4	6.7
Technology	5.0	3.5
Food and beverages	4.9	4.1
Basic resources	3.9	3.5
Retail	3.9	3.9
Media	3.8	4.5
Automobiles	3.8	2.8
Personal and household goods	2.9	2.7
Other	6.7	7.2



# Fixed-income portfolio

## Bank bonds

### Rating structure



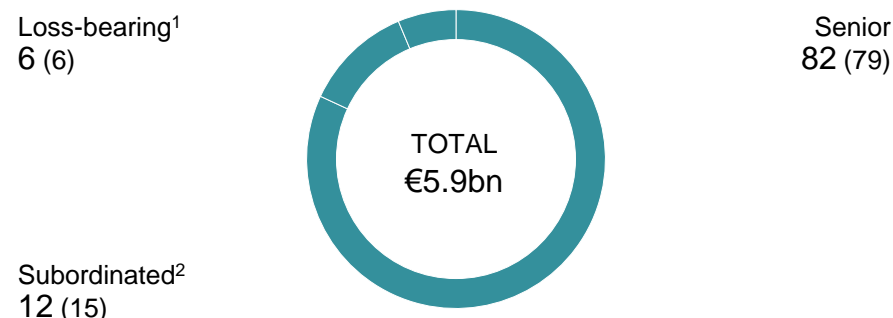
### Maturity structure



### Regional breakdown

	Senior bonds	Subordinated	Loss-bearing	Total	
				31.12.2016	31.12.2015
US	32.2	6.1	0.3	38.6	36.7
Germany	18.0	1.3	4.0	23.3	24.3
UK	6.6	0.8	0.2	7.6	8.7
Ireland	6.7	0.1	0.0	6.8	6.0
France	2.1	1.0	1.2	4.3	3.9
Canada	2.1	0.8	0.0	2.8	2.6
Jersey	2.4	0.0	0.0	2.4	1.7
Guernsey island	1.5	0.0	0.0	1.5	0.7
Austria	0.6	0.5	0.0	1.2	1.6
Other	9.6	1.2	0.6	11.4	13.7

### Investment category of bank bonds





# Fixed-income portfolio

## Structured products

### Structured products portfolio (at market values): Breakdown by rating and region

%

		Rating						Region			
		AAA	AA	A	BBB	<BBB	NR	USA + RoW	Europe	Total	Market-to-par
ABS	Consumer-related ABS <sup>1</sup>	300	372	13	5	0	1	264	427	691	101%
	Corporate-related ABS <sup>2</sup>	9	106	86	43	0	0	0	243	243	100%
	Subprime HEL	0	0	1	0	0	0	1	0	1	91%
CDO/ CLN	Subprime-related	0	0	0	0	0	0	0	0	0	0%
	Non-subprime-related	625	792	89	25	0	30	374	1,186	1,560	100%
MBS	Agency	1,288	54	0	0	0	0	1,342	0	1,342	104%
	Non-agency prime	167	168	34	3	0	0	2	371	373	100%
	Non-agency other (not subprime)	85	74	16	0	8	0	0	183	183	98%
	Commercial MBS	350	56	23	18	0	0	318	128	446	102%
Total 31.12.2016		2,823	1,622	261	95	8	31	2,303	2,537	4,839	101%
In %		58%	34%	5%	2%	0%	1%	48%	52%	100%	
Total 31.12.2015		2,668	1,450	430	116	12	51	2,099	2,628	4,727	100%

# Sensitivities to interest rates, spreads and equity markets

Sensitivity to risk-free interest rates – Basis points <sup>4</sup>	–50	–25	+50	+100
Change in gross market value (€bn)	+8.7	+4.3	–8.1	–15.5
Change in on-balance-sheet reserves, net (€bn) <sup>1</sup>	+2.0	+1.0	–1.9	–3.6
Change in off-balance-sheet reserves, net (€bn) <sup>1</sup>	+0.4	+0.2	–0.4	–0.7
P&L impact, net (€bn) <sup>1</sup>	+0.0	+0.0	–0.0	–0.0
Sensitivity to spreads <sup>2</sup> (change in basis points)			+50	+100
Change in gross market value (€bn)			–5.9	–11.3
Change in on-balance-sheet reserves, net (€bn) <sup>1</sup>			–1.1	–2.2
Change in off-balance-sheet reserves, net (€bn) <sup>1</sup>			–0.3	–0.6
P&L impact, net (€bn) <sup>1</sup>			–0.0	–0.1
Sensitivity to equity and commodity markets <sup>3</sup>	–30%	–10%	+10%	+30%
<b>EURO STOXX 50 (3,291 as at 31.12.2016)</b>	2,304	2,962	3,620	4,278
Change in gross market value (€bn)	–4.8	–1.6	+1.5	+4.7
Change in on-balance-sheet reserves, net (€bn) <sup>1</sup>	–1.3	–0.6	+0.9	+2.7
Change in off-balance-sheet reserves, net (€bn) <sup>1</sup>	–0.8	–0.3	+0.3	+0.8
P&L impact, net (€bn) <sup>1</sup>	–1.6	–0.4	+0.0	+0.2

1 Rough calculation with limited reliability assuming unchanged portfolio as at 31.12.2016. After rough estimation of policyholder participation and deferred tax; linearity of relations cannot be assumed. Approximation – not fully comparable with IFRS figures. 2 Sensitivities to changes of spreads are calculated for every category of fixed-interest securities, except government securities with AAA ratings. 3 Worst-case scenario assumed including commodities: impairment as soon as market value is below acquisition cost. Approximation – not fully comparable with IFRS figures.

# On and off-balance-sheet reserves (gross)

€m	31.12.2014	31.12.2015	30.6.2016	30.9.2016	31.12.2016
Market value of investments	235,849	230,529	237,519	241,824	236,153
Total reserves	31,470	25,969	34,530	36,401	28,496
On-balance-sheet reserves					
Fixed-interest securities	11,967	7,886	13,685	14,077	8,649
Non-fixed-interest securities	2,270	2,446	1,966	2,357	2,924
Other on-balance-sheet reserves <sup>1</sup>	311	201	164	182	186
Subtotal	14,548	10,533	15,816	16,617	11,759
Off-balance-sheet reserves					
Real estate <sup>2</sup>	2,006	2,273	2,176	2,190	2,413
Loans and investments (held to maturity)	14,400	12,610	15,926	16,991	13,591
Associates	516	553	613	603	733
Subtotal	16,922	15,436	18,714	19,784	16,738
Reserve ratio	13.3%	11.3%	14.5%	15.1%	12.1%

# On-balance-sheet reserves

## On-balance-sheet reserves









€m

	31.12.2016	Change Q4
Investments afs	11,573	–4,862
Valuation at equity	80	4
Unconsolidated affiliated enterprises	90	5
Cash flow hedging	16	–6
Total on-balance-sheet reserves (gross)	11,759	–4,858
Provision for deferred premium refunds	–5,634	1,932
Deferred tax	–1,383	967
Minority interests	–16	2
Consolidation and currency effects	–294	–89
Shareholders' stake	4,432	–2,046

# Off-balance-sheet reserves

## Off-balance-sheet reserves

€m

	31.12.2016	Change Q4
Real estate <sup>1</sup>	2,413 	223
Loans	13,591 	–3,399
Associates	733 	130
Total off-balance-sheet reserves (gross)	16,738 	–3,046
Provision for deferred premium refunds	–12,189 	2,681
Deferred tax	–1,371 	132
Minority interests	–1 	0
Shareholders' stake	3,176 	–233

<sup>1</sup> Excluding reserves for owner-occupied property.

# Specifics of Munich Re's Group Internal Model (GIM)

## Specific features of GIM

- GIM approved by core college (BaFin, PRA, MFSA) covers all risk categories
- Own funds and SCR based on fully consolidated accounts – no use of deduction and aggregation, e.g. for US subsidiaries
- All figures do not include effects from transitionals or long-term-guarantee (LTG) measures, e.g. volatility adjustment
- Stable and market-consistent calibration of pricing scenarios<sup>1</sup>
- Pricing models fully capable of reflecting market distortions, e.g. negative interest rates
- Conservative treatment of loss-absorbing capacity of deferred taxes
- Consideration of tail dependencies via Gumbel copula<sup>2</sup>

## Relevant driver of capital requirements

- Migration, default (credit risk) and spread variations (market risk), capitalised for all fixed-income securities<sup>3</sup>, e.g. government bonds
- Capitalisation of all relevant pension liabilities, type DBO, also in case of externally-managed pension funds
- Capitalisation of significant interest rate “down” shocks also in case of negative interest rates
- Consideration of interest rate sensitivity of risk margin in GIM
- Internal Model also capitalises variations at the very-long end of the interest-rate curve, i.e. no convergence towards UFR implemented in real-world scenarios
- No expected return considered in real-world projections

Conservatively calibrated GIM safeguards sound risk measurement and provides adequate management impulses

<sup>1</sup> This implies that (i) asset prices observed in financial markets are recovered, (ii) “no arbitrage” condition is fulfilled, and (iii) pricing scenarios fully reflect risk-free interest-rate curve.

<sup>2</sup> Validation via extreme events, e.g. pandemic. <sup>3</sup> Including EEA sovereign bonds, AAA- and AA-rated non-EEA sovereign bonds, supranationals, and mortgage loans on residential property



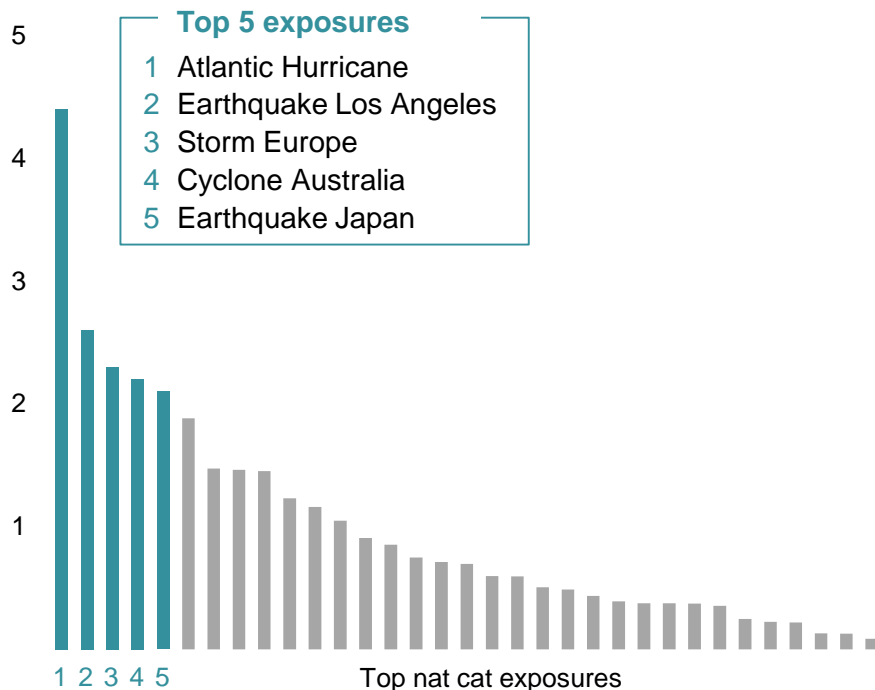
# Breakdown of solvency capital requirement (SCR) by risk category and segment

Risk category (€bn)	Group		Delta	RI	ERGO	MH	Div.	Remarks
	2015	2016		2016	2016	2016	2016	
Property-casualty	6.3	6.8	+0.4	6.7	0.4	–	–0.3	Appreciation of US\$
Life and Health	4.7	5.2	+0.5	4.3	1.2	0.3	–0.6	
Market	8.7	9.9	+1.2	5.9	6.5	–	–2.5	Low-interest-rate environment Model reflects negative interest rates
Credit	4.2	4.0	–0.1	2.6	1.6	–	–0.2	
Operational risk	1.0	1.4	+0.4	0.9	0.8	0.1	–0.4	Reassessment of cyber scenarios
Other <sup>1</sup>	0.1	0.6	+0.5	0.4	0.2	0.0	0.0	Change in disclosure
Simple sum	25.1	27.9	+2.8	20.8	10.7	0.4	–4.0	
Diversification	–9.3	–10.0	–0.7	–7.7	–2.4	0.0		Diversification benefit: 36%
Tax	–2.3	–2.6	–0.3	–2.2	–1.0	–0.1		
<b>Total SCR</b>	<b>13.5</b>	<b>15.3</b>	<b>+1.8</b>	<b>10.9</b>	<b>7.3</b>	<b>0.3</b>	<b>–3.2</b>	

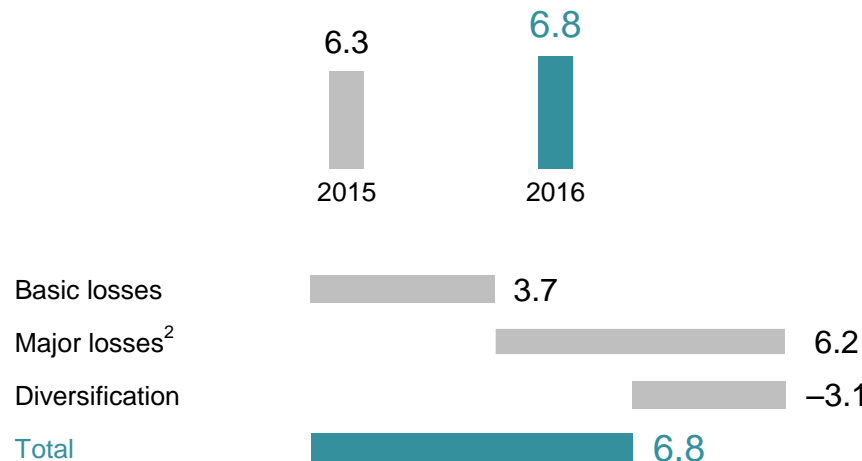
▶ Low interest-rate environment largest determinant of SCR changes

# Property-casualty risk – High global diversification, both within nat cat risks and between major and basic losses

Nat cat exposure (net of retrocession) – AggVaR<sup>1</sup> €bn



SCR property-casualty €bn



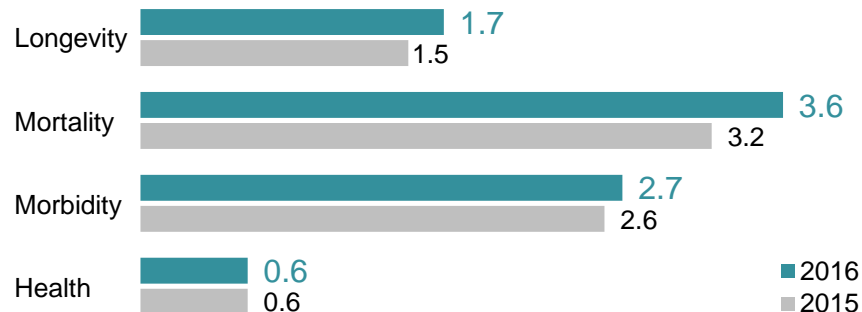
- Overall, portfolio remained stable vs. last year
- SCR increase mainly due to FX, esp. strong US\$, affecting major and basic losses

# Life and Health risk

## Slight increase mainly driven by Reinsurance Life

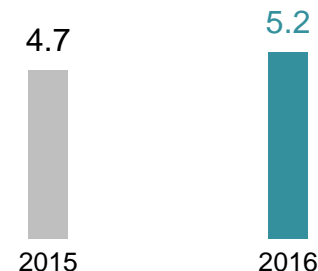
### Life and Health – VaR<sup>1</sup>

€bn



### SCR Life and Health

€bn



### Longevity<sup>2</sup>

Slight increase equally driven by ERGO L/H and Reinsurance Life

- Reinsurance Life: mainly due to growth in UK business
- ERGO L/H: effects of lower euro interest rates largely offset by the implementation of the Strategy Programme

### Mortality

Slight increase mainly driven by Reinsurance Life

- Business growth particularly in Asia and USA
- FX effects, appreciation of CAD and US\$

### Morbidity

Slight increase mainly driven by Reinsurance Life

- Mostly due to business growth in Canada, Australia and Asia

<sup>1</sup> Munich Re (Group). Return period 200 years, pre-tax. <sup>2</sup> ERGO L/H has a share of ~60% in this risk category.

