

2019 P&C triangles



P&C loss development triangles and reserves as of December 2019

Group Actuarial Department

Disclaimer

Certain statements contained in this presentation and any documents referred herein are forward-looking statements, considered provisional. They are not historical facts and are based on a certain number of data and assumptions (both general and specific), risks and uncertainties that could cause actual results, performance or events to differ materially from those in such statements. Forward-looking statements are typically identified by words or phrases such as, without limitation, "anticipate", "assume", "believe", "continue", "estimate", "expect", "foresee", "intend", "may increase" and "may fluctuate" and similar expressions or by future or conditional verbs such as, without limitations, "will", "should", "would" and "could". Undue reliance should not be placed on such statements, as due to their nature they are subject to known and unknown risks and uncertainties.

As a result of the extreme and unprecedented volatility and disruption related to the financial crisis, SCOR is exposed to significant financial, capital market and other risks, including variations in interest rates, credit spreads, equity prices, currency movements, changes in government or regulatory practices, changes in rating agency policies or practices, and the lowering or loss of financial strength or other ratings. Forward-looking statements were developed in a given economic, competitive and regulatory environment and the Group may be unable to anticipate all the risks and uncertainties and/or other factors that may affect its business and to estimate their potential consequences. Such factors include among others:

- further instability affecting the global financial system and developments related thereto;
- further deterioration in global economic conditions;
- the cyclicity of the reinsurance industry;
- uncertainties in estimating reserves;
- uncertainties in estimating future claims for purposes of financial reporting, particularly with respect to large natural catastrophes, as significant uncertainties may be involved in estimating losses from such events and preliminary estimates may be subject to change as new information becomes available;
- the frequency, severity and development of insured claim events;
- acts of terrorism and acts of war;
- extraordinary events affecting the Group's clients and other counterparties, such as bankruptcies, liquidations and other credit-related events;
- current, pending and future legislation and regulation affecting the Group or its ceding companies and the interpretation of legislation or regulations.

The P&C loss development triangles as of December 2019 is provided by SCOR for informational purposes only. SCOR is under no obligation to, and does not intend to, update or revise any of the information included in the excel workbook or referred to in this presentation, whether as a result of new information, future events or other developments, even when any such new information, events or developments have been reflected in any report or other document published by SCOR or any of its business units. Although the information in the excel workbook bears directly on estimating loss reserves, it is not the only basis used by SCOR to establish its reserves.

P&C loss development triangles and reserves as of December 2019

CONTENTS

1 A robust governance

2 Triangles disclosure

3 SCOR portfolio

4 Appendices

A robust Governance coupled with a prudent reserving philosophy

SCOR overall reserving philosophy can be summarized as follows:



A robust governance insuring independent opinion and free from influence environment



Top of the class actuarial methods coupled with an holistic “four axis approach”



Instant reactivity to indications of potential negative developments



Conservative opening ultimate loss ratios applied on more recent underwriting years where statistical data is scarce



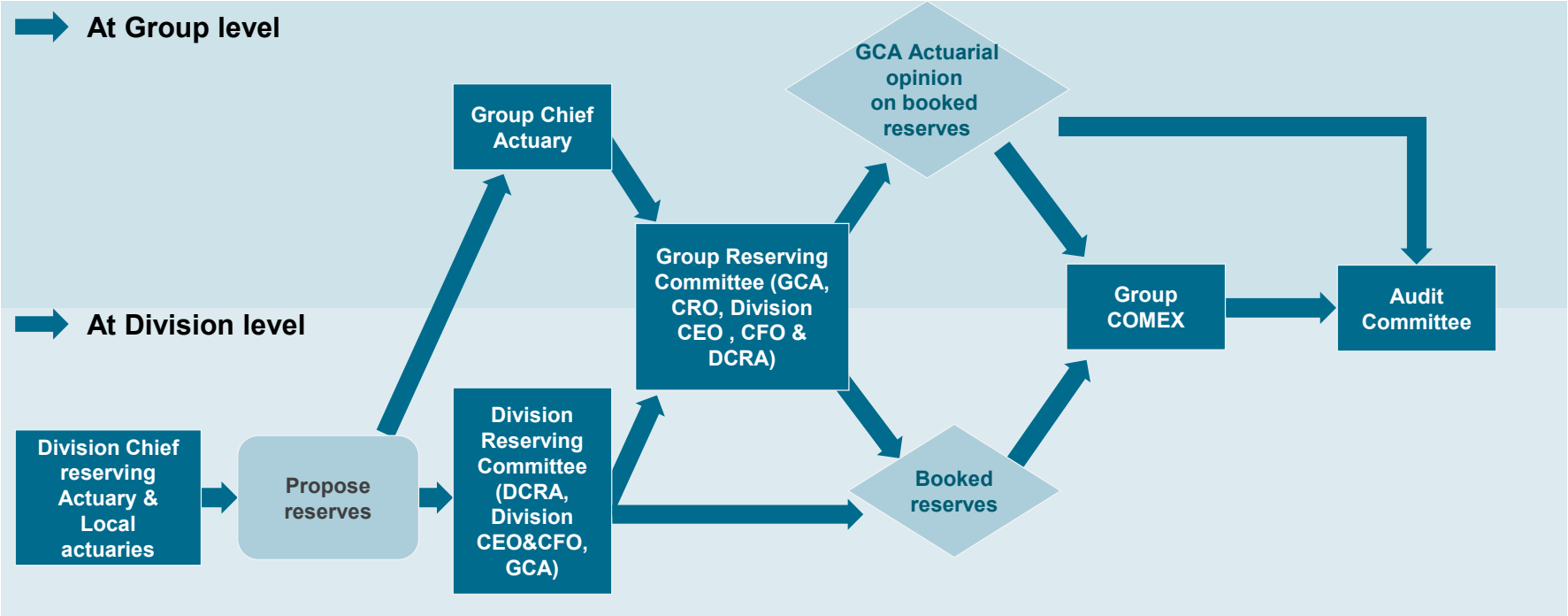
Hypothesis used in pricing systematically challenged and stress tests impact on pricing expected loss ratios taken into account



