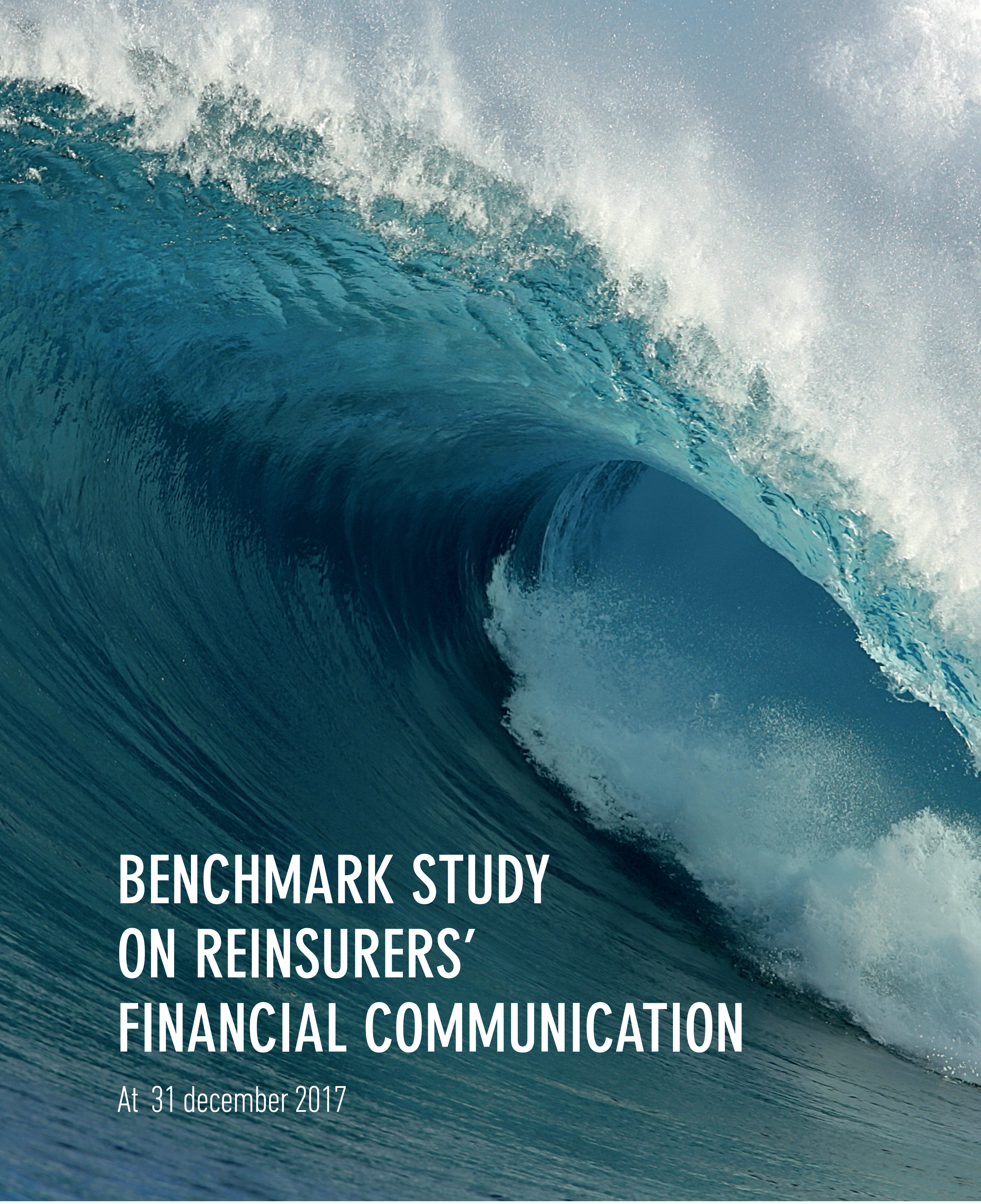

BENCHMARK STUDY ON REINSURERS' FINANCIAL COMMUNICATION

At 31 december 2017

MAZARS

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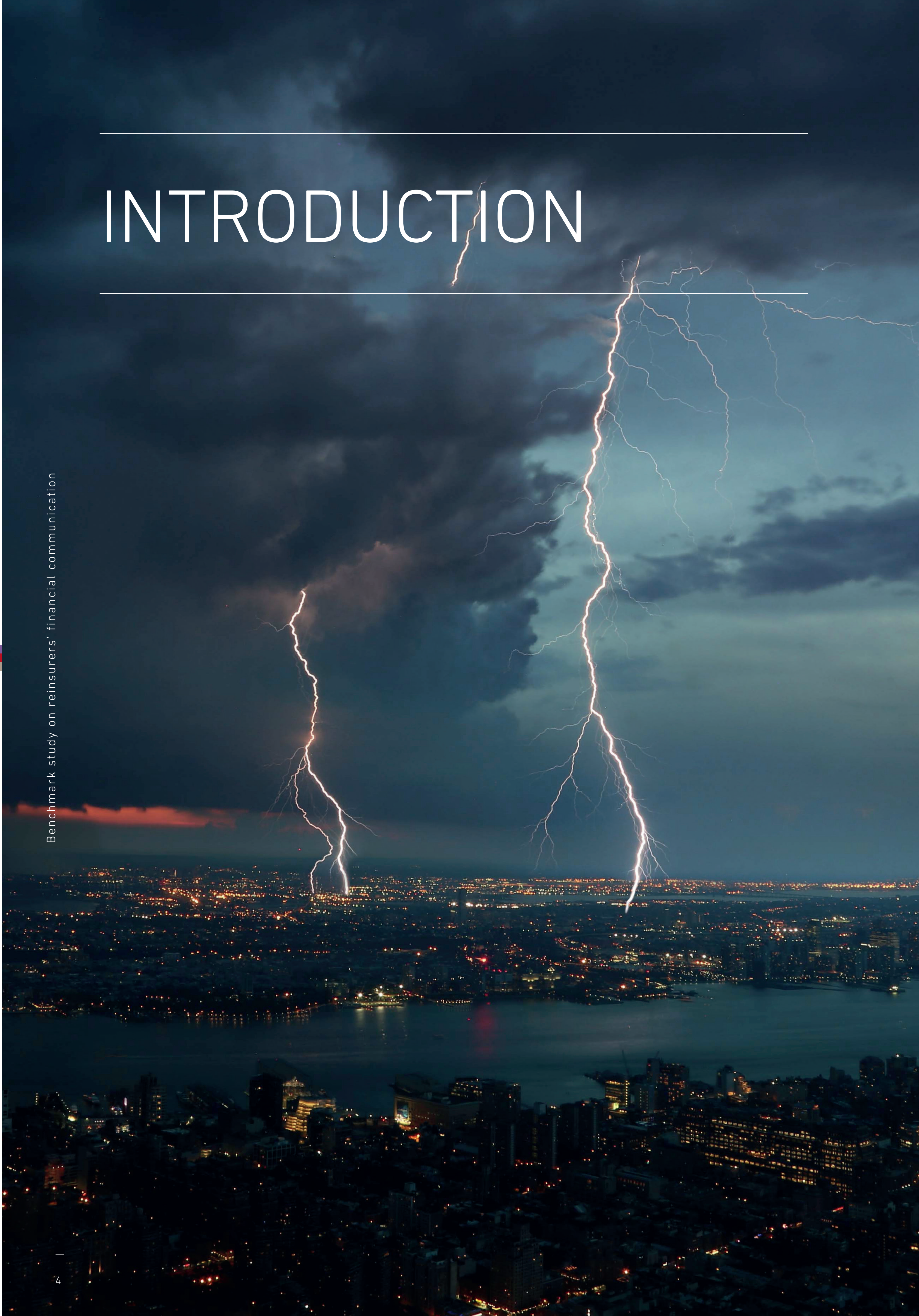
Benchmark study on reinsurers' financial communication

INTRODUCTION



Reinsurance, also known as the " insurers' insurance ", plays a key role in the global market economy today. Several factors, such as the strengthening of capital requirements, the increasing level of significant NAT CAT events or the need for optimal coverage is increasing the need for reinsurance.

Initially, insurance companies sought partnerships with reinsurers in order to obtain protection or financing for the risks they were underwriting. However, the role of reinsurance is continuously expanding and, in the current market circumstances, reinsurers propose a growing range of products that not only cover risks, but also offer financial solutions (especially for life businesses). It is also common to sell specific packages to improve the capital management of ceding companies.

Furthermore, in the current actual low interest rate environment we note the continuous development of the ILS market to which reinsurers contribute significantly as they are often sponsors of SPVs issuing mortality or CAT bonds. This product offers higher yields as the coupons are largely superior to risk free rates.