# Market risk – Increase driven by lower interest rates and full recognition of negative interest rates in the internal model

## Solvency capital requirement

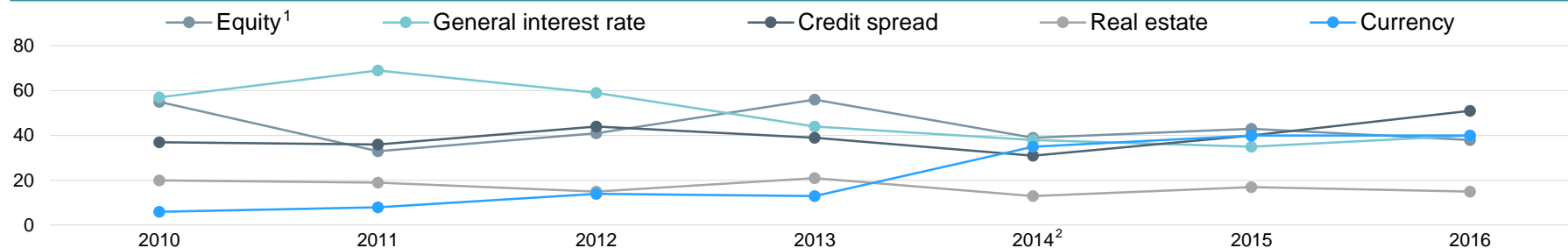
€bn

Risk category	Group		RI/MH	ERGO	Div.	Remarks
	2015	2016	2016	2016	2016	
Equity	3.7	3.8	3.1	0.8	−0.1	Positive performance of equity portfolio
General interest rate	3.1	4.0	1.7	3.9	−1.6	Further decrease of euro interest rates in conjunction with full recognition of negative interest rates in the internal model; shift to credit spread risk caused by lower risk-mitigating buffers.
Credit spread	3.5	5.0	1.5	4.3	−0.8	
Real estate	1.5	1.4	0.9	0.6	−0.1	Improved diversification of real estate portfolio
Currency	3.5	3.9	3.9	0.1	−0.1	Increase of FX position, in particular US\$
Simple sum	15.3	18.1	11.1	9.7	−2.7	
Diversification	−6.6	−8.2	−5.2	−3.2	−	Increase in FX and interest rate risk results in improved diversification
<b>Total market risk SCR</b>	<b>8.7</b>	<b>9.9</b>	<b>5.9</b>	<b>6.5</b>	<b>−2.5</b>	

# Market risk – Well balanced profile improves diversification effects

## Risk contribution (undiversified)

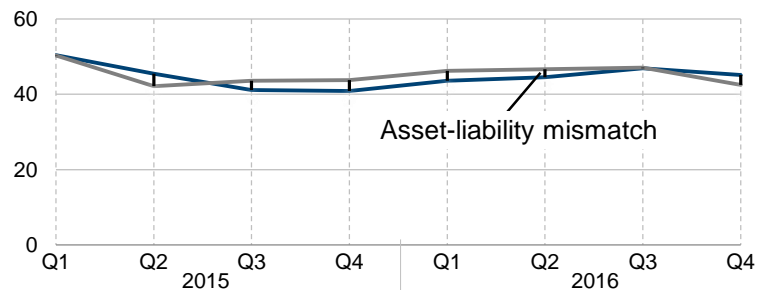
%



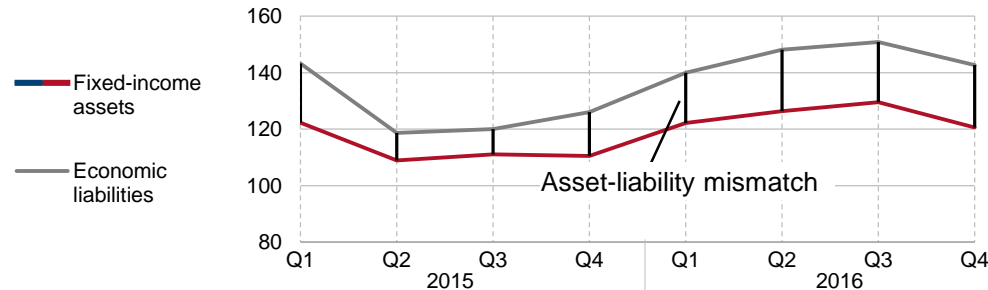
## DV01 – Sensitivity to parallel downward shift of yield curve by one basis point reflects portfolio size

€m

### Reinsurance



### ERGO

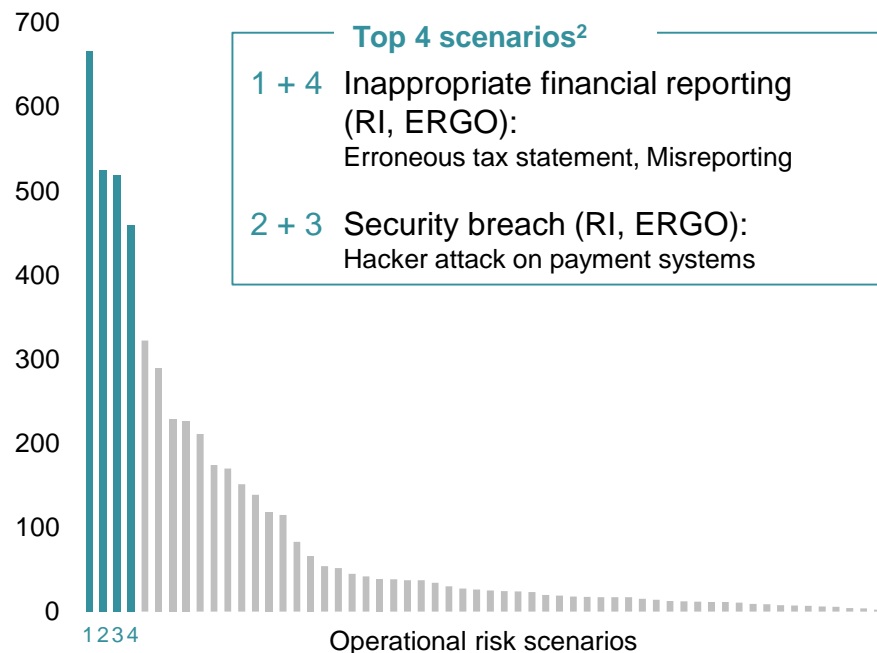


<sup>1</sup> Equity risk also includes alternative investments, such as investments in infrastructure. <sup>2</sup> Transition into SII metric.

# Operational risk – Increase mainly driven by better reflection of rising cyber risk exposure

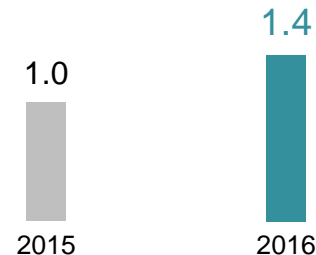
Operational risk scenarios<sup>1</sup> – VaR

€m



Group SCR operational risk

€bn



## Integral part of the internal model

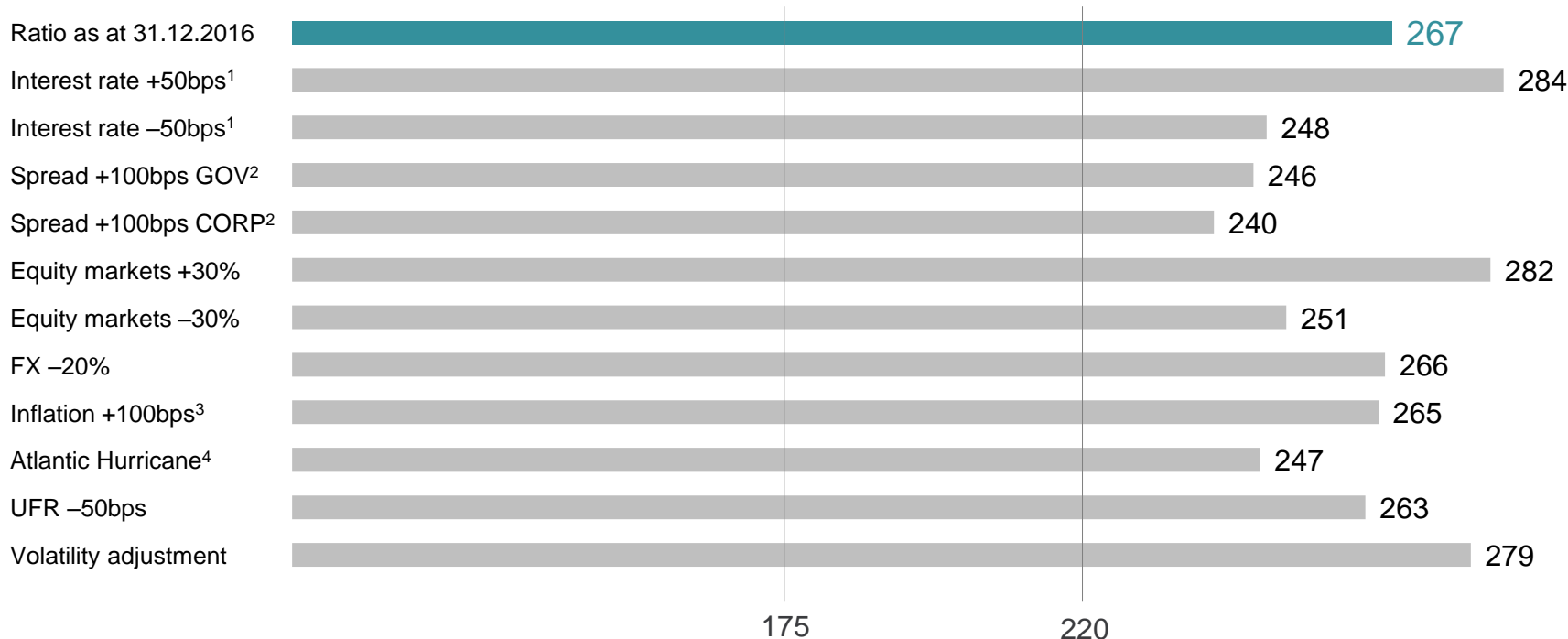
- Calculation based on ~20 scenarios for each field of business
- Scenario categorisation by ORIC standard<sup>2</sup>
- Risk strategy for operational risk: Trigger defined at business-field level
- Internal control system implemented to actively manage operational risks for Munich Re (Group)

<sup>1</sup> Scenarios on group and business field level, before diversification. <sup>2</sup> ORIC: Listed are the first-level categories according to the standard of Operational Risk Consortium.

# Sensitivities of SII ratio

## SII ratio – Sensitivity

%



1 Parallel shift until last liquid point, extrapolation to unchanged UFR. 2 Due to diversification, spread sensitivity simultaneously stressing GOV and CORP spreads (226%) is lower than the sum of shown separate sensitivities. 3 Based on CPI inflation. 4 Based on 200-year event.

# Development of Munich Re's Solvency II ratio

## Munich Re actions

### >220%: Above target capitalisation

- Capital repatriation
- Increased risk-taking
- Holding excess capital to meet external constraints

### 175% – 220%: Target capitalisation

- Optimum level of capitalisation

### 140% – 175%: Below target capitalisation

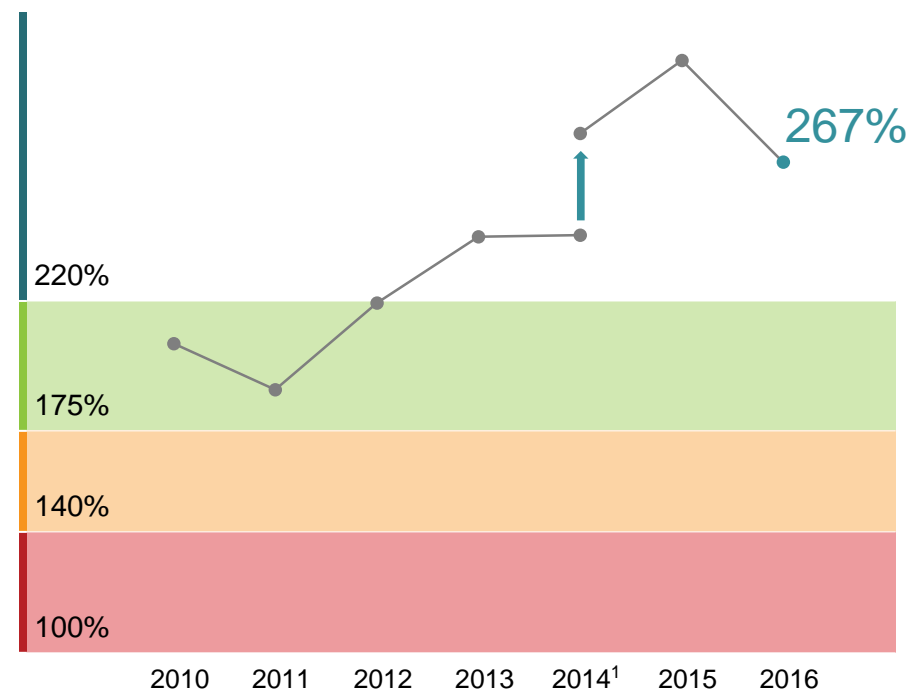
- Tolerate (management decision) or
- If necessary, take management action (e.g. risk transfer, scaling-down of activities; raising of hybrid capital)

### <140%: Sub-optimal capitalisation

- Take risk-management action (e.g. risk transfer, scaling-down of activities; raising of hybrid capital) or
- In exceptional cases, tolerate situation (management decision)

## SII ratio

%



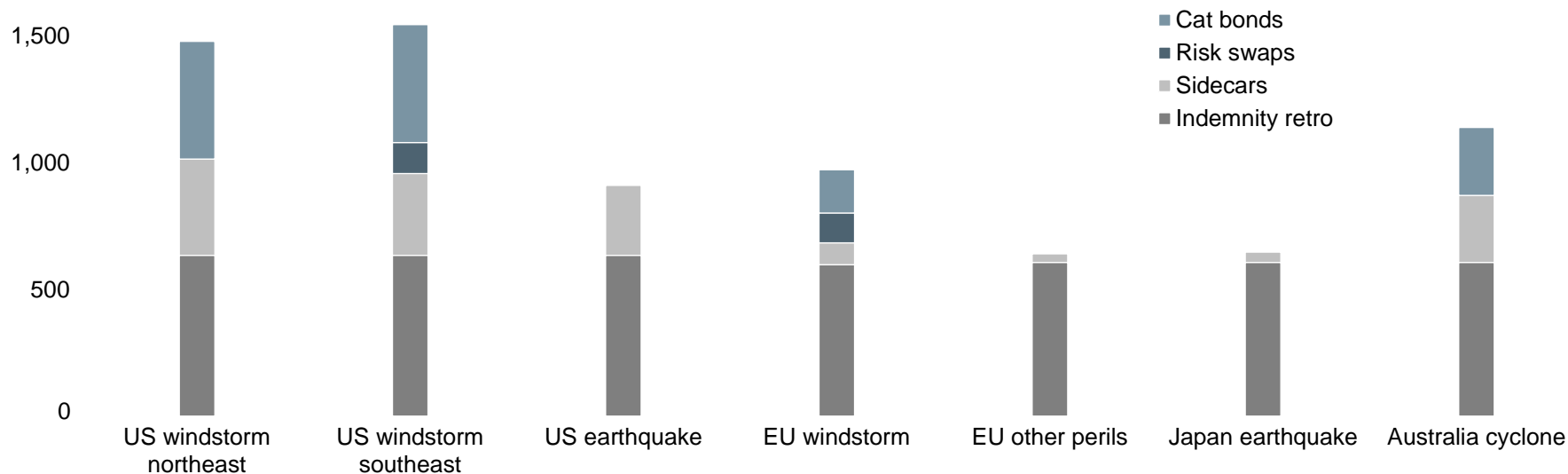
<sup>1</sup> Transition into SII metric.