Extra time allowed to recognise positive run-offs, especially for mid and long tail classes of business

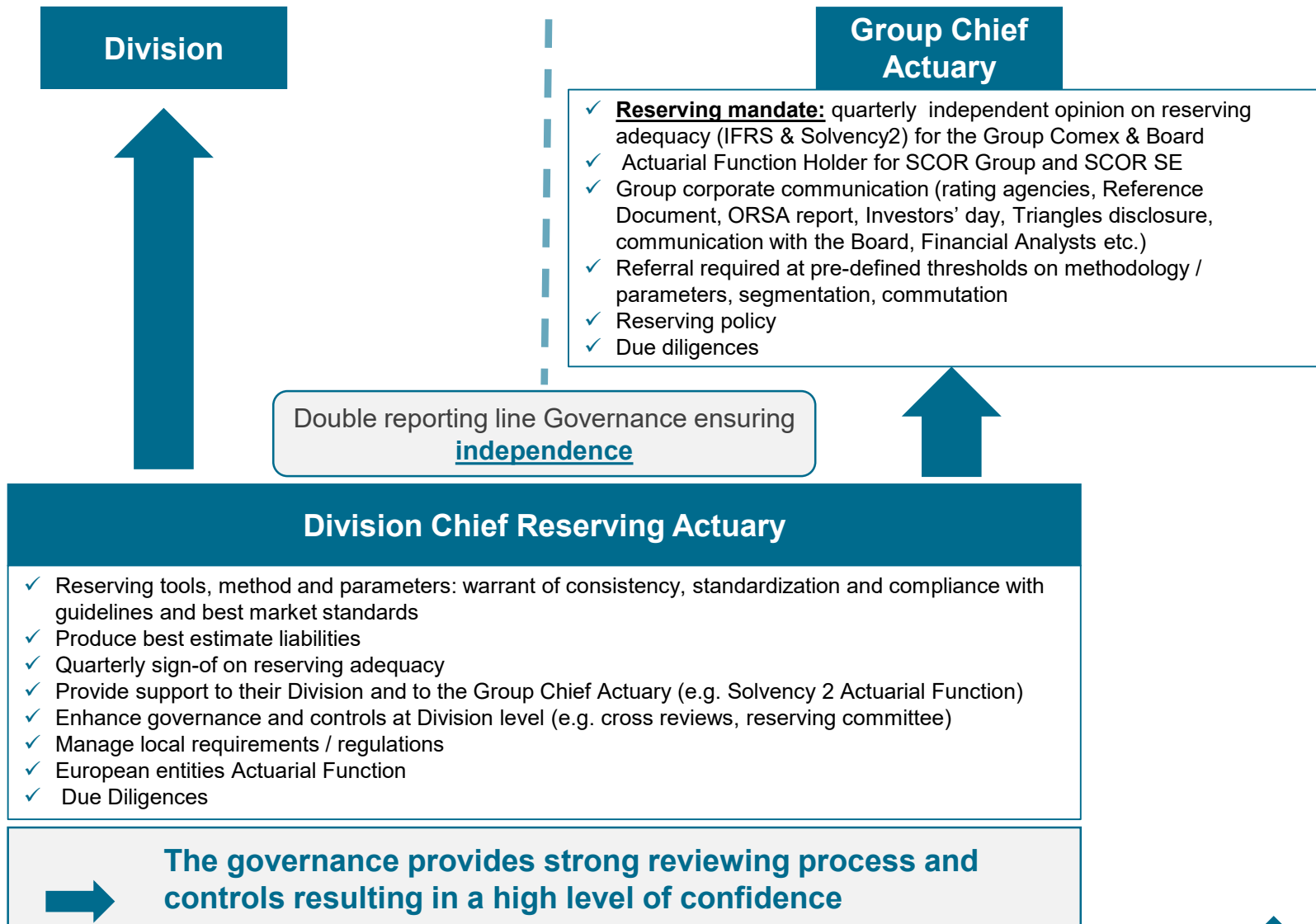
A strong governance with a quarterly process ensuring strong reserving control and independent opinion

- As presented in the following chart, an initial booked reserves position is proposed by the Division based on Division Chief Reserving Actuary’s opinion. An opinion on IFRS point estimate is formed by the Group Chief Actuary based on Division and Group Actuarial analyses.
- The final Group Chief Actuary view on the level of reserves is then presented to the Group Executive Committee who validates the booked reserves.
- The Group Chief Actuary opinion on the reserving adequacy is then shared by the Group Chief Actuary with Board Audit Committee as detailed in the following chart:



1) GCA : Group Chief Actuary
 2) DCRA: Division Chief Reserving Actuary

A strong governance in a free from influence environment



Top of the class Actuarial methods

Assessment of IBNR reserves and the variability of the overall reserves

- To assess IBNR reserves and the variability of the overall reserves, SCOR generally uses actuarial techniques which take into account quantitative loss experience data, together with qualitative factors, where appropriate.
- This exercise is performed on homogenous groups of contracts, called actuarial segments having similar development pattern and a required statistical mass.
- The reserves are also adjusted to reflect reinsurance treaty terms and conditions, and the variety of claims processing which may potentially affect SCOR's commitment over time.