Given the above, we consider that a benchmark study targeting this specific market could give an insight and provide a better understanding of the reinsurance business.

1

The panel of reinsurers

For this benchmark study, we have focused our attention on several companies whose core business is reinsurance. The companies targeted were selected based on the top 15 reinsurers in the world (based on gross written premiums) from which we excluded two Asian and one Indian company (China Re, Korean Re and the General Insurance Corporation of India) and two holding companies (Great West Lifeco and Transatlantic Holdings) due to comparability issues. Consequently, our reinsurance panel is comprised of ten companies.

From a pure information perspective we have also included AXA and Allianz, as we considered this information would allow a better understanding of the way reinsurers compare to regular insurers.

The benchmark study includes financial statements published in 2016 and 2017 and below we present the key information in respect of their origins, the quotation market place and the accounting standards used for financial reporting purposes.

Overview as at 31/12/2017

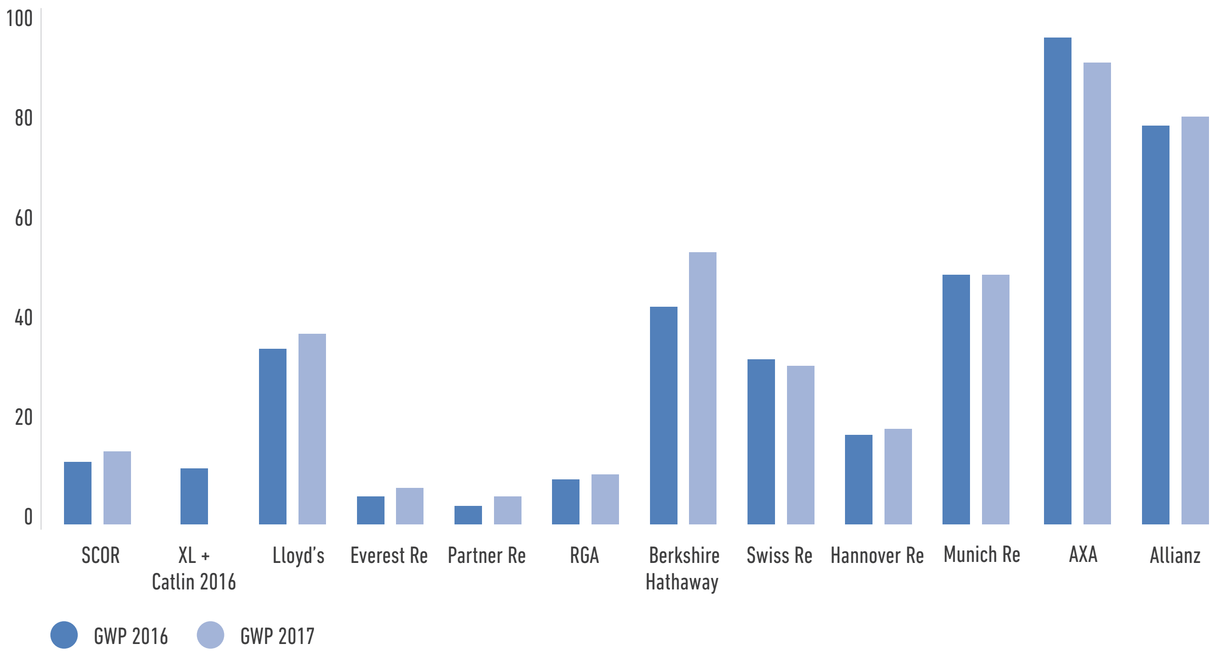
	Munich Re	Hannover Re	Swiss Re	Berkshire Hathaway	RGA	Partner Re	Everest Re	Lloyd's	XL + Catlin[1] 2016	SCOR	AXA	Allianz
Country of origin:	Deutschland	Deutschland	Switzerland	USA	USA	USA	USA	UK	USA	France	France	Deutschland
Listed company / Market	Xetra	Xetra	SIX Swiss Exchange	NYSE	NYSE	NYSE	NYSE	N/A	NYSE	Euronext	Euronext Paris	Xetra/NYSE
Accounting Standards	IFRS	IFRS	US GAAP	US GAAP	US GAAP	US GAAP	US GAAP	IFRS	US GAAP	IFRS	IFRS	IFRS
Currency of the FS	EUR	EUR	USD	USD	USD	USD	USD	GBP	USD	EUR	EUR	EUR
Share price 31/12/2017	180.75 €	104.90 €	CHF 91.25	A : $ 299.9k B : $ 197.57	$155.93	$28.67	$221.26	N/A	$37.57	33.55 €	24.74 €	191.50 €
Registered shares (in millions)	155.0	120.6	349.5	1 343	79	0.3	40.8	N/A	267	194	2 425	440
Estimated Market Value at 31/12/17 (in Currency Bn)	28.0	12.7	CHF 31.89	493.9	12.3	7.3	9.0	N/A	10.0	6.6	60.0	84.3
Estimated Market Value at 31/12/17 (in € Bn)	28.0	12.7	27.3	416.0	10.4	6.1	7.5	N/A	8.4	6.6	60.0	84.3