# Munich Re's maximum in-force nat cat protection

Munich Re's maximum in-force nat cat protection as at January 2017

€m



Benefiting from favourable market environment

Broadening of relationship to end-investors




# ESP – Update “Fit, Digital & Successful!”

	Elements		Achievements 2016
<b>Fit</b>	<b>F1</b> Sales	<b>F2</b> Administration	<ul style="list-style-type: none"> <li>▪ Bundling of sales forces into one tied-agent organisation</li> <li>▪ Despite restructuring, sales volume exceeded forecast (+12%)</li> <li>▪ Workers' council has agreed on major topics</li> </ul>
	<b>F3</b> Governance International	<b>F4</b> Life Germany	
<b>Digital</b>	<b>D5</b> Foundational IT	<b>D6</b> Digital IT	<ul style="list-style-type: none"> <li>▪ Establishment of new IT organisation</li> <li>▪ Incorporation of new ERGO Digital IT GmbH</li> <li>▪ Improvement of “Straight Through Processing” rate</li> </ul>
	<b>D7</b> Processes		
<b>Successful!</b>	<b>S8</b> Product portfolio	<b>S9</b> Hybrid customers	<ul style="list-style-type: none"> <li>▪ New modular product design and start of new modular policies (motor and liability)</li> <li>▪ Re-design of ERGO.de website</li> <li>▪ Legal establishment of pure digital player “nexible”</li> <li>▪ Start of “ERGO Vorteilswelt” (ERGO Direkt)</li> <li>▪ Starting full digital underwriting of term insurance policies (ERGO Direkt)</li> <li>▪ ERGO International strategy and organisational structure finalised</li> </ul>
	<b>S10</b> Online customers	<b>S11</b> Commercial/ industrial business	
	<b>S12</b> Mobility Solutions	<b>S13</b> Strategy International	

# ERGO Life and Health Germany

## 2016 vs. 2015

### Gross premiums written €m

2015		9,426
Foreign exchange		–25
Divestments/investments		0
Organic change		–225
2016		9,177

- Life: –€225m  
Decline in regular premiums due to ordinary attrition, while single premiums suffered from lower product sales
- Health: –€23m  
Positive development in supplementary insurance, but overcompensated by discontinuation of a large contract; comprehensive cover flat

### Major result drivers

	2016	2015	▲
Technical result	370	293	77
Non-technical result	257	18	239
thereof investment result	4,415	3,841	574
Other	–513	–640	127
<b>Net result</b>	<b>114</b>	<b>–329</b>	<b>443</b>

	Q4 2016	Q4 2015	▲
Technical result	163	31	133
Non-technical result	–74	–33	–42
thereof investment result	717	699	18
Other	6	–460	466
<b>Net result</b>	<b>95</b>	<b>–462</b>	<b>556</b>

### Technical result

- Q4: Positive effect from technical interest due to refined calculation method
- Q4: Increased shareholder participation at Victoria Leben

### Investment result

- FY: Significantly improved derivative result, partly reversed in Q4
- FY: Release of unrealised gains for ZZR
- FY: Lower regular income

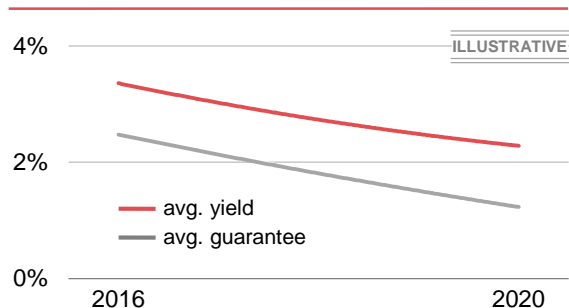
### Other

- FY: Restructuring expenses include investments<sup>1</sup> of –€289m/–€82m (gross/net), mainly in Q2; non-tax deductible goodwill impairment in 2015 (+€429m)
- FY: Tax rate of 25.3% vs. –3.0%

1 A small part of expenses from ESP is included in the technical result.

# Life Germany – Key figures and ZZR

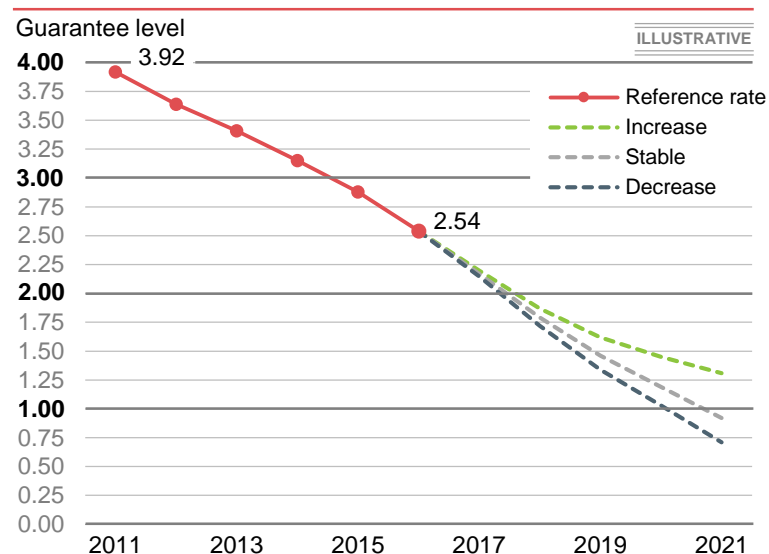
## Average yield vs. average guarantee



## Key figures<sup>1</sup>

	Reinvestment yield	Average yield	Average guarantee
<b>2016</b>	~1.3	~3.4	~2.4
2015	~1.8	~3.4	~2.7
2014	~2.6	~3.6	~3.0

## ZZR reference rate – Projection<sup>2</sup>



## Key financials<sup>3</sup> – €bn

	Free RfB	Terminal bonus fund	Unrealised gains	Accumulate ZZR
<b>2016</b>	1.2	1.1	13.7	3.6
2015	0.9	1.6	12.2	2.5
2014	1.0	1.7	14.6	1.5

## ZZR – Low interest-rate reserve

- Local GAAP reserve against low interest rates
- Expected accumulated ZZR in 2017: ~€5bn
- Partly financed through unrealised gains – positive impact on IFRS earnings when realised
- Effect on IFRS net income in 2016: +€22m**

# ERGO Life Germany: Total premiums and new business, incl. direct business (statutory premiums)

## Total premiums (€m)

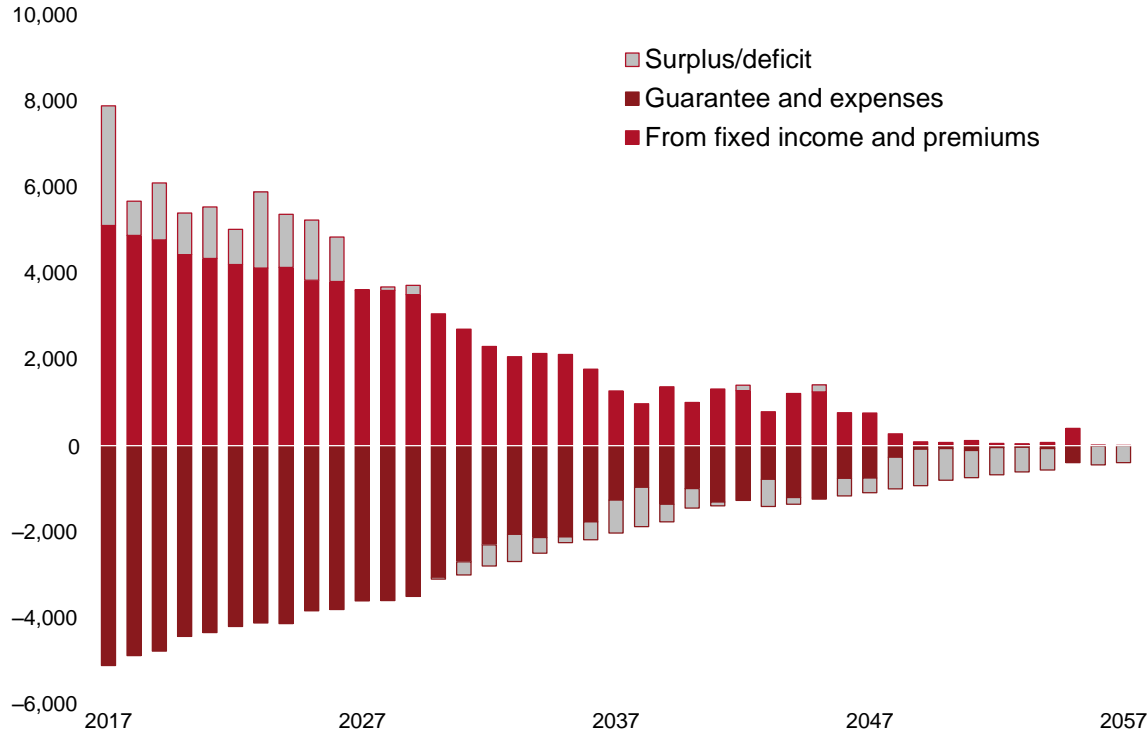
	2016	2015	▲ abs.	▲ %
Gross premiums written	3,380	3,628	−248	−6.8
Statutory premiums	832	896	−64	−7.1
Total premiums	4,212	4,524	−311	−6.9

## New business (€m)

	2016	2015	▲ abs.	▲ %
Total new business	815	991	−176	−17.8
Regular premiums	220	218	2	0.9
Single premiums	595	773	−178	−23.0
Annual premium equivalent (APE) <sup>1</sup>	279	295	−16	−5.4

<sup>1</sup> Regular premiums +10% single premiums.

# Life Germany – Sufficient cash flow buffers



Cumulated surplus years 1-40	€1,844m
------------------------------	---------

Non-fixed-income assets	€4,291m
-------------------------	---------

Market value swaptions	€2,412m
------------------------	---------

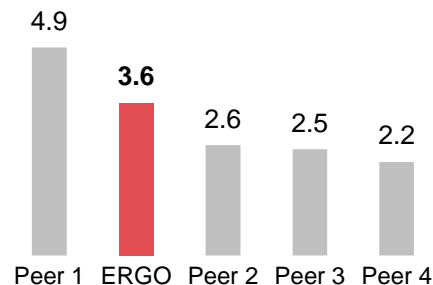
<b>Available as buffer</b>	<b>€8,548m</b>
----------------------------	----------------

- Cash flows as shown with low-interest-rate sensitivity
- Swaptions provide additional protection against further decline of interest rates

# Health Germany – Stabilise comprehensive insurance, strengthen supplementary insurance

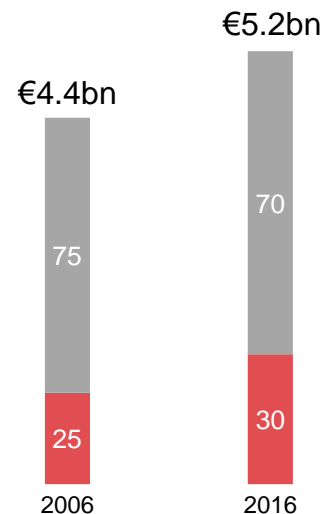
## Market view on comprehensive insurance<sup>1</sup>

€bn



## ERGO business mix – Gross premiums written

%



### Comprehensive insurance

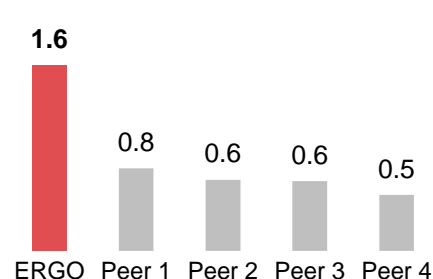
ERGO number 2 in German market – stable results and stable political environment

### Supplementary insurance

ERGO clear market leader – expansion in long-term care and direct insurance

## Market view on supplementary insurance<sup>1</sup>

€bn



<sup>1</sup> Gross premiums written as at 31.12.2015. Source: PKV Verband.