Methods used by SCOR

- SCOR uses among others:
 - Deterministic methods (e.g. Chain Ladder, Bornhuetter-Ferguson, Average cost per claim or Loss ratio methods) for Best Estimate assessment
 - Stochastic approaches (e.g. Mack model, Bootstrap) for reserves' volatility estimates
 - Tailor made solutions like annuity projection by victim, generalized linear models, machine learning such as neural networks

Top of the class Actuarial methods

Example of actuarial method Chain-Ladder

- Chain-Ladder is a deterministic method which consists in the analysis of the behavior of losses using historical data in order to estimate a development pattern
- The estimated pattern is applied to the latest diagonal of the triangle in order to project the ultimate loss

UWY	Dvpt					Ultimate
	1	2	3	4	5	
1	$C_{1,1}$	$C_{1,2}$	$C_{1,3}$	$C_{1,4}$	$C_{1,5}$	$\hat{C}_{1,I}$
2	$C_{2,1}$	$C_{2,2}$	$C_{2,3}$	$C_{2,4}$		$\hat{C}_{2,I}$
3	$C_{3,1}$	$C_{3,2}$	$C_{3,3}$			$\hat{C}_{3,I}$
4	$C_{4,1}$	$C_{4,2}$				$\hat{C}_{4,I}$
5	$C_{5,1}$					$\hat{C}_{5,I}$

$$\hat{f}_k = \frac{\sum_{j=1}^{I-k} C_{j,k+1}}{\sum_{j=1}^{I-k} C_{j,k}}, 1 \leq k \leq I-1$$

$$\hat{\sigma}_k^2 = \frac{1}{I-k-1} \sum_{i=1}^{I-k} C_{i,k} \left(\frac{C_{i,k+1}}{C_{i,k}} - \hat{f}_k \right)^2 \text{ for } 1 \leq k \leq I-2$$

Example of actuarial method Mack model

- Mack is a stochastic model whose structure is based on the Chain-Ladder method
- It is distribution free and provides a measure of variability of the reserves

Reserves

$$\hat{R}_j = \hat{C}_{j,I} - C_{j,I-j+1}$$

Best Estimate

$$\sum_{j=1}^I \hat{C}_{j,I} = \sum_{j=1}^I C_{j,I-j+1} \prod_{k=I-j+1}^I \hat{f}_k$$