As shown above, and for comparison purposes only, we have also included the estimated market value of the company by multiplying the total number of registered shares by the share price as at December 31st, 2017. However, it is important to highlight that this information is only for the purposes of the benchmark study and does not mean that this is the current market value.

Furthermore, in order to provide an overall picture of the size of the companies in the panel and to better understand the nature of the business underwritten, we present below the evolution of the GWP between 2016 and 2017, and also the split between life and non-life activities.

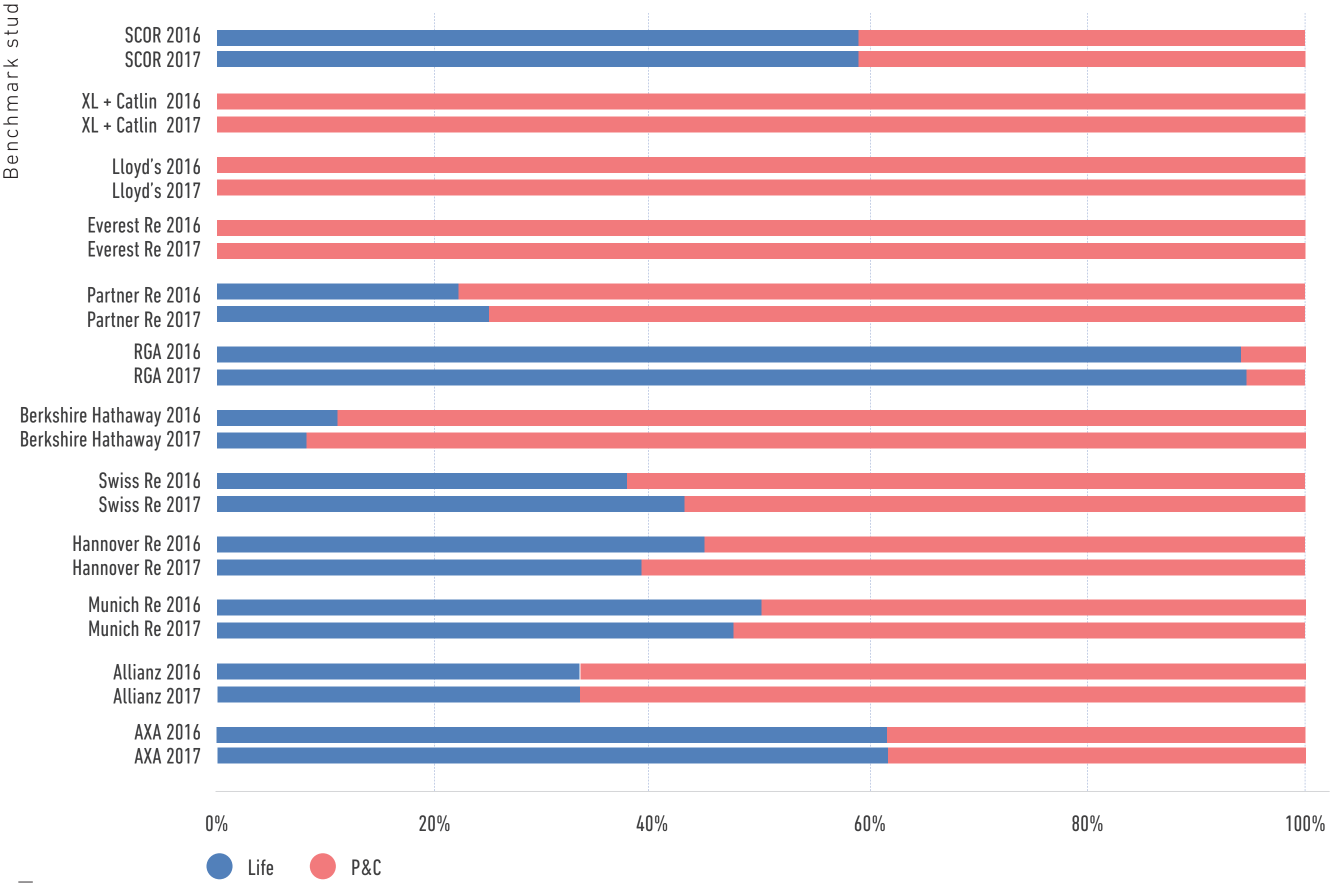
As can be seen from the analysis, the level of GWP remains fairly stable between 2016 and 2017, except for Berkshire Hathaway (+31% at constant FX). This is due to significant one-off non-life transactions with AIG (total impact in 2017 of USD $10.2bn).