# ERGO Property-casualty Germany (1)

## 2016 vs. 2015

Gross premiums written	€m
2015	3,162
Foreign exchange	-17
Divestments/investments	0
Organic change	49
<b>2016</b>	<b>3,194</b>

- Positive development in almost all lines of business

Major result drivers	€m		
	2016	2015	▲
Technical result	139	122	17
Non-technical result	-11	97	-108
thereof investment result	80	187	-107
Other	-200	-4	-195
<b>Net result</b>	<b>-72</b>	<b>214</b>	<b>-286</b>

	Q4 2016	Q4 2015	▲
Technical result	15	-19	35
Non-technical result	27	-9	36
thereof investment result	48	16	32
Other	-31	9	-40
<b>Net result</b>	<b>11</b>	<b>-19</b>	<b>30</b>

### Technical result

- FY: Combined ratio of 97.0% better than 2015; ESP impact on combined ratio ~1%-pts.
- FY: Lower large losses compared to previous year
- Q4: Higher impact from nat cat losses in 2015

### Investment result

- FY: Lower disposal gains and decreased regular income

### Other

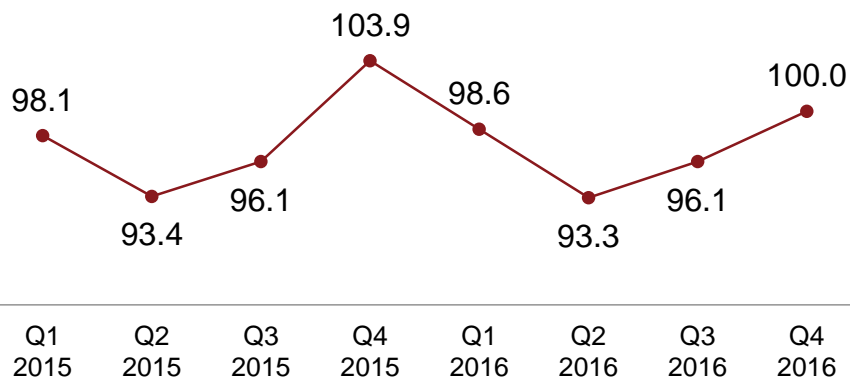
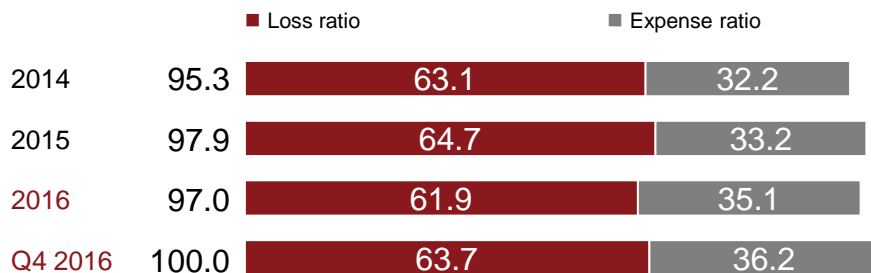
- FY: Restructuring expenses including investments<sup>1</sup> -€222m/-€151m (gross/net) mainly in Q2
- FY: Tax rate of 37.0% vs. -39.1%

1 A small part of expenses from ESP is included in technical result.



# ERGO Property-casualty Germany (2)

## Combined ratio %



## Gross premiums written<sup>1</sup> €m

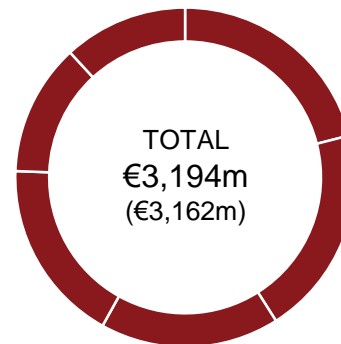
Other 379 (336) Motor 671 (663)

Legal protection 401 (395)

Fire/property 559 (577)

Liability 545 (536)

Personal accident 638 (654)











<sup>1</sup> Fair values as at 31.12.2016 (31.12.2015).

# ERGO International portfolio focuses on three pillars

Rank Share

## Strong presence in selected developed markets

Country	GWP, 2016 €m	Focus segment	Market position <sup>5</sup>
 Poland	1,178	Non-life	
 Austria	627	Life	
 Baltics	206	Non-life	
 Greece <sup>1</sup>	194	Non-life	



Leverage existing scale to  
strengthen organic growth










## Specialized global business expertise

Existing global businesses <sup>2</sup>	GWP, 2016 €m
 Legal protection <i>Market presence in 18 countries</i> 	1,146 <sup>8</sup>
 Travel <i>Market presence in 24 countries</i> 	452 <sup>9</sup>
Launch new global businesses	
 Pure Digital Player	
 Mobility Solutions	



Efficient management and  
expansion of global businesses

## Promising exposure in prioritized growth markets

JVs	GWP <sup>3</sup> , 2016 €m	Seg- ment	Market position	Expected CAGR, 2016-20, %
 China	25	Life		70
 India <sup>4</sup>	270	Non-life		21
 Vietnam	11	Non-life		16
 Thailand	21	Non-life		8
Subsidiaries				
 Turkey	249	Non-life		10



Capture opportunities  
in growth markets

# ERGO International

## 2016 vs. 2015

### Gross premiums written €m

2015		3,947
Foreign exchange		-119
Divestments/investments		-127
Organic change		-37
2016		3,664

Negative FX effects driven by PLN, GBP and TRY

Life: -€394m

- Poland: Lower sales of bancassurance products
- Belgium: Decrease mainly due to reclassification of premiums
- Disposal of ERGO Italia (-€154m)

P-C: +€111m

- Increase mainly driven by rate increases in motor business in Poland and Baltic states
- First-time consolidation of ATE (+€46m)

### Major result drivers

	2016	2015	▲
Technical result	-132	33	-166
Non-technical result	383	35	348
thereof investment result	734	447	286
Other	-333	-181	-152
<b>Net result</b>	<b>-82</b>	<b>-112</b>	<b>31</b>

	Q4 2016	Q4 2015	▲
Technical result	-100	-16	-84
Non-technical result	258	-44	302
thereof investment result	337	57	280
Other	-193	-103	-90
<b>Net result</b>	<b>-34</b>	<b>-163</b>	<b>128</b>

### Technical result

Life: (-€291m) (FY)

- Extraordinary DAC write-downs in Belgium (-€149m)
  - Disposal of ERGO Italia as at 30 June
- P-C: (+€125m) (FY)

- Turkey: Better loss development in motor TPL
- Poland: Rate increases in motor and improvement of financial insurance products
- UK: Lower claims expenses

### Investment result

- Q4: High level of realised gains in Belgium

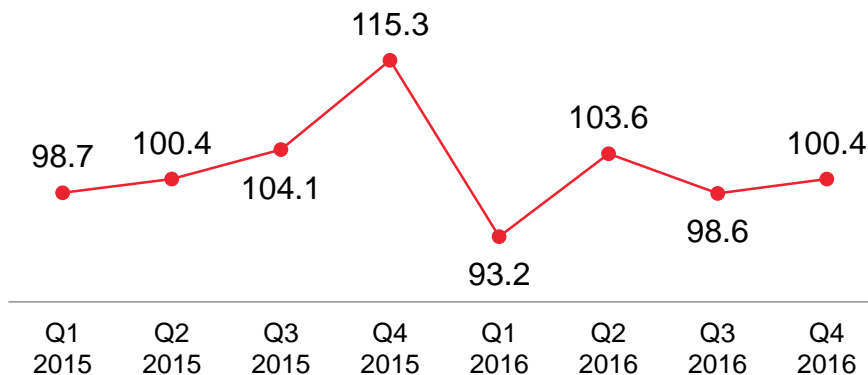
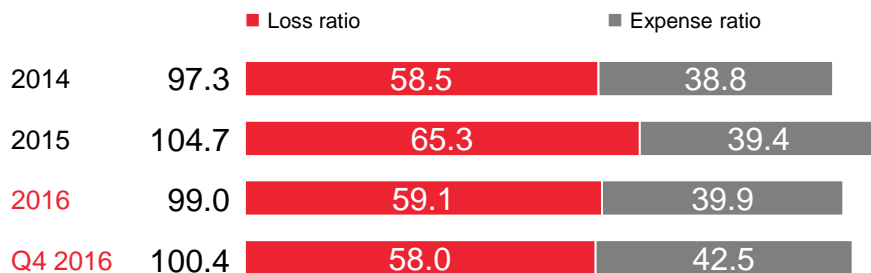
### Other

- Q4: Restructuring expenses in Belgium -€99m
- FY: Restructuring expenses including investments of -€18m/-€14m (gross/net) mainly in Q2; payments for an exclusivity agreement in Q1
- FY: Tax rate of 13.5% vs. -86.2%

# ERGO International – Property-casualty

## Combined ratio

%



## Gross premiums written – Property-casualty<sup>1</sup>

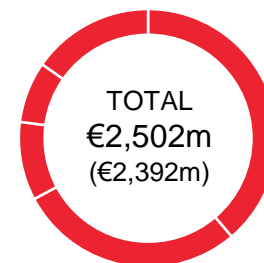
€m

Other  
383 (366)

Greece  
192 (140)

Turkey  
246 (296)

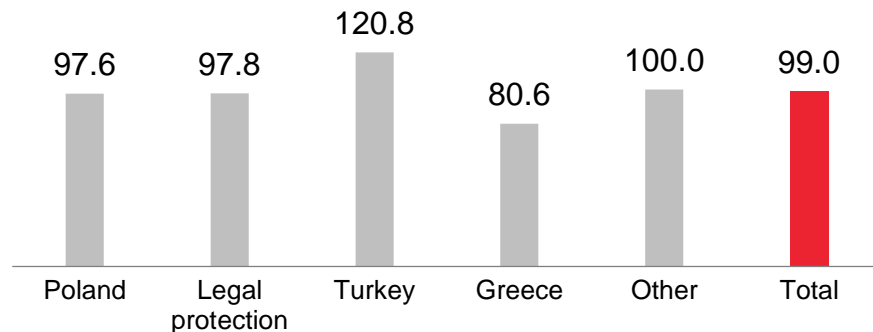
Poland  
971 (884)



Legal protection  
711 (706)

## Combined ratio 2016

%



<sup>1</sup> Fair values as at 31.12.2016 (31.12.2015).

## International life: Total premiums and new business (statutory premiums)

### Total premiums (€m)

	2016	2015	▲ abs.	▲ %
Gross premiums written	1,161	1,555	−394	−25.3
Statutory premiums	369	435	−67	−15.3
Total premiums	1,530	1,991	−461	−23.1

### New business (€m)

	2016	2015	▲ abs.	▲ %
Total new business	656	1,022	−366	−35.8
Regular premiums	130	146	−16	−10.7
Single premiums	526	877	−351	−40.0
Annual premium equivalent (APE) <sup>1</sup>	183	234	−51	−21.7

<sup>1</sup> Regular premiums +10% single premiums.

# ERGO – Economic earnings

ERGO 2016 €bn	L/H Germany	P-C Germany	Inter- national	New business value
Operating economic earnings	−0.4	−0.1	−0.1	<ul style="list-style-type: none"> <li>▪ New business value L/H Germany mainly from health business</li> <li>▪ ERGO Hestia Poland non-life with increasing premium volume most substantial contributor to new business value of International</li> </ul>
Expected return existing business	0.1	0.0	0.1	Operating variances
New business value	0.2	0.0	0.1	<ul style="list-style-type: none"> <li>▪ Strategic investments lead to negative operating variances</li> <li>▪ Especially high restructuring effort in L/H Germany due to long-term business in force and the run-down of life products with guarantees</li> </ul>
Operating variances existing business	−0.7	−0.1	−0.2	<ul style="list-style-type: none"> <li>▪ Expected increase in future new business value both in L/H Germany and P-C Germany not included, conforming with Solvency II methodology</li> </ul>
Economic effects	−0.1	−0.1	−0.2	
Other non-operating earnings	−0.5	0.0	−0.2	Operating economic earnings
<b>Total economic earnings</b>	<b>−1.0</b>	<b>−0.2</b>	<b>−0.5</b>	<ul style="list-style-type: none"> <li>▪ Impact of strategic decisions more than offset positive development of operating economic earnings</li> </ul>

Economic earnings in 2016 affected by strategic investments;  
expected increase of future new business values due to planned measures

# Remaining relatively resilient to pressure on rates with a client-centric approach

## Rate changes January renewals %

### Europe/Latin America



### Asia Pacific



### US/Global accounts



Market range<sup>1</sup> Munich Re

## Current market developments

- Reinsurance capital remained abundant for most segments, but
  - Slowdown in growth of alternative capital
  - Signs of price stabilisation in key segments, e.g. US property-casualty
- Continued tiering of reinsurers
  - Preference for major, best-rated reinsurers with client-centric approach, providing scale, security, diversification
  - Increasing demand for complex programmes<sup>2</sup>
  - Increasing underwriting discipline, esp. for Tier 1 reinsurers – Tier 2 and 3 reinsurers showed more aggressive
  - Hardly any pressure on wordings and largely stable retentions
- Major losses have increased

## Implications for Munich Re

- Globally well positioned to counterbalance regional rate differences and to flexibly shape the portfolio
- Scale and financial strength provide competitive advantage through the cycle
- Value proposition as strategic partner strongly valued by clients
- Capabilities designed to offer tailor-made solutions meeting clients' demand for large and complex reinsurance

<sup>1</sup> Range of market rate changes in January 2017 renewals published by brokers, media and observed by own experts.

<sup>2</sup> For example, in M&A cases, multi-line covers, multi-year covers, whole-account solutions.

# January renewal outcome in line with expectations

## Munich Re portfolio – Premium change in major business lines

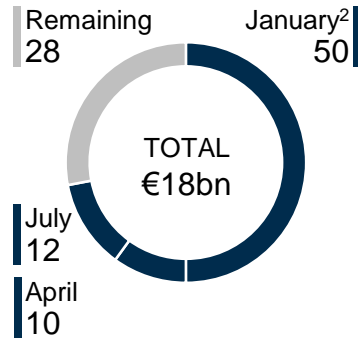
Business line	Total	Property		Casualty		Specialty lines		
		Prop.	XL	Prop.	XL	Marine	Credit	Aviation
Premium split <sup>1</sup>	€9.0bn	29%	10%	42%	4%	8%	5%	2%
Price change				0.2%				
	~ -0.5%	-0.6%	-4.0%		-0.3%	-1.1%	-0.5%	-1.1%
Volume change		2.4%						1.1%
	-4.9%		-9.2%	-4.7%	-1.4%	-21.5%	-19.6%	
Price change	<ul style="list-style-type: none"> <li>Price change is only slightly negative and better than last year</li> <li>Dominating proportional business remains stable</li> <li>Across almost all lines of business and markets, price reductions are slowing down</li> </ul>							

Portfolio profitability maintained due to active cycle and portfolio management in a challenging environment



# Lasting client relationships and our know-how-oriented services offer growth opportunities in a competitive market

## Total P-C book<sup>1</sup>

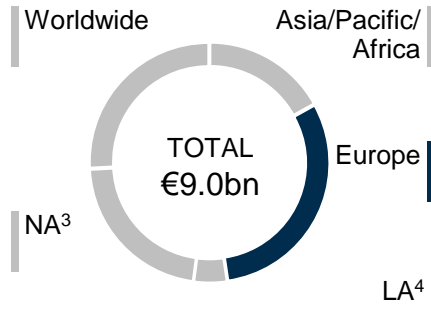


Nat cat share: 13%

50% of total P-C book renewed in January

## Treaty business

### January

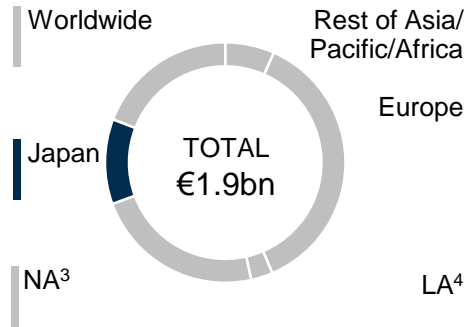


Focus: **Europe**

Nat cat share: 12%

Slightly negative price change of ~-0.5%

### April

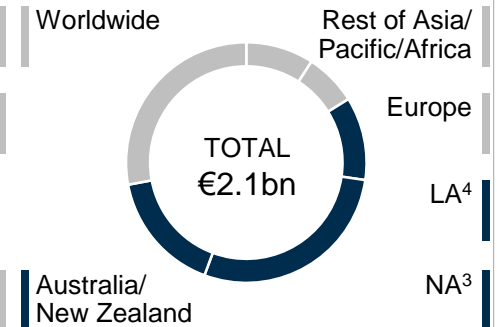


Focus: **Japan**

Nat cat share: 24%

- Given higher nat cat shares, overall pricing trend will largely depend on development of nat cat prices
- Capacity and competition expected to be high