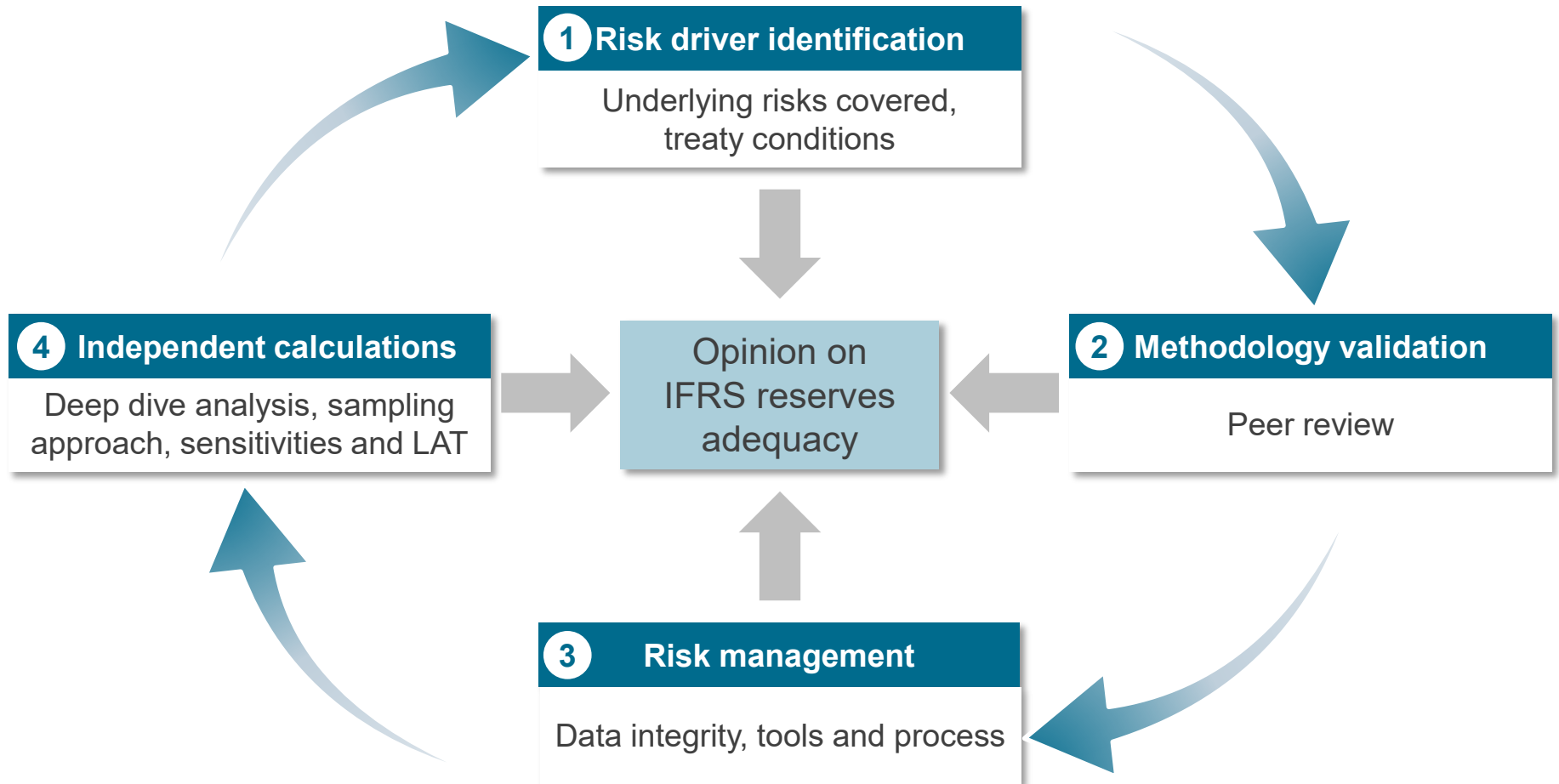
Mean square error

$$mse\left(\sum_{i=2}^I \hat{R}_i\right) = \sum_{i=2}^I \left(mse(\hat{R}_i) + \hat{C}_{i,I} \left(\sum_{j=i+1}^I \hat{C}_{j,I} \right) \sum_{k=I+1-i}^{I-1} \frac{2\hat{\sigma}_k^2 / \hat{f}_k^2}{\sum_{n=1}^{I-k} C_{nk}} \right)$$

with

$$mse(\hat{R}_i) = \hat{C}_{i,I}^2 \sum_{k=I+1-i}^{I-1} \frac{\hat{\sigma}_k^2}{\hat{f}_k^2} \left(\frac{1}{\hat{C}_{i,k}} + \frac{1}{\sum_{n=1}^{I-k} C_{nk}} \right)$$

A holistic “four axis approach” for “deep dives” studies



P&C loss development triangles and reserves as of December 2019

CONTENTS

- 1 A robust governance
- 2 Triangles disclosure**
- 3 SCOR portfolio
- 4 Appendices

Scope



- In SCOR, the actuarial analysis axis is the actuarial segment which groups together homogeneous contracts based on a variety of criteria (proportional basis or not, underlying risks typology, geography...). At group level, there are almost 464 active reserving segments (still carrying reserves) at 2019 year end.
- The eight reserving classes disclosed are aggregations of these actuarial segments.



- Data which is not included in the triangles:
 - Lloyd's portfolio as the RITC scheme (Reinsurance To Close – Lloyd's accounting scheme) does not allow displaying entire triangles
 - Run-off portfolios are not disclosed as their claims development profile does not match the actual development of the ongoing portfolio
 - Direct business segments (including MGA US) are also excluded from triangles as this is pure primary insurance
 - Fronting contracts from a major French aviation insurer
 - Proportional business in South America due to incomplete diagonals for older years and
 - Significant quota-shares in China because of their specificities (large sliding scales)



- These triangles and reserves disclosure covers almost 82% of gross P&C IFRS booked reserves.



- Triangles data are reconciled with financial statements which have been audited by the external auditors.