Evolution of GWP between 2016 and 2017 (in €bn)



With respect to the type of business underwritten, no major shifts are to be noted. Concerning mixed reinsurers we see that they mainly concentrate on non-life business except for SCOR (59% life reinsurance) and RGA (which almost exclusively focuses on life products).

Split of GWP between Life & P&C



A key factor when choosing a reinsurer is the rating. This is driven by the importance ceding companies put on the financial strength of the other party. Furthermore, the credit risk of a reinsurer can also play a significant role for the ceding company in terms of the level of capital required for solvency purposes (SCR) imposed by local regulations such as Solvency II in Europe. In brief, a higher rated reinsurer, e.g. A+, will reduce the amount of capital required due to a lower counterparty default risk compared to a B+ rated reinsurer. However, the ceding company will generally agree to pay a higher level of premium if it chooses a top ranked reinsurer.

For this reason, the following table presents a summary of the main ratings:

Latest ratings available (02/05/2018)												
	Munich Re	Hannover Re	Swiss Re	Berkshire Hathaway	RGA	Partner Re	Everest Re	Lloyd's	XL Catlin	SCOR	AXA	Allianz
A.M. Best	**A** (Upper medium)	**A+** (Superior)	**A+** (Superior)	**A++** (Excellent)	**A+** (Superior)	**A** (Excellent)	**A+** (Superior)	**A** (Excellent)	**A** (Upper medium)	**A+** (Superior)	**AA-** (Superior)	**A+** (Superior)
Fitch	**A+** (Upper medium)					**A+** (Upper medium		**AA-** (Very strong)		**AA-** (Very strong)	**AA-** (Very strong)	
Moody's	**A2** (Upper medium)		**Aa3** (Excellent)		**A1** (Upper medium)	**A1** (*) (Upper medium)	**A1** (Upper medium)			**Aa3** (Excellent)		**Aa3** (Excellent)
S&P	**A-** (Upper medium)	**AA-** (Very strong)	**AA-** (Very strong)	**AA+** (Excellent)	**AA-** (Very strong)	**A+** (Strong)	**A+** (Strong)	**A+** (Strong)	**A** (Upper medium)	**AA-** (Very strong)	**Aa3** (Excellent)	**AA** (Very strong)

(*) Applies to Partner Reinsurance Company Ltd. And Partner Reinsurance Company of the U.S.

We note that ratings are quite homogeneous in the panel. The ratings strengthen the idea that these companies are comparable and can be studied via this benchmark study.

2

Purpose of the benchmark study

The purpose of this benchmark study is to provide readers with a comparative view on disclosures undertaken on specific matters of attention or specific events of the year. For this reason, we will limit the study scope to the following areas:

- disclosures on intangible assets (with a specific focus on goodwill and value of business acquired) and deferred acquisition costs;
- communication around deferred tax assets with a specific focus on the disclosures done in respect of tax losses carried forward;
- key business performance indicators disclosed in the annual reports;
- Solvency II indicators: applicable only for companies in Europe and for European subsidiaries of non-EU based reinsurers. To be noted, that the study is limited only to 2016 as the 2017 group/solo SFCRs were not yet available in time for this study;
- we have also included in the benchmark two significant 2017 topics which directly impacted reinsurance business:
    - disclosures in respect of significant NAT CAT events such as Atlantic hurricanes (Harvey, Irma and Maria), Cyclone Debbie in Australia, California wildfires and the two Mexican earthquakes;
    - reporting on the impact of the US tax reform.