### July



Focus: **USA, LA, Australia**

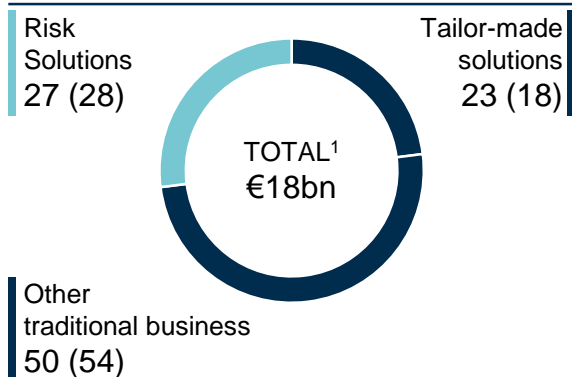
Nat cat share: 19%

Profitability-oriented underwriting ensures high portfolio quality

# Traditional book and Risk Solutions complement each other and provide diversification

## Total P-C book

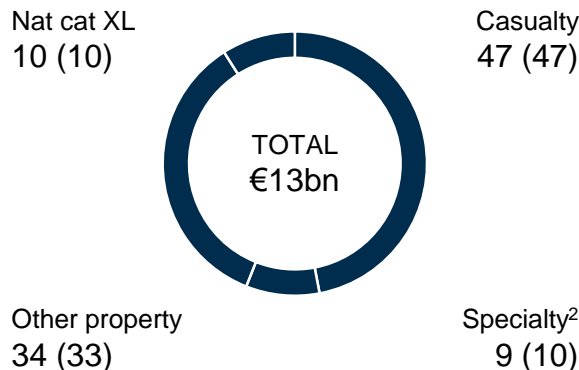
%



- Demand for tailor-made solutions compensates for the reduction in other traditional business
- Risk Solutions an important pillar for top-line contribution

## 1 Traditional

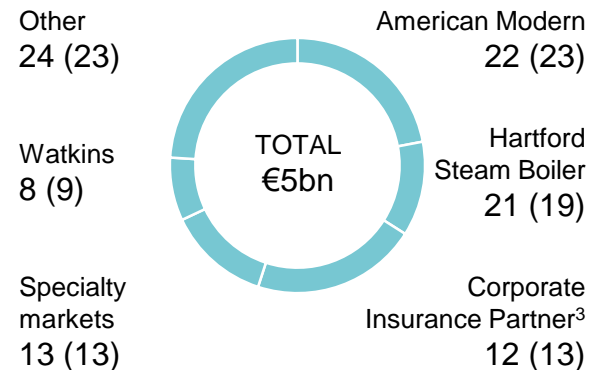
%



- Well balanced traditional portfolio
- Slight shift from specialty lines to other property

## 2 Risk Solutions

%

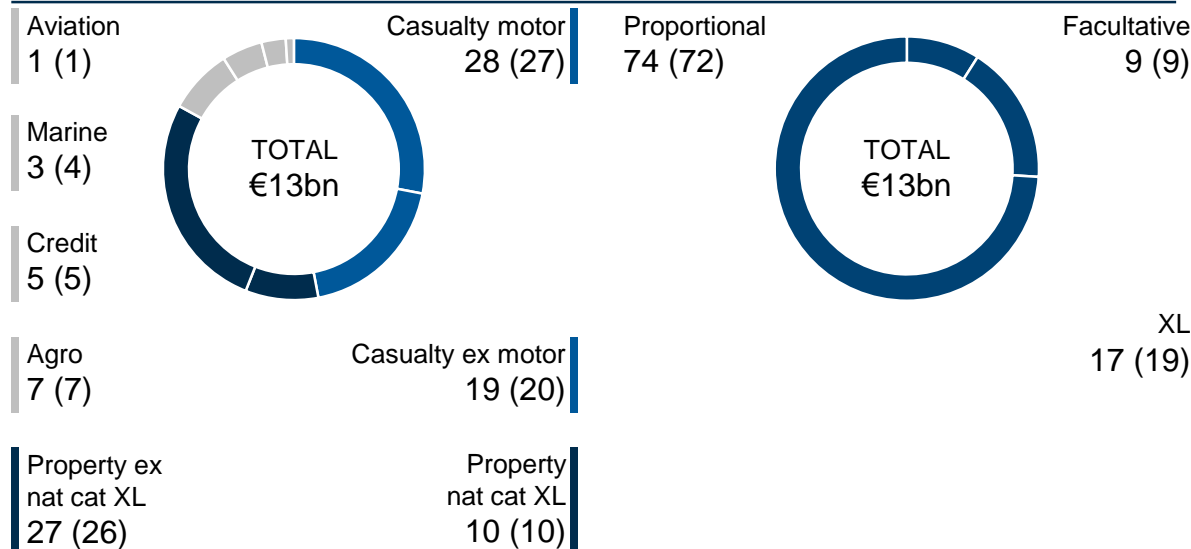


- Dominated by US business – More than 50%
- HSB top-line growth driven by new innovative products

Well balanced portfolio from a regional and line-of-business perspective

# 1 Well balanced portfolio as basis for sustainable earnings generation

## Traditional



## Portfolio developments

### Share increases

- Proportional casualty motor and property – following the realisation of profitable business opportunities during the year
- Accordingly, ongoing shift towards proportional business

### Share decreases

- Deliberate reductions in marine (offshore energy)
- Growth in casualty ex motor below portfolio average
- Continued reduction of more volatile XL portfolio

Increase in proportional business supports earnings resilience

# 1 Various levers to create value in mature markets – Top-notch expertise and best-in-class solutions as key differentiators

## Munich Re value contribution

- Rapid development of tailor-made solution unlike any other alternative available in the marketplace
- High capacity, hard to replace
- Predictability and reliability
- Outstanding nat cat pool expertise
- Key player in developing reinsurance solution
- Moving risk from public to private sphere
- Appetite for large, industrial risks
- Top-notch technical and risk mgmt. expertise for mega projects

## Mature markets

- **Structured, holistic 3-year programme** for regional US client
- Direct placement
- **Flood Re:** Lead in one of Europe's largest natural hazard RI programmes
- **National Flood Insurance Program (NFIP)** in the US
- Leading reinsurer
- **Northern Marmara Motorway** – world's longest suspension bridge
- Leading reinsurer



Sample  
deals/opportunities

# 1 Munich Re's traditional reinsurance book benefits from dynamic growth and opportunities in emerging markets

## Munich Re value contribution

- Specialised segments and capital solutions complementing our franchise
- Full service branch blending HQ expertise with local knowledge
- Risk transfer to the private sphere
- Advice on structuring reinsurance solutions
- Establishing reinsurance as security enhancement instrument
- Profound expertise provision to deliver bespoke transaction structure
- Tailored products developed and launched with local partners for specific target groups and channels

## Emerging markets

- **First** foreign reinsurer to establish **branch in India**
- Highly dynamic insurance market
- **Nat cat schemes** to mitigate extreme weather events, e.g. Pacific catastrophe RAFI<sup>1</sup>
- **Rating solution South Africa**
- Sovereign rating-triggered transaction for regional player
- **Product development** for digital business models in Asia together with insurers and internet giants

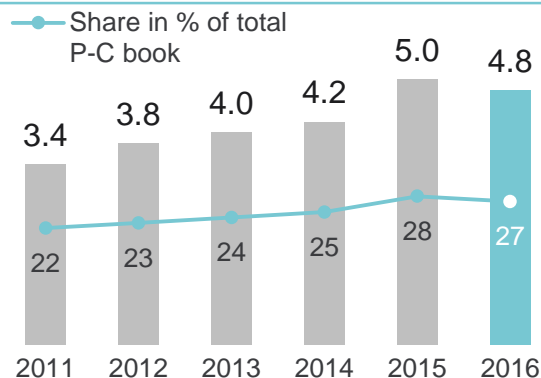


Sample  
deals/opportunities

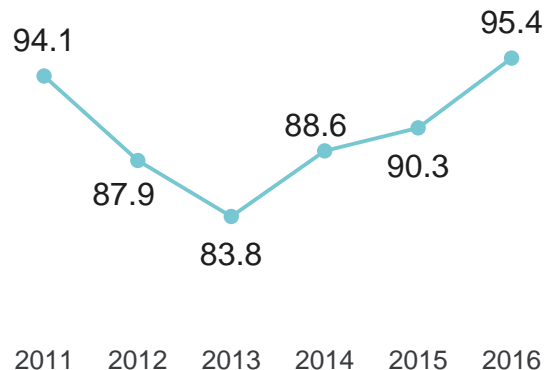
<sup>1</sup> Risk Assessment and Financing Initiative.

## 2 Risk Solutions: Sustainable earnings contribution

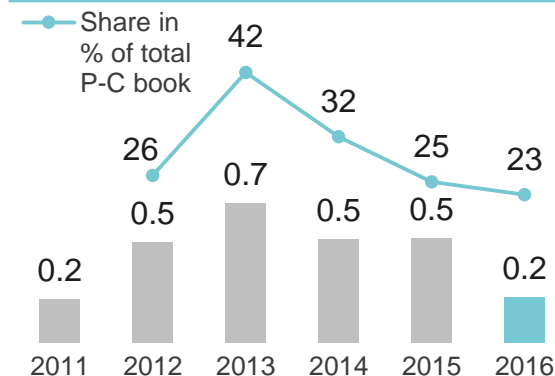
Gross earned premiums<sup>1</sup> €bn



Combined ratio<sup>1</sup> %



Underwriting result<sup>1</sup> €bn



### Drivers in 2016

- Top-line driven by FX and exit from Financial Institutions Division (FID) business at American Modern
- Bottom line negatively influenced by run-off business, IT investments and outlier losses
- Hartford Steam Boiler with highest result contribution

Active portfolio management to keep level of profitability – Medium term ambition confirmed

## 2 Active portfolio management and IT investments to manifest value contribution of Risk Solutions

### Active portfolio management

- Active cycle management to enhance profitability
  - Munich Re Syndicate (MRS) (formerly Watkins)
  - Corporate Insurance Partner (CIP)
  - Run-off management

### Organic growth

- HSB continues strong growth
- Intensified collaboration and joint innovation for product development and cross-selling
- Growth in specialty/niche business: e.g. expansion in Asia ...
- ... offset by cancelation of Financial Institutions Division (FID) business

### Investment in systems for future growth

- Multi-year investment programme (systems and processes) in business and service providers to further improve client centricity

### M&A activities

- Continuous M&A screening to complement Risk Solutions
- Strong guidelines to evaluate business opportunities in current market environment

Active cancellations and portfolio transfers enhance profitability –  
Multi year investment programme to build digital infrastructure

# Munich Re utilising all ART channels as instrument for risk management and expanded product range

## Munich Re channels to tap alternative capacity sources

### Sidecar programme<sup>1</sup>

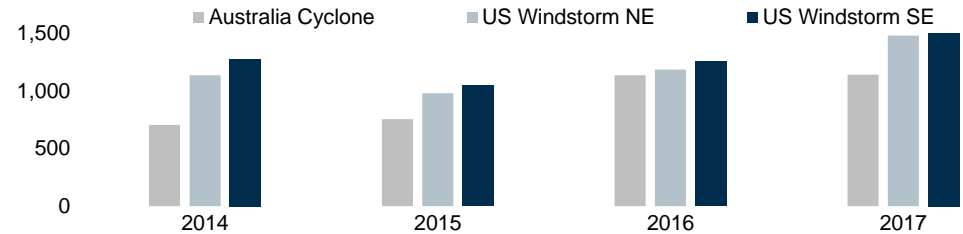
- Eden Re II renewed with 2017 series at previous year's level (US\$ 360m)
- Broader investor base and cession with four lines of business

### Queen Street programme

- Additional cat bond of US\$ 190m issued (Queen Street XII)
- Broadened investor base for fully collateralised cover of Munich Re peak-zone risk

### Retrocession – Protection per nat cat scenario<sup>2</sup>


€m



Retrocession use reflects favourable market terms and strong Munich Re capital base

## Enhanced risk management and client offerings on basis of ART channels

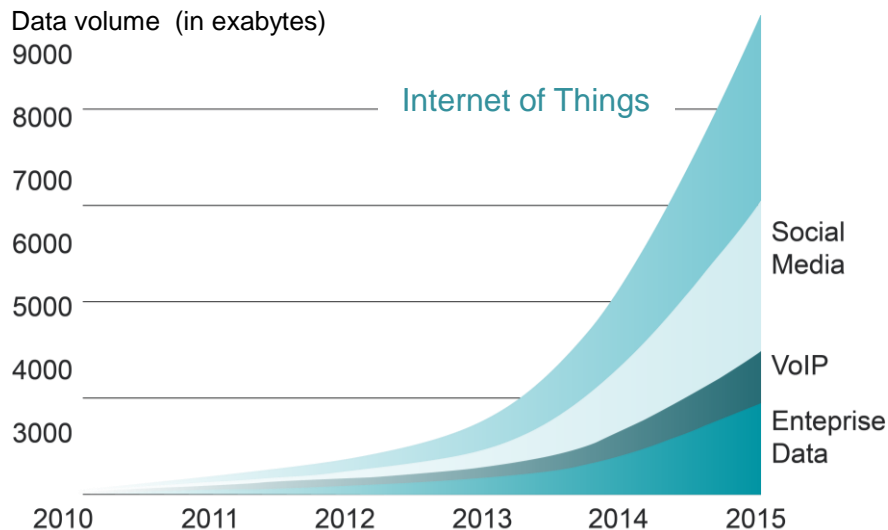
- Combining Munich Re's unique value proposition in managing peak risk with client access to institutional investor capacity
- Taking advantage of new sources of capital for clients and Munich Re's own book
- Munich Re ILS service for third parties completes offer as customised stand-alone service or integrated into traditional solutions

 Broadened distribution channels to ART markets to increase flexibility of Munich Re balance sheet – relationship-based approach allows for scaling-up