Total loss development triangle

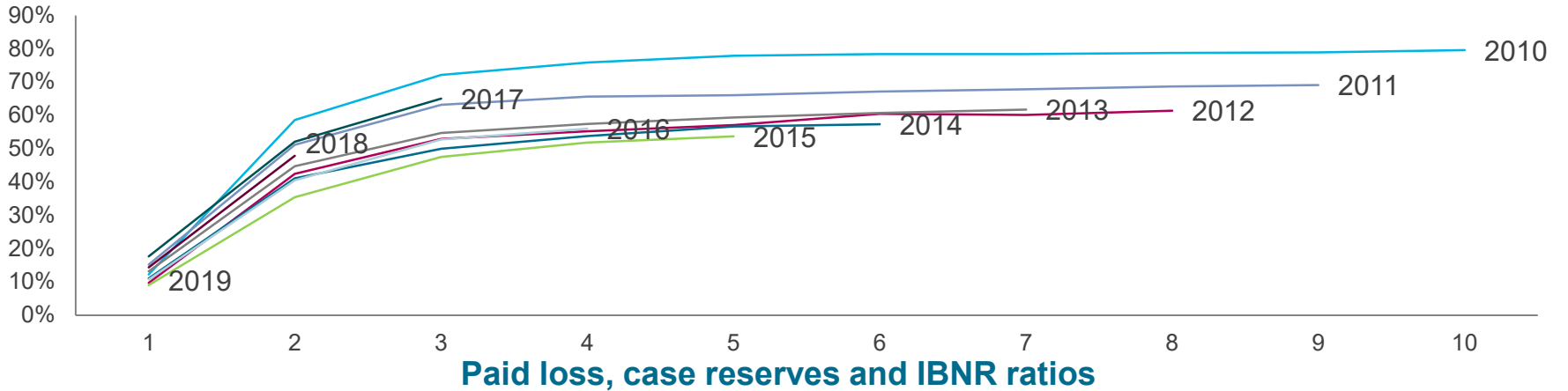
Total Triangle

Under writing Year	Ultimate Premium (€m)	Development Year										Ultimate Loss Ratio	Ultimate Loss Ratio 2018 - as if 2019	Paid Loss Ratio	Case Reserves Ratio	IBNR Ratio
		1	2	3	4	5	6	7	8	9	10					
2010	2 913	12,2%	58,6%	72,1%	75,8%	77,9%	78,4%	78,4%	78,7%	78,9%	79,5%	82,0%	82,4%	73,8%	5,7%	2,5%
2011	3 212	15,2%	51,1%	63,1%	65,7%	66,0%	67,1%	67,8%	68,6%	69,1%		71,1%	72,2%	62,6%	6,5%	2,0%
2012	3 533	9,7%	42,5%	53,0%	55,3%	57,1%	60,5%	60,1%	61,4%			64,5%	64,6%	53,7%	7,7%	3,1%
2013	3 449	13,2%	44,7%	54,7%	57,4%	59,4%	60,7%	61,7%				65,1%	65,9%	54,7%	7,0%	3,4%
2014	3 615	11,1%	41,1%	50,0%	53,8%	56,6%	57,3%					62,4%	63,5%	48,6%	8,7%	5,1%
2015	3 866	9,1%	35,4%	47,6%	51,8%	53,7%						61,1%	61,6%	44,2%	9,5%	7,5%
2016	4 097	10,7%	40,5%	52,8%	56,0%							66,5%	66,9%	43,8%	12,2%	10,5%
2017	4 292	17,6%	52,1%	65,0%								79,8%	79,1%	44,4%	20,6%	14,7%
2018	5 029	14,4%	47,8%									75,0%	77,9%	26,3%	21,6%	27,2%
2019	5 409	10,6%										71,3%		0,2%	10,4%	60,7%

Total loss development triangle

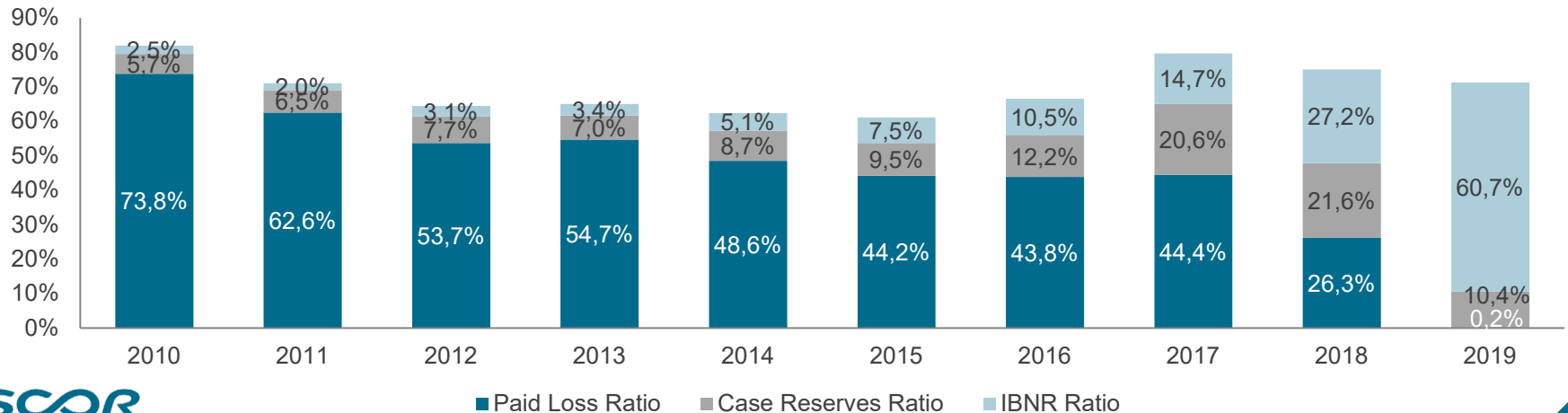
Incurred loss development in loss ratios

Development year



Paid loss, case reserves and IBNR ratios

Underwriting year



A reserving approach leading to a high confidence in reserving adequacy

SCOR's strong reserving process reveals high level of confidence

Underwriting Year	Ultimate Premium € billion	1 Ultimate Loss Ratio 2018 as if 2019	2 Ultimate Loss Ratio 2019	Difference
2010	2,9	82,4%	82,0%	-0,4%
2011	3,2	72,2%	71,1%	-1,1%
2012	3,5	64,6%	64,5%	-0,1%
2013	3,4	65,9%	65,1%	-0,8%
2014	3,6	63,5%	62,4%	-1,1%
2015	3,9	61,6%	61,1%	-0,5%
2016	4,1	66,9%	66,5%	-0,4%
2017	4,3	79,1%	79,8%	0,6%
2018	5,0	77,9%	75,0%	-2,9%
2019	5,4		71,3%	

- The table reads as:

1 Ultimate Loss Ratios (ULRs) 2018 on 2019 perimeter and Exchange rates

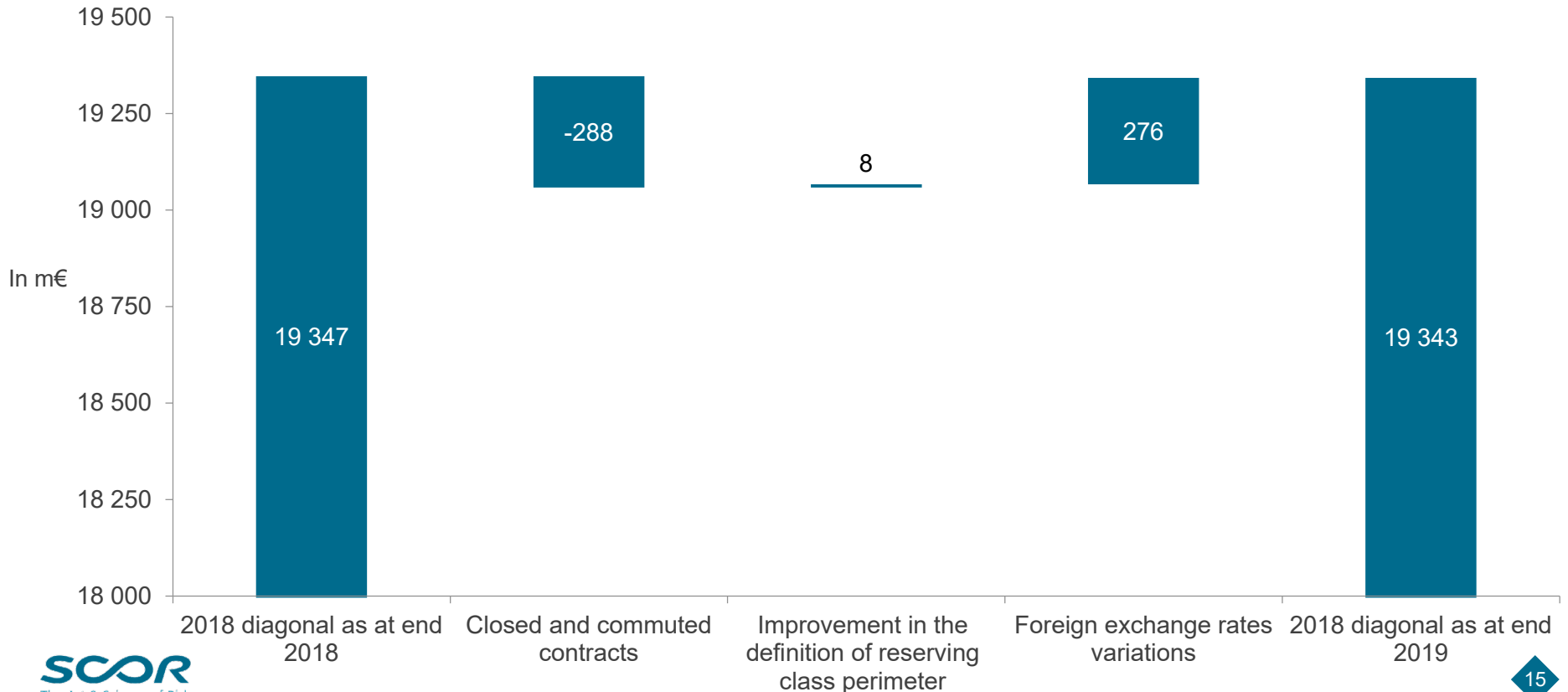
2 2019 ULRs on 2019 perimeter

- Globally, ULRs develop positively from 2018 to 2019 calendar year except for UWY 2017 which was impacted by some large losses deteriorations on property and aviation.
- The ULR for UWY 2017, 2018 & 2019 are higher than average due to Cat losses.

Reconciliation to prior triangles

Reconciliation between 2018 diagonal as at end of 2018 and 2019

- The following graph provides reconciliation between the amount of incurred claims disclosed at year-end 2018 and year-end 2019 taking into account all available information at reserving class level. The main changes come from the closed and commuted contracts (decrease of EUR288m) and from Fx impact (increase of EUR276m).



P&C loss development triangles and reserves as of December 2019

CONTENTS

- 1 A robust governance
- 2 Triangles disclosure
- 3 SCOR portfolio**
- 4 Appendices

Types of reinsurance

Facultative reinsurance

- The ceding company cedes and the reinsurer assumes all or part of the risks covered by a single specific insurance policy
- Facultative reinsurance is negotiated separately for each insurance contract that is reinsured
- Facultative reinsurance normally is purchased by ceding companies for individual risks not covered by their reinsurance treaties, for amounts in excess of the monetary limits of their reinsurance treaties or for unusual risks