3

Benchmark study conclusions

3.1 I Intangible assets & deferred acquisition costs (DAC)

The purpose of this section is to provide a global overview on the intangible assets and deferred acquisition cost disclosures made in the 2017 and 2016 financial statements. In the table, DAC is presented gross of UPR.

Intangible assets & DAC in 2017

€Bn	Munich Re	Hannover Re	Swiss Re	Berkshire Hathaway (1)	RGA	Partner Re	Everest Re	Lloyd's	XL + Catlin(2) 2016	SCOR	AXA	Allianz
Goodwill	2.6	0.1	3.5	46.3	0.0	0.4	-	-	1.0	0.8	15.4	11.8
Deferred Acquisition Costs (DAC)	9.4	2.2	5.8	12.9	2.7	0.6	0.3	4.9	0.8	1.4	22.9	23.2
VOBA	0.4	0.1	1.7	-	0.0	0.1	-	-	-	1.4	1.9	0.5
Other intangibles assets	0.7	0.1	3.0	27.4	0.0	0.1	-	-	0.8	0.3	3.2	0.9
Total intangible assets & DAC	**13.1**	**2.5**	**14.0**	**86.6**	**2.8**	**1.1**	**0.3**	**4.9**	**2.5**	**3.9**	**43.3**	**36.5**

(1) The total balance sheet presented here corresponds to the insurance business only (USD 486bn out of a total group balance sheet of USD 702bn)

(2) 2017 annual reports have not been issued at the date of this report for XL+Catlin. The data disclosed for the entity corresponds to 2016

KPIs

€Bn	Munich Re	Hannover Re	Swiss Re	Berkshire Hathaway (1)	RGA	Partner Re	Everest Re	Lloyd's	XL + Catlin(2) 2016	SCOR	AXA	Allianz
GWP	49.1	17.8	31.0	56.1	9.5	5.0	6.4	38.3	12.4	14.7	92.1	77.3
Technical Result	1.2	1.4	1.0	1.5	1.0	0.2	0.4	(3.1)	0.5	0.5	7.7	9.5
Technical Reserves	209.9	41.2	156.2	122.4	36.7	11.8	11.7	85.4	31.1	29.0	560.8	727.9
Total balance sheet	265.7	61.2	187.4	409.2	51.0	19.4	19.9	122.5	49.2	43.2	870.1	901.3
% intangible assets & DAC in BS	4.9%	4.1%	7.5%	21.2%	5.4%	5.6%	1.7%	4.0%	5.1%	9.1%	5.0%	4.0%

Intangible assets & DAC in 2016

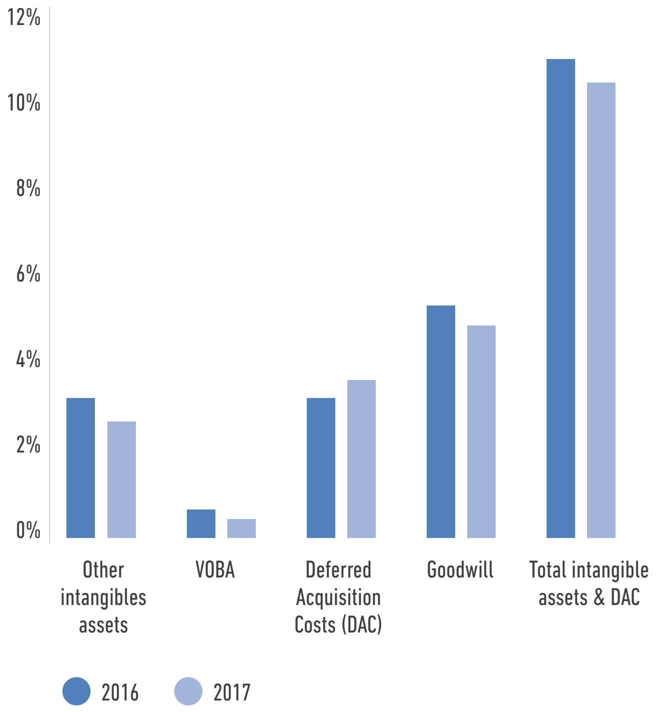
€Bn	Munich Re	Hannover Re	Swiss Re	Berkshire Hathaway (1)	RGA	Partner Re	Everest Re	Lloyd's	XL + Catlin	SCOR	AXA	Allianz
Goodwill	2.8	0.1	3.8	51.3	0.0	0.4	-	-	1.2	0.8	16.7	12.4
Deferred Acquisition Costs (DAC)	9.5	2.2	5.9	7.7	3.1	0.6	0.3	5.0	0.9	1.4	24.1	24.9
VOBA	0.5	0.1	1.9	-	0.0	-	-	-	-	1.6	2.2	0.2
Other intangibles assets	0.8	0.1	2.5	31.8	0.1	0.1	-	-	0.9	0.2	3.3	1.2
Total intangible assets & DAC	**13.7**	**2.4**	**14.1**	**90.8**	**3.2**	**1.1**	**0.3**	**5.0**	**3.0**	**4.0**	**46.3**	**38.6**