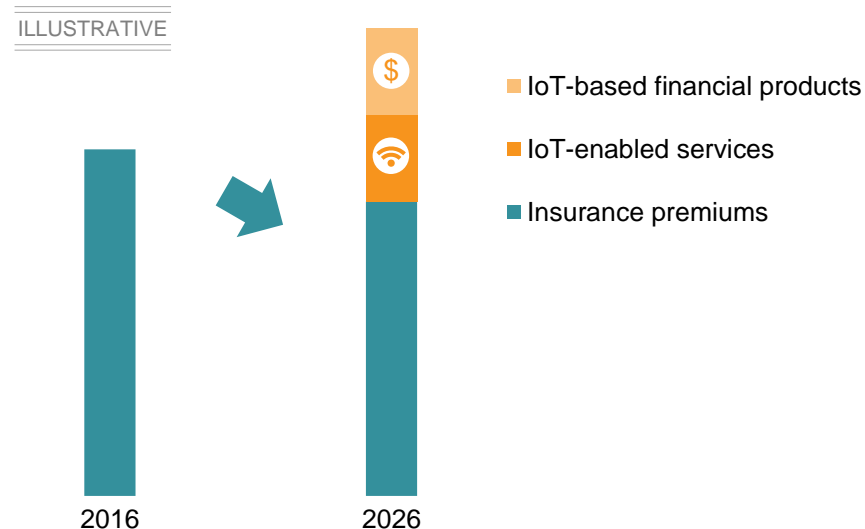


## IoT is expected to disrupt the (re)insurance industry – Munich Re well positioned with first tangible results

IoT will generate vast amounts of data, with potential economic impact of \$3.9 to \$11.1 trillion p.a. by 2025



IoT-enabled services provide an opportunity that might level off expected pressure on premiums




Munich Re well positioned to capture IoT opportunity by growing an IoT ecosystem through strategic investments and acquisitions, and providing IoT-enabled services and insurance

# Corporate partnering: Digital Partners – Partnering with start-ups to digitalise insurance

## Digital distribution


**Making insurance like the rest of the internet**

For example: 

- On-demand single-item cover (electronics, sporting goods, valuables)
- Initial market: USA
- Go-live: 2017

## Digital economy


**Insuring the sharing and gig economies**

For example: 

- On-demand cover for home and rider-sharers
- Initial markets: US, UK, Canada
- Go-live: October 2016 (beta-test in Iowa), roll-out 2017

## Digital data

**Using new sources of data to price risk better**

For example: 

- Personal insurance informed by data-driven risk score
- Initial markets: UK, then roll-out to Europe and US
- Go-live: 2017

▶ Total of 20 partners in development, across the 3 pillars

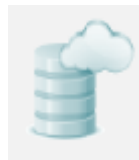
# Most advanced data analytics platform with steadily growing users, developing services for existing and new customers

## Global usage of data analytics platform



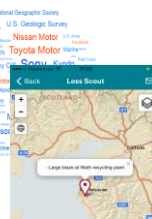
Worldwide enabling of analytical capabilities

## Data lake as basis for self-service analytics



- Central pool for all Munich Re data
- State-of-the-art high performance computing
- Community-driven approach

## Data analytics services



Early loss detection and internet research & intelligence system

Text-mining and geo-referencing for analysis of exposures/automatic detection and severity assessment of losses



Digital risk management platform

Integrated platform for visualising nat cat risks, historic losses and hazards for nat cat exposure of clients

## Sales analytics



Machine-learning algorithms to predict cross-selling opportunities and evaluate profitability and probability of end-customers purchase

# Reinsurance Property-casualty – Economic earnings

Reinsurance property-casualty – €bn	2016	2015
Operating economic earnings	0.7	1.7
Expected return existing business	0.2	0.2
New business value	–0.5	0.2
Operating variances existing business	1.0	1.3
Economic effects	2.0	0.7
Other non-operating earnings	–0.6	–0.1
Total economic earnings	2.1	2.3

## Operating economic earnings

- Reduction of –€1.0bn mainly due to higher outlier losses (–€0.5bn) and lower reserve releases (–€0.3bn)

## New business value

- Value reflects unchanged reserving discipline; €0.2bn adjusted for prudency margin of €0.7bn
- Significantly higher outlier losses compared with 2015

## Operating variances existing business

- Favourable actual vs. expected comparison allows for ultimate reductions for prior years (€0.9bn adjusted for commissions)
- Major losses below expectations

Benign major losses and reserve releases above expectation, although on lower level than previous year

# Reinsurance Property-casualty

## 2016 vs. 2015

Gross premiums written	€m
2015	17,680
Foreign exchange	−385
Divestments/investments	0
Organic change	531
2016	17,826

- Negative FX effects mainly driven by GBP
- Organic growth due to several new deals, particularly in motor and fire

Major result drivers	€m		
	2016	2015	▲
Technical result	1,859	3,116	−1,258
Non-technical result	425	525	−100
thereof investment result	1,589	2,046	−456
Other	−259	−726	467
Net result	2,025	2,915	−890

	Q4 2016	Q4 2015	▲
Technical result	217	1,247	−1,030
Non-technical result	57	111	−54
thereof investment result	323	595	−272
Other	−10	−161	151
Net result	264	1,197	−933

### Technical result

- FY: Major loss ratio below expectation of 12.0%
- Q4: Major losses of 14.8% in Q4
- FY: Higher basic losses: Lower reserve releases, rate deteriorations and various larger claims just below the outlier threshold in H1

### Investment result

- FY: Reduced disposal gains and lower regular income only partly offset by decreased net write-downs

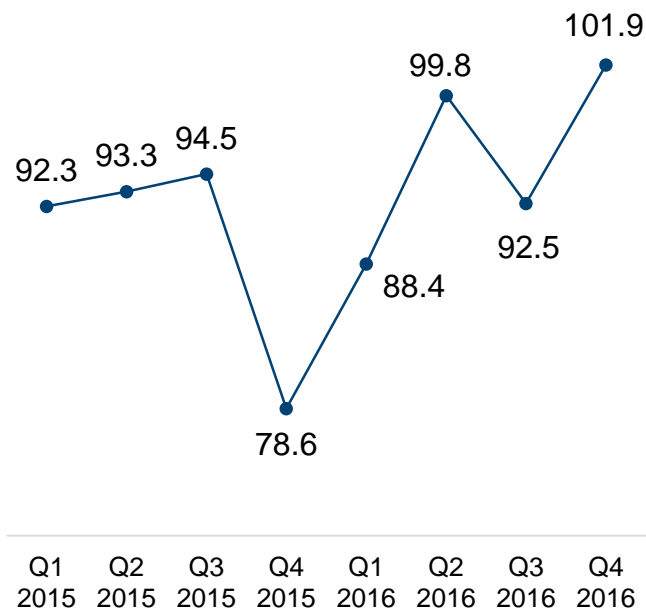
### Other

- FY: FX result of €445m vs. −€132m, high contribution from GBP
- FY: Tax rate of 21.4% vs. 12.8%

# Combined ratio

## Combined ratio

%



		Basic losses	Major losses	Expense ratio
2014	92.7	53.0	7.2	32.5
2015	89.7	50.8	6.2	32.6
2016	95.7	54.2	9.1	32.4
Q4 2016	101.9	51.1	14.8	35.9

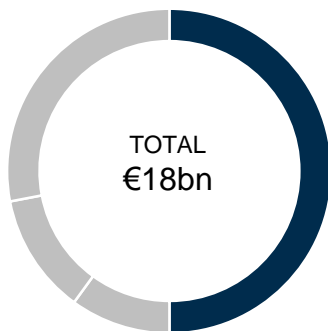
	Major losses	Nat cat	Man-made	Reserve releases <sup>1</sup>	Normalised combined ratio <sup>2</sup>
2016	9.1	5.5	3.6	-5.5	100.0
Q4 2016	14.8	10.9	3.9	-5.7	100.4
Ø Annual expectation	~12.0	~8.0	~4.0	~-4.0 <sup>2</sup>	

<sup>1</sup> Basic losses prior years, incl. asbestos, environmental, workers' compensation discount amortisation and retrocession effects adjusted for corresponding commission effects (sliding scale offset and other commission effects), reserve release not taking commission effects into account amounts to -6.2% for 2016 and -8.7% for Q4 2016. <sup>2</sup> Based on 4%-pts. reserve releases.

# Business up for renewal roughly half of total P-C book – Regional focus on Europe

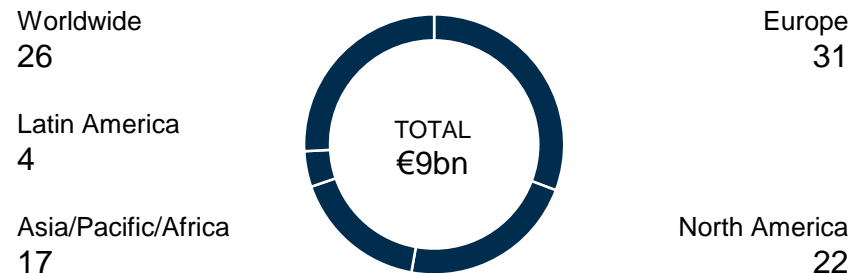
## Total property-casualty book<sup>1</sup> %

Remaining business 28	Business up for January renewal 50
--------------------------	---------------------------------------

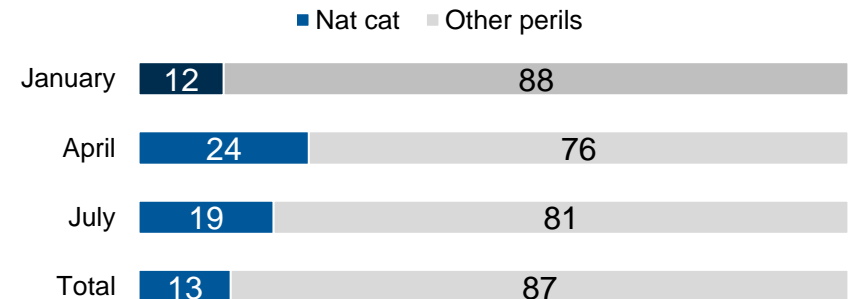


Business up for July renewal 12	Business up for April renewal 10
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## Regional allocation of January renewals %



## Nat cat shares of renewable portfolio<sup>2</sup> %

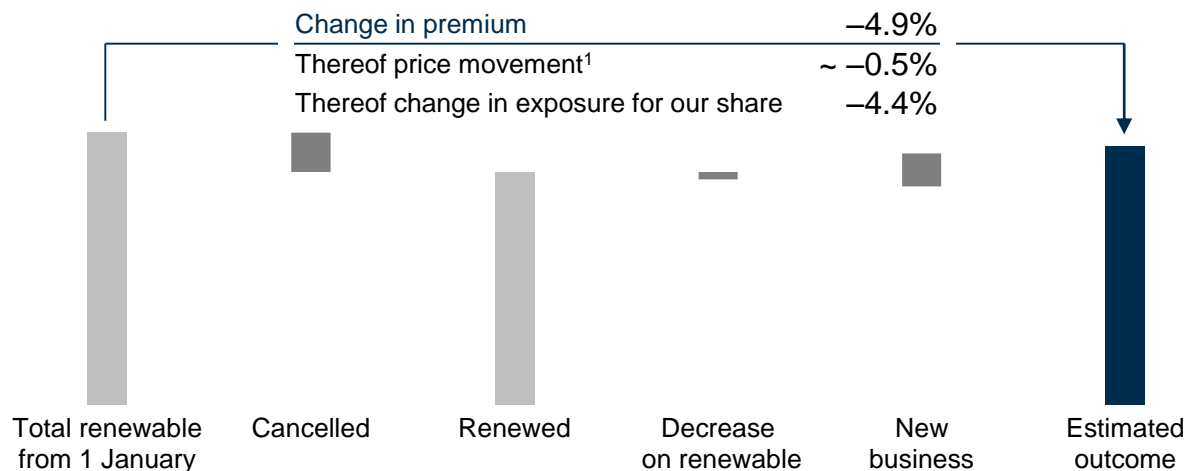


<sup>1</sup> Gross premiums written. Economic view – not fully comparable with IFRS figures. <sup>2</sup> Total refers to total P-C book, incl. remaining business.

# Cycle management reduction mitigated by new business opportunities – Further slow-down in price decline

## January renewals 2017

%	100	–14.4	85.6	–2.7	12.2	95.1
€m	8,982	–1,297	7,685	–241	1,094	8,538



- Overall premium decline due to disciplined underwriting partly offset by new business opportunities
- Price change of –0.5% less pronounced compared with last year
- Continued pressure on XL business, while price decline for US nat cat lower than in the past
- Proportional business remains resilient

Overall portfolio profitability was maintained and remains above cost of capital

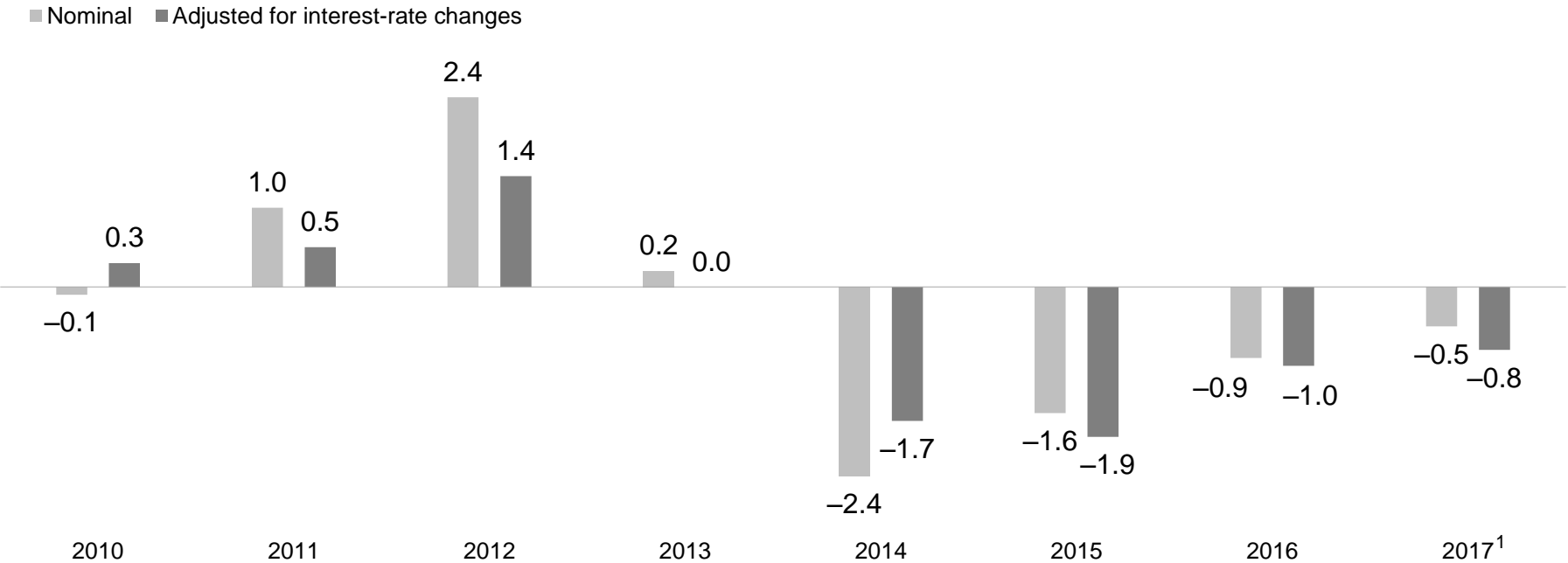
<sup>1</sup> Price movement is risk-adjusted, i.e. includes claims inflation/loss trend and is adjusted for portfolio mix effects. Furthermore, price movement is calculated on a wing-to-wing basis (including cancelled and new business).