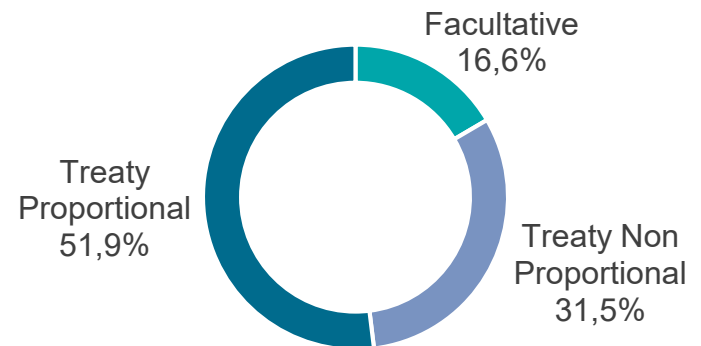
Proportional or quota share reinsurance

- The reinsurer, in return for a predetermined share of the insurance premium charged by the ceding company, indemnifies the ceding company against the same predetermined share of the losses of the ceding company under the covered insurance contracts

Non-proportional, or excess of loss or stop loss reinsurance

- The reinsurer indemnifies the ceding company against all or a specified portion of losses, on a claim by claim basis or with respect to a specific event or a line of business, in excess of a specified amount, known as the ceding company's retention or reinsurer's attachment point, and up to a negotiated reinsurance treaty limit

2010-2019 Reserves split by type of reinsurance



Lines of business description

Engineering

- It provides coverage for the risks inherent in the construction projects (from inception to completion). It covers all types of civil construction risks, plant and machinery breakdown risks as well as delay in start up coverage

Property

- The risks covered are classically fire, agriculture, machinery breakdown, and theft for private individuals, commercial or industrial risks

Proportional casualty

- The premium and reserves of this class are predominantly derived from our UK medical malpractice portfolio (long-term risks). A significant part of this class is also IDI business (Inherent Defect Insurance) in France and Spain. IDI provides coverage for inherent defects that are detected during a period starting at the completion of a construction/installation and expiring up to 10 years after completion of the works. This class also includes professional and personal liabilities but also D&O (Directors and Officers, in run-off) and WC (Workers Compensation mainly in the US)

Non-proportional casualty

- This class contains IDI (France and Spain mainly), medical malpractice (mainly France) and professional and manufacturing liabilities (heavy industry, food producers). Workers compensation business is also included (mainly in the US)

Marine, transport, aviation

- This class is dominated by the aviation risks. Aviation risks include products liability, hull and liabilities for airlines, general aviation and satellite risks. Marine and transport are basically insurance of hull and liabilities for merchant ships

Credit and surety

- This class mainly contains proportional business. The surety business is mainly performance bonds. The rest of the portfolio is credit insurance

Lines of business description

Motor non-proportional

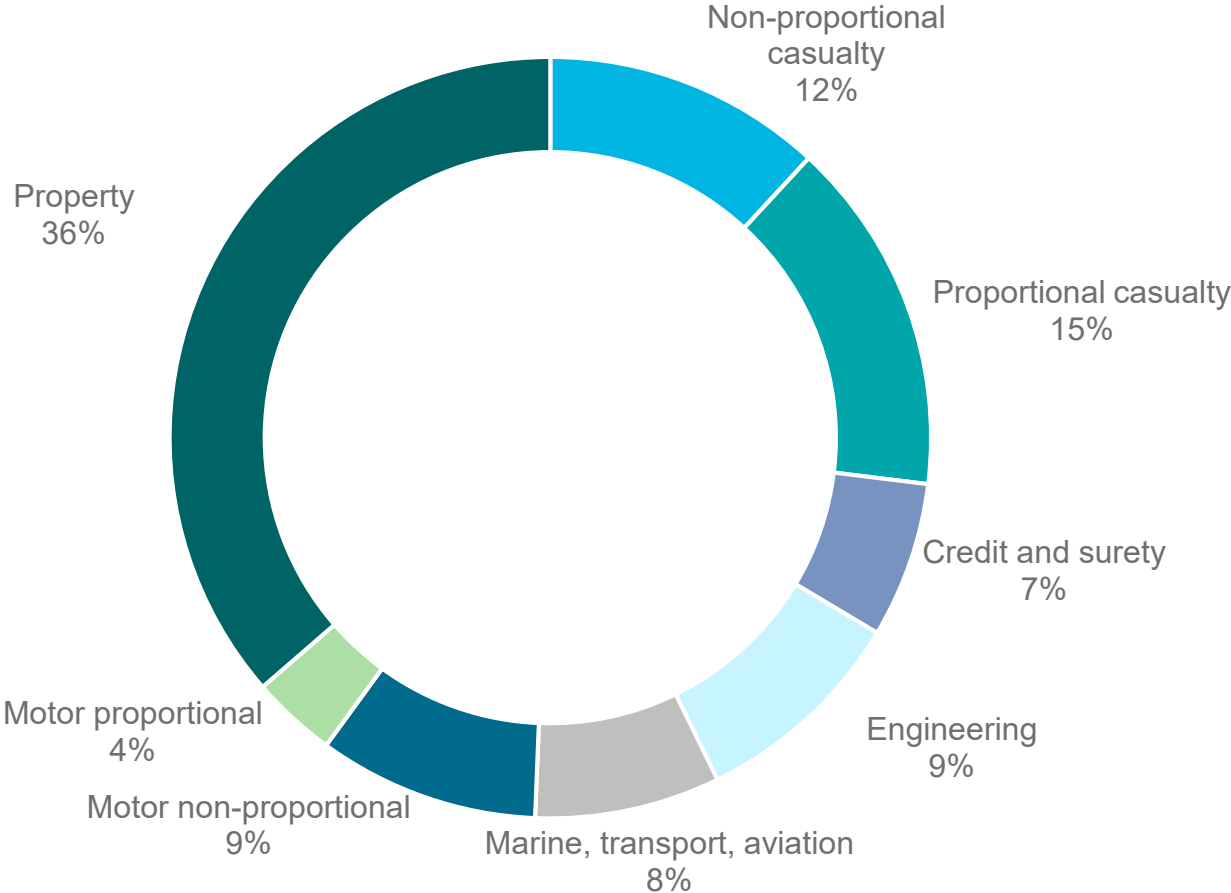
- The main risk covered is auto liability
- The most important part of this class is motor third party liability on French market. The second largest part is motor third party liability on UK market
- Both premium and reserves are mainly related to bodily injury covers
- From a reinsurance point of view, this class is expected to have a longer development length than the motor proportional class, as only claims that overcome the threshold (as defined in the reinsurance contract) are concerned