(1) The total balance sheet presented here corresponds to the insurance business only (USD 409bn out of a total group balance sheet of USD 621bn)

KPIs

€Bn	Munich Re	Hannover Re	Swiss Re	Berkshire Hathaway (1)	RGA	Partner Re	Everest Re	Lloyd's	XL + Catlin	SCOR	AXA	Allianz
GWP	48.9	16.3	32.1	43.0	9.1	4.8	5.4	36.4	12.5	13.8	94.2	76.3
Technical Result	4.0	0.1	4.5	6.0	1.3	0.4	1.0	1.4	0.5	1.0	7.7	9.5
Technical Reserves	197.5	42.1	93.5	108.3	36.4	12.1	11.9	75.2	35.1	28.7	574.8	599.6
Total balance sheet	267.8	63.6	204.5	389.2	50.5	20.9	20.3	118.9	55.6	43.3	892.8	883.8
% intangible assets & DAC in BS	5.1%	3.8%	6.9%	23.3%	7.6%	5.3%	1.6%	4.2%	5.4%	9.1%	5.2%	4.4%

Average weight in the total BS 2017 vs. 2016



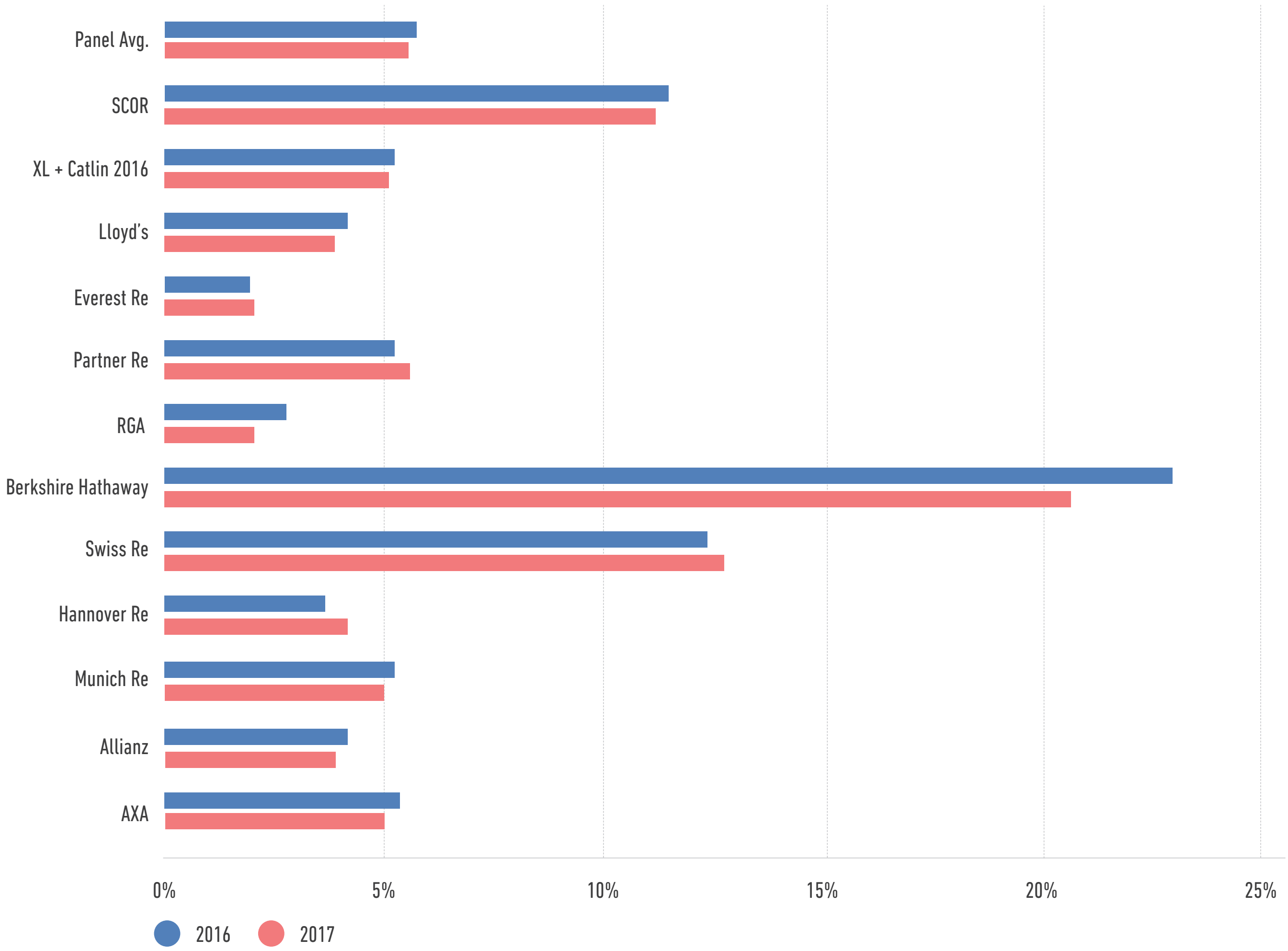
Looking at the graph below, at the breakdown by company, we note that most of them present values in line with the pro-forma[1] average with Everest Re showing the lowest ratio (1.7% in 2017 vs. 1.6% in 2016) and SCOR having the highest ratio (9.1% in 2017 and 2016). For SCOR, the main contributor in the balance sheet is the VOBA representing 3.2% (vs. an average VOBA from the panel of 0.3%).