# Renewal results



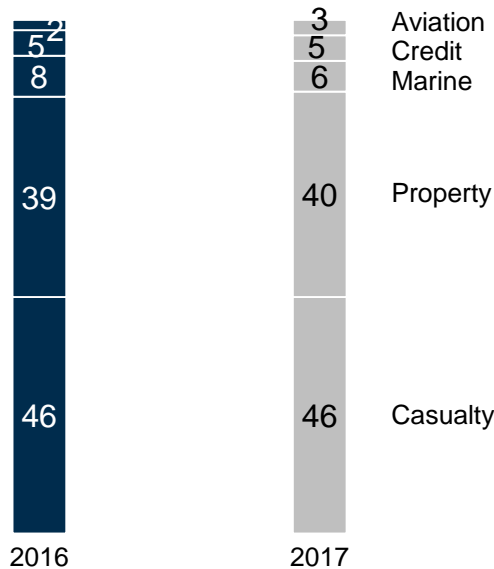
## Year-to-date price change 2010–2017



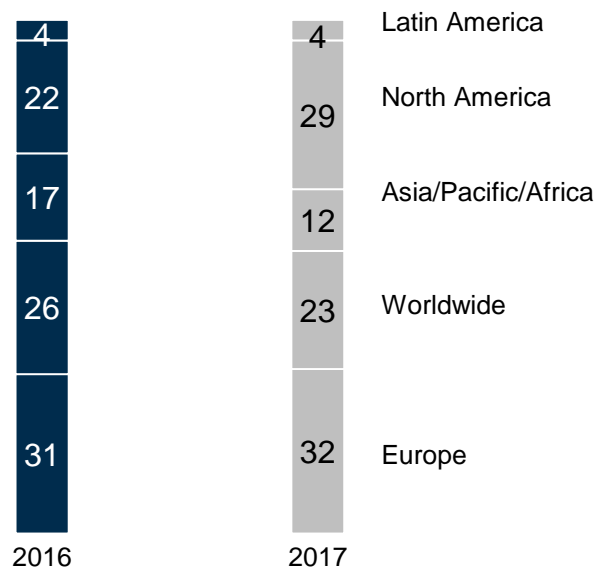
<sup>1</sup> January renewals.

# January renewals 2017 – Split by line of business and region

Split by line of business %



Split by region %



# Reinsurance Life – Economic earnings

Reinsurance Life – €bn	2016	2015
Operating economic earnings	1.1	1.5
Expected return existing business	0.1	0.2
New business value	1.2	0.9
Operating variances existing business	–0.2	0.4
Economic effects	0.8	0.3
Other non-operating earnings	–0.3	0.1
<b>Total economic earnings</b>	<b>1.7</b>	<b>1.8</b>

## New business value

- Exceeding expectations, even stronger than last year
- Ongoing very strong contribution from North America and Asia
- Financially-motivated reinsurance: Again a successful year with around 25 new transactions, including 8 innovative SII solutions
- Large portfolio transactions in Australia and Canada
- Traditional reinsurance: Resilient overall to mounting pressure on volumes and margins

## Operating variances

- Large claims lead to negative experience variances
- One-off data updates and recapture of one profitable treaty have negative impact on economic earnings
- Variety of largely balancing model and assumption changes

Outstanding new business value generation – Aggregate in-force development within normal range of volatility

# Strong IFRS performance exceeding benchmark

Reinsurance Life – €m	2016	2015
Gross premiums written	10,001	10,536
Mortality	55%	50%
Morbidity	38%	39%
Other	7%	11%
Technical result	487	335
Mortality	60%	70%
Morbidity	38%	27%
Other	2%	3%
Fee income	41	70

## Gross premiums written

- Overall reduction of premium income as one very large financially-motivated transaction was only renewed with lower share
- Ongoing positive development in Asia
- Large new transactions in Australia and Canada will contribute fully to top line only in 2017
- Longevity business in UK continues to grow

## Technical result

- Strong second half of the year more than balances outlier claims in Q1
- Result supported by one-off effects and reserve releases
- US back-book and Australia within range of normal volatility

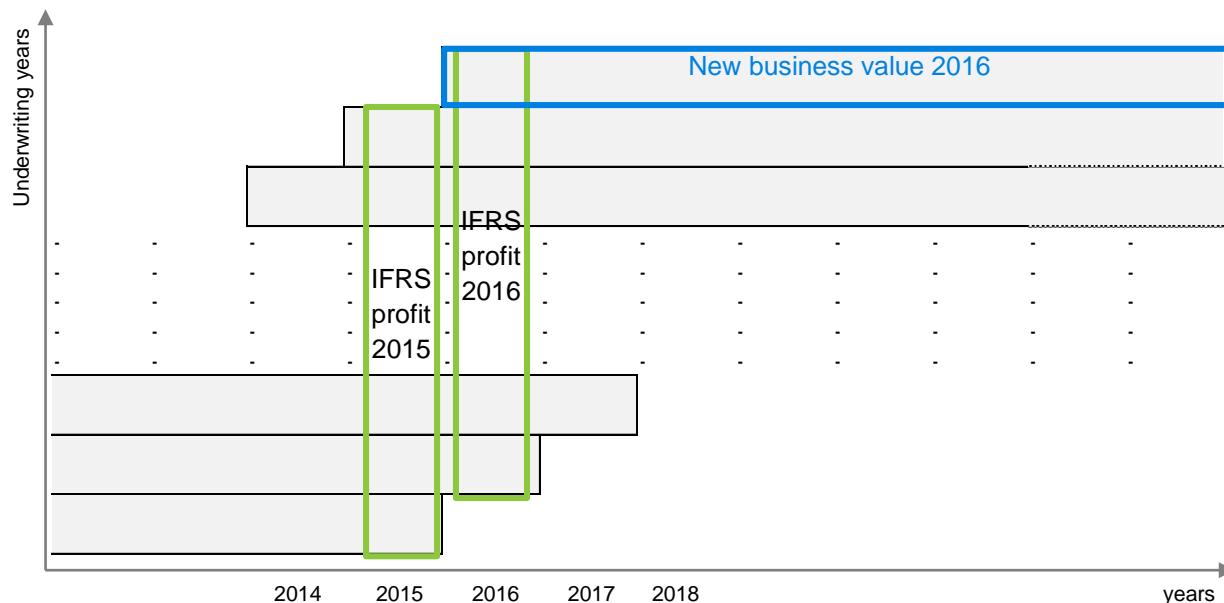
## Fee income

- Significant part of profit is generated outside the technical result
- Lower result driven by scheduled termination of one large transaction

Strong result particularly from North America and Europe, supported by several one-off effects

# Economic earnings take prospective view and tend to be more volatile than IFRS profits

## Relationship between IFRS profit and economic earnings



ILLUSTRATIVE

### Economic earnings

- Immediate risk-adjusted recognition of present value of all expected future profits of the current underwriting year
- Valuation adjustments relative to current best-estimate assumptions of all historic underwriting years

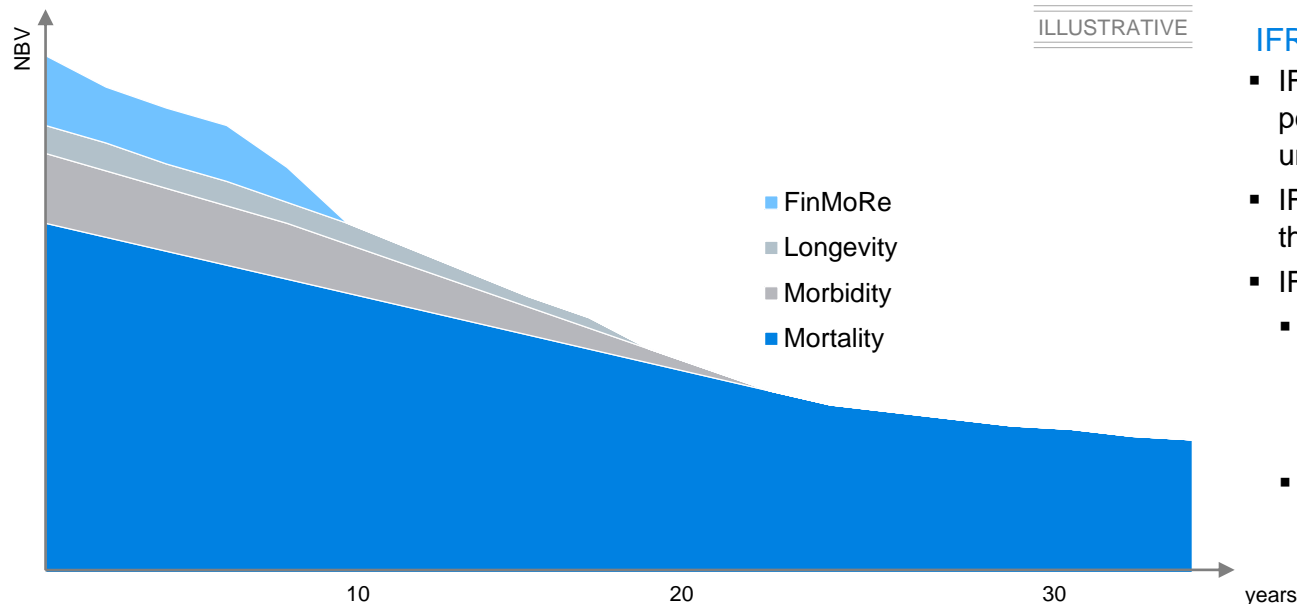
### IFRS profit

- Margin releases from all past underwriting years
- Valuation adjustments reflecting IFRS reserving and assumption-setting rules (e.g. lock-in principle)

IFRS dominated by past underwriting years – High NBV in 2016 to translate into IFRS earnings only over time

# IFRS profit an image of the unwinding of NBVs

## Translation of NBV into IFRS earnings

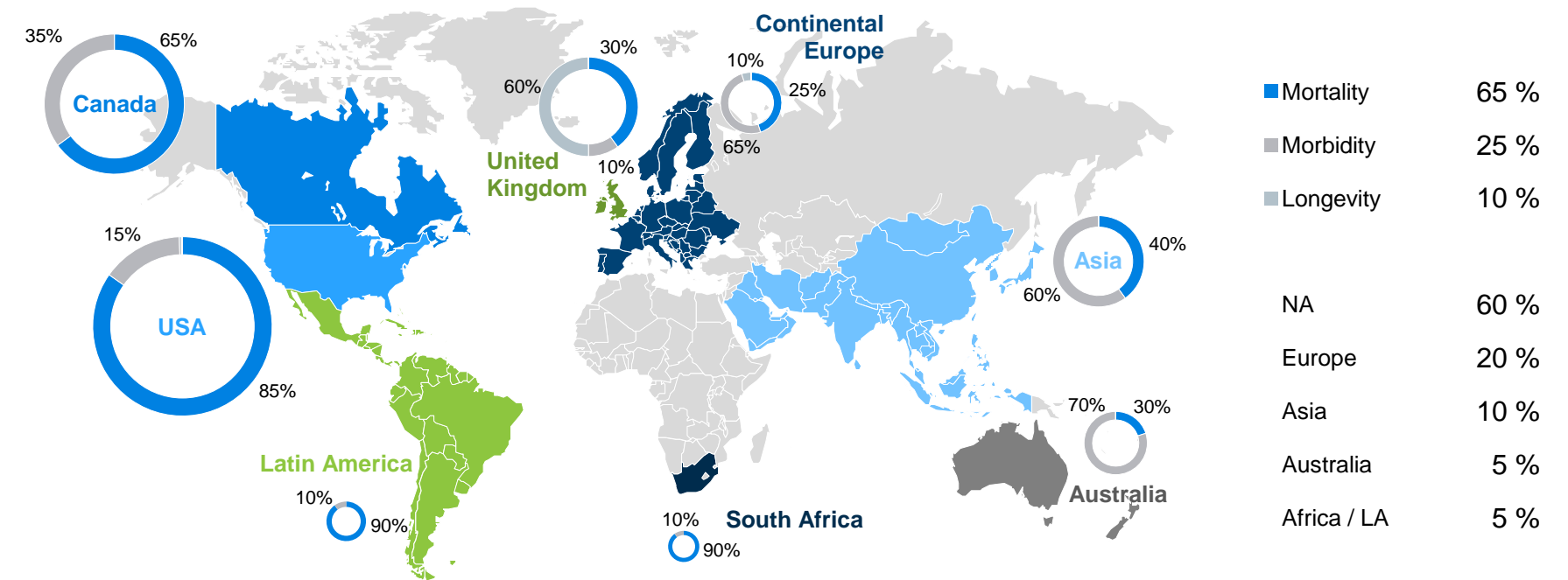


### IFRS profit vs NBV

- IFRS profit reflects the structure of the portfolio as built in all preceding underwriting years
- IFRS profit sluggish towards changes in the level of NBV
- IFRS profit grows if
  - annual contribution from current underwriting year exceeds the loss of earnings from business that has ceased, and
  - valuation adjustments are non-negative

► Diversified portfolio supports strong IFRS profit – Long duration overall

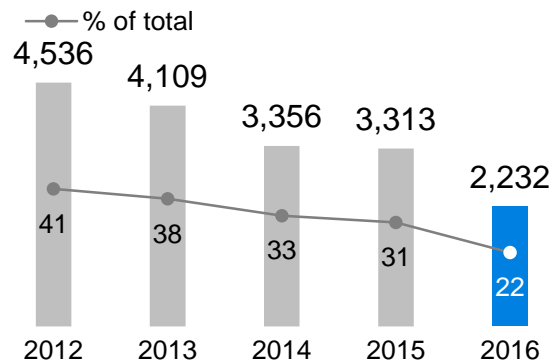
# Well diversified global portfolio



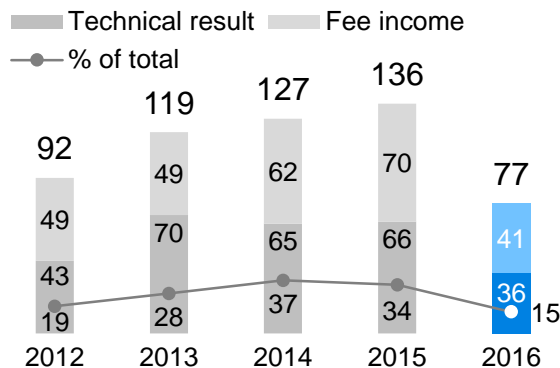
▶ North American overweight reflective of size of reinsurance markets – Biometric risk exposure dominated by mortality

# Financially Motivated Reinsurance – Well established value proposition, strong demand prevails

## Gross premiums written

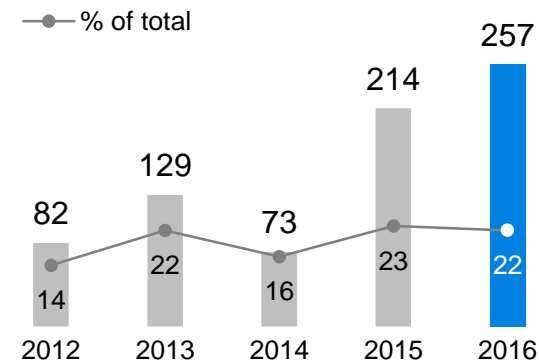


## Technical result and fee income



## NBV<sup>1</sup>

€m



## Portfolio development

- Geographically well diversified portfolio
- Lower result from scheduled termination of some large treaties
- 2016 new business again exceptional; approx. 25 new transactions, including large portfolio transaction in Australia
- New business value dominated by APAC and Europe, including 8 SII-related treaties

## Expectations going forward

- Demand will remain high
- Transaction types will vary by geographical region
- Number, size and type of transactions are difficult to predict and will vary on an annual basis

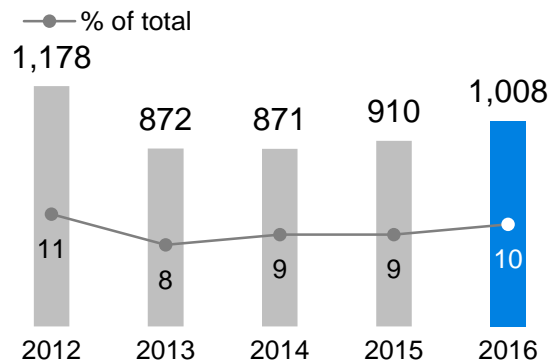
1 2012–14 MCEV, from 2015 Solvency II.