Motor proportional

- This class contains property damage covers as well as bodily injury covers
- Compared to the motor non-proportional class, this motor proportional class has a shorter development length
- This is explained by the more important weight of damages to property (short term risks) and the nature itself of this class (the claims reporting to the reinsurer is faster for proportional businesses)

Lines of business description

2010-2019 Reserves split by line of business



P&C loss development triangles and reserves as of December 2019

CONTENTS

- 1 A robust governance
- 2 Triangles disclosure
- 3 SCOR portfolio
- 4 Appendices**

Appendix 1: Large losses

- Depending upon which actuarial reserving method is used, the presence or absence of large natural catastrophe and man-made losses and how they are treated may have a significant impact on the estimated ultimate loss amount
- Only loss amounts exceeding €40m by underwriting year for Property and €15m for the other classes of business (on the disclosed perimeter) are shown in the table below

Underwriting year	Paid claims	Incurred claims	Main events by UWY
Worldwide Property fire all natures including Nat Cat			
2010	526 235	542 485	Great East Japan earthquake, New Zealand earthquake
2011	368 855	369 928	Heavy rainfall in Denmark, New Zealand earthquake, Thailand floods
2012	94 609	95 882	Hurricane Sandy
2013	321 302	324 406	Central European Flood, Fire in a China Semiconductor Company, Hailstorm Andreas, Japan Snowstorm, Saint-Jude Storm
2014	89 951	90 476	European hail (Ela)
2016	38 581	41 750	Fort McMurray Wildfire
2017	519 117	692 392	California Wildfire, Hurricanes Harvey, Irma, Maria, Fire in a middle east refinery complex, Refinery Explosion in Wisconsin
2018	449 902	601 630	Camp California Wildfire, Hurricane Michael, Typhoon Jebi, Typhoon Trami, Refinery Explosion in Germany
2019	0	462 377	Typhoon Hagibis, Typhoon Faxai, Petrochemical plant explosion in Texas
Worldwide marine, transport , aviation all natures			
2010	41 702	41 702	Maersk - Gryphon FPSO Unit
2011	17 082	17 117	Petrojarl Banff FPSO
2013	6 420	15 961	Disappearance of Malaysian Airline
2014	69 793	71 489	BW offshore explosion, Mexican Petrol Company - Abkatun Platform Fire
2015	30 481	33 769	Failure of turret
2018	26 296	38 633	Falcon Eye 1 launch failure, Ethiopian Boeing B737 Max 8
Worldwide Credit & Surety all natures			
2017	16 262	16 816	Bankruptcy of a Chinese mobile manufacturer
2018	16 109	16 257	Surety loss of a Canadian construction company
Worldwide Casualty non proportional and facultative - including PA, WC, IDI and Medical Malpractice			
2005	17 174	17 174	US Homebuilders loss
2009	626	27 678	Residences damaged by pyrrhotite (Canada)
2010	16 152	16 152	Pharmaceutical company (Herbicide)
2012	22 612	22 612	Bayou Corne sinkhole
Worldwide Engineering all natures			
2011	107	30 988	Ituango Heavy Rain
2012	88	19 790	Inpex Coating/Water damage
2014	1 138	20 820	Kuwait Flood

(in 000s EUR)

Appendix 2: Positive (negative) development vs Reserve release (reinforcement)

Positive (negative) development

- Any movement of the reserves which are fully reflecting the incurred's ones and are not impacting the margin are identified as positive or negative development.

Reserve release (reinforcement)

- Any movement of the reserves which are not fully reflecting the incurred's ones and therefore are impacting the margin are identified as reserves' release or reinforcement.

Appendix 3: External auditors (EY and Mazars) statement

- On our request, procedures have been performed in 2020 by SCOR external auditors which has led to a “Statutory auditors’ report of the factual findings of the agreed-upon procedures relating to the loss development triangles and reserves for the year ended December 31, 2019”. The objective was to provide SCOR with their findings regarding the quality and the completeness of the loss development triangles disclosed. These procedures as defined by us covered quality and completeness of data disclosed, correct consolidation of the triangles and controls of process leading to the production of the Ultimate Loss Ratios as well as the “As-if” figures.
- As part of the procedure, SCOR external auditors have found that the disclosed triangles reconcile with the underlying data; the triangles have been consolidated with no exception found, the process leading to the production of the Ultimate Loss Ratios as well as the “As-if” figures did not raise any exception and the document accompanying the triangles is a fair reflection of the way in which the triangles are actually built.