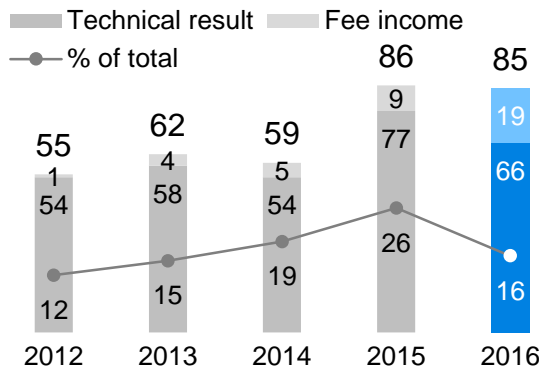
# Asia –

## Vital new business production secures growth across the region

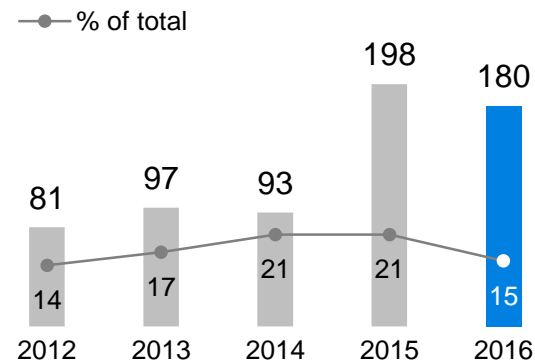
### Gross premiums written €m



### Technical result and fee income €m



### NBV<sup>1</sup> €m



### Portfolio development

- Sustained growth path – volume of recurring business steadily increasing
- Tailor-made market and client strategies
- Growth supported by broad range of services
- New business production second only to the exceptionally strong year 2015

### Expectations going forward

- Reinsurance markets will continue their growth path
- Demand for solvency relief and financing solutions remains high
- Underwriting discipline remains high although competition and pressure on prices are expected to increase
- We are watching product trends in critical illness closely

# Longevity – Book developed carefully in line with risk appetite

## Gross premiums written

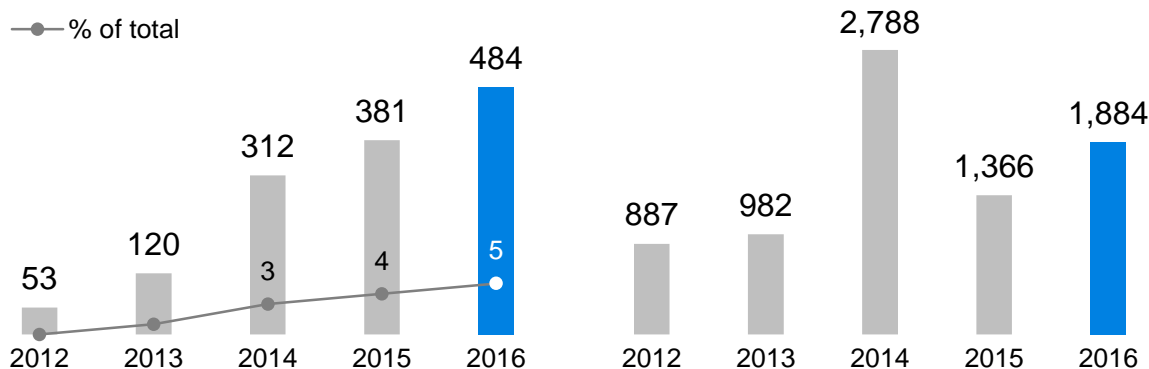
€m

## Liability assumed p.a.

€m

## Strategic proposition

—● % of total



- Longevity considered to be primarily a risk management tool to balance mortality portfolio and to stabilise earnings
- Prudent approach in pricing and valuation because of uncertainty around future mortality trend

## Portfolio development

- Portfolio comprises longevity swaps in UK
- First transaction concluded in 2011 after in-depth research
- Executed 1-2 transactions per year to build portfolio carefully and to allow for selective underwriting approach
- 2014: Participation in one particularly large transaction

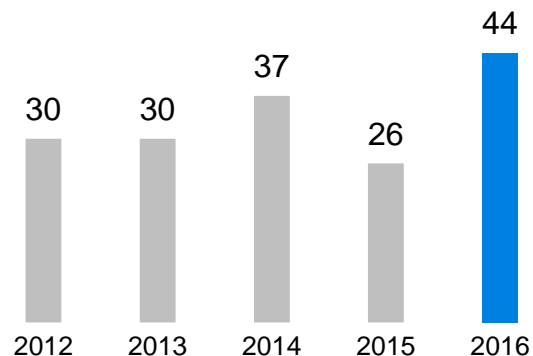
## Expectations going forward

- Evolutionary development of portfolio within clearly defined risk tolerance
- Careful investigation of expansion into other markets
- High market potential but also significant pressure on prices
- Continuation of highly selective approach and prudent valuation (no significant recognition of NBV)

# Asset protection – Comprehensive solutions to non-biometric financial risks

## IFRS contribution margin<sup>1</sup>

€m



## Product portfolio

- Solutions to Basel III and Solvency II needs
- Resolution of accounting asymmetry
- ALM solutions for smaller players, i.e. reinsurance solutions for business with significant market risk
- Development of modern savings products

## Strategic proposition

- Wide range of tailor-made solutions
- Legal, regulatory and structuring expertise
- State-of-the-art in-house hedging platform

## Portfolio development

- Portfolio continues to gain significance
- Growing contribution to NBV

## Expectations going forward

- Existing book dominated by Asia/Japan
- Current opportunities mainly in Europe and Asia/Japan
- Active exploration of business potential in North America

<sup>1</sup> Part of non-technical-result, incl. insurance-related investment result.

# NBV supported by major portfolio transactions

## Two transactions executed in 2016

- Relevance in M&A situations as well as acquisition or transfer of in-force portfolios through reinsurance
- Key success factors:
  - Financial strength
  - In-depth expertise in assessment of biometric risk
  - Execution credibility
- Leverages our high market share and superior understanding of underlying risk
- Both 2016 transactions very accretive to economic earnings

### Citi Group, US

- Purchase of a block of Canadian term-life insurance policies from Citi, originally issued by Primerica Life Insurance Company of Canada
- Approximately 10% of our current Canadian mortality portfolio in size
- Transaction grows the traditional mortality risk in one of our most important markets

### AMP, Australia

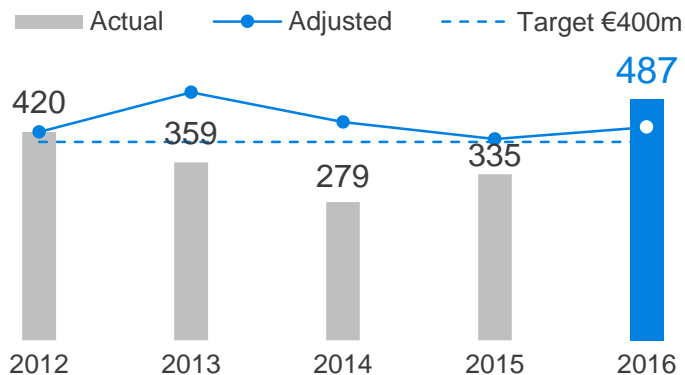
- Reinsurance arrangement covers 50% of AMP's retail portfolio
- It improves diversification of our portfolio as disability risk is underweight compared with our existing portfolio

Well positioned to benefit from comparable opportunities in the future  
Expertise in biometric risk and execution capabilities key success factor

# Financial outlook 2017

## IFRS technical result

€m



### Adjustments

- 2013/14: Australian disability
- 2014: US recapture settlement
- 2015: Outlier claims in North America
- 2016: In aggregate, positive one-offs and reserving effects

- ➔ USA
- ➔ Canada
- ➔ Europe
- ➔ Asia
- ➔ Australia
- ➔ Africa/  
Latin America
- ➔ FinMoRe
- ➔ Longevity/  
Asset protection
- ➔ Technical interest

Result increases as new business is profitable and back-book is being run off

Significant profit pool with stable outlook

Healthy IFRS result likely to decrease as new business volumes are small in relation to size of portfolio

Remarkable result and growing

Expected result around break-even with moderate growth

Relatively small contributions with moderately positive outlook

As business is rather short-term we do not expect a lot of bottom-line growth versus current level

Moderate growth from low level



Expected to decline over time

Technical result plus fee income of at least €450m

## Reinsurance Life

## 2016 vs. 2015

## Gross premiums written €m

2015		10,536
Foreign exchange		-260
Divestments/investments		28
Organic change		-303
2016		10,001

- Negative FX effects driven by Can\$ and GBP
- Negative organic change due to cancellation/modification of large capital-relief deals, ...
- ... partly offset by growth in Asia, Canada, UK

## Major result drivers

	2016	2015	▲
Technical result	487	335	152
Non-technical result	75	165	-90
thereof investment result	629	898	-268
Other	-104	-155	51
Net result	459	345	113

	Q4 2016	Q4 2015	▲
Technical result	169	88	81
Non-technical result	9	77	-69
thereof investment result	161	270	-109
Other	-88	8	-96
Net result	90	174	-84

## Technical result

- FY: Result well above annual target, despite large losses in Q1
- FY: Strong contribution mainly from North America, Europe and Asia supported by one-off effects
- FY: Reserve releases in H2 2016

## Investment result

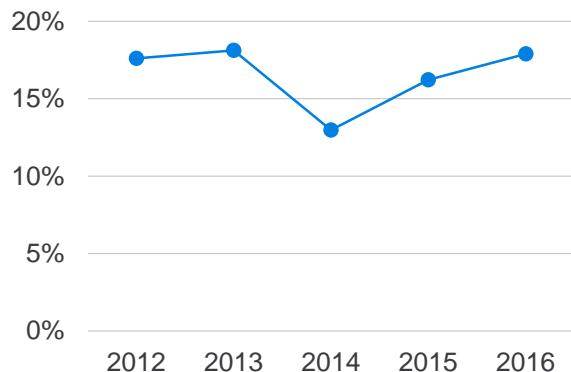
- FY: Lower interest income from deposits retained on assumed reinsurance due to cancellation/modification of large capital-relief deals
- FY: Lower disposal gains

## Other

- FY: FX result of €123m vs. -€58m, high contribution from GBP
- FY: Tax rate of 28.8% vs. 14.1%

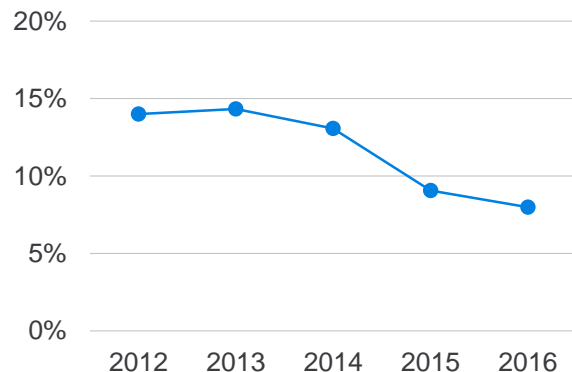
# New business profitability

## RORAC spread<sup>1</sup> %



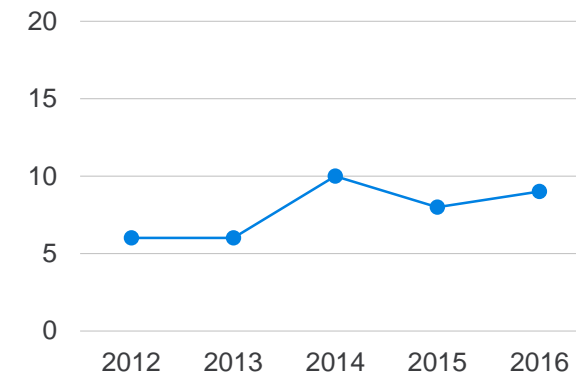
Very good new business profitability relative to economic risk capital (RORAC spread)

## IRR spread<sup>1</sup> %



New business profitability relative to total investment in new business (IRR spread) influenced composition of new business portfolio

## Payback period<sup>2</sup> years



Lower share of business with shorter durations (as typically the case for FinMoRe) slightly increased payback period compared with 2015

<sup>1</sup> Spread in addition to reference rate (weighted-average swap yield curves), after tax. earnings distributable to shareholders.

<sup>2</sup> Number of years it takes to amortise the total investment in new business through future (undiscounted)

# Financial calendar

## 2017

26 April	Annual General Meeting 2017, ICM – International Congress Centre Munich
9 May	Quarterly statement as at 31 March 2017 <sup>1</sup>
9 August	Half-year financial report as at 30 June 2017
9 November	Quarterly statement as at 30 September 2017 <sup>1</sup>

## 2018

6 February	Preliminary key figures 2017 and renewals
15 March	Balance sheet press conference for 2017 financial statements Analysts' conference in Munich with videocast
25 April	Annual General Meeting 2018, ICM – International Congress Centre Munich
8 May	Quarterly statement as at 31 March 2018 <sup>1</sup>
8 August	Half-year financial report as at 30 June 2018
7 November	Quarterly statement as at 30 September 2018 <sup>1</sup>

<sup>1</sup> Munich Re is adjusting its financial reporting format following an amendment to the regulations of the Frankfurt stock exchange. The half-year financial reports and annual reports will remain unchanged. However, instead of issuing quarterly reports for the first and third quarters, we will release reports in the new form of quarterly statements from 2016 onwards. We will continue to present and explain the figures for each quarter in telephone conferences for analysts and journalists, and in press releases.



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