In the panel, the highest ratio is presented by Berkshire Hathaway (21.2% in 2017 vs. 23.3% in 2016) of which more than half is accounted for by Goodwill. This is an indication of growth done in the past by acquiring companies.

1 : This ratio does not include Berkshire Hathaway

For the two direct insurers included in the panel, the ratios are quite in line with the average computed for the reinsurance companies.

Weight of Intangibles assets & DAC in the BS 2017 vs. 2016



The following table presents what topics are disclosed or mentioned in the annual reports. Globally, all major reinsurers provide, either in a separate note to the financial statements or in another note, the key figures and the accounting methods for Goodwill, DAC and VOBA.

Mention in the Annual Report					
	Reporting standards	Goodwill	DAC	VOBA	Other intangibles
Munich Re	IFRS	√	√	X	√
Hannover Re	IFRS	√	√	X	√
Swiss Re	US GAAP	X	√	√	X
Berkshire Hathaway	US GAAP	√	√	X	√
RGA	US GAAP	√	√	√	X
Partner Re	US GAAP	√	√	√	√
Everest Re	US GAAP	X	√	X	X
Lloyd's	IFRS	X	X	X	√
XL + Catlin	US GAAP	√	X	X	X
SCOR	IFRS	√	√	√	√
AXA	IFRS	√	√	√	√
Allianz	IFRS	√	√	X	√

3.1.1 | Goodwill

Goodwill is defined in the same way by all companies in the panel. Overall, it is the difference between the acquisition price and the fair value of the net identifiable assets. This difference can either be positive (Goodwill) or negative (Badwill). The following table reflects how Goodwill is disclosed:

Goodwill in Annual Reports							
	Report. Standard	Separate line in BS	Note in Annual Report	Impairment method description	Var. Table Net [1]	GW per Geog. Area	GW per LoB
Munich Re	IFRS	√	√	√	√	X	√
Hannover Re	IFRS	√	√	√	X	X	X
Swiss Re	US GAAP	√	X	X	X	X	√
Berkshire H.	US GAAP	√	√	√	X	X	X
RGA	US GAAP	X	X	√	X	X	X
Partner Re	US GAAP	√	√	X	√	X	√
Everest Re	US GAAP	X	X	X	X	X	X
Lloyd's	IFRS	X	X	X	X	X	X
XL + Catlin	US GAAP	v	√	√	√	X	X
SCOR	IFRS	√	√	√	√	X	X
AXA	IFRS	√	√	√	√	√	√
Allianz	IFRS	X	√	√	√	√	√

(1) Gross of impairment and amortization

Benchmark study on reinsurers' financial communication

Globally, we could highlight that most companies show Goodwill on a separate line in the consolidated balance sheet with the following exception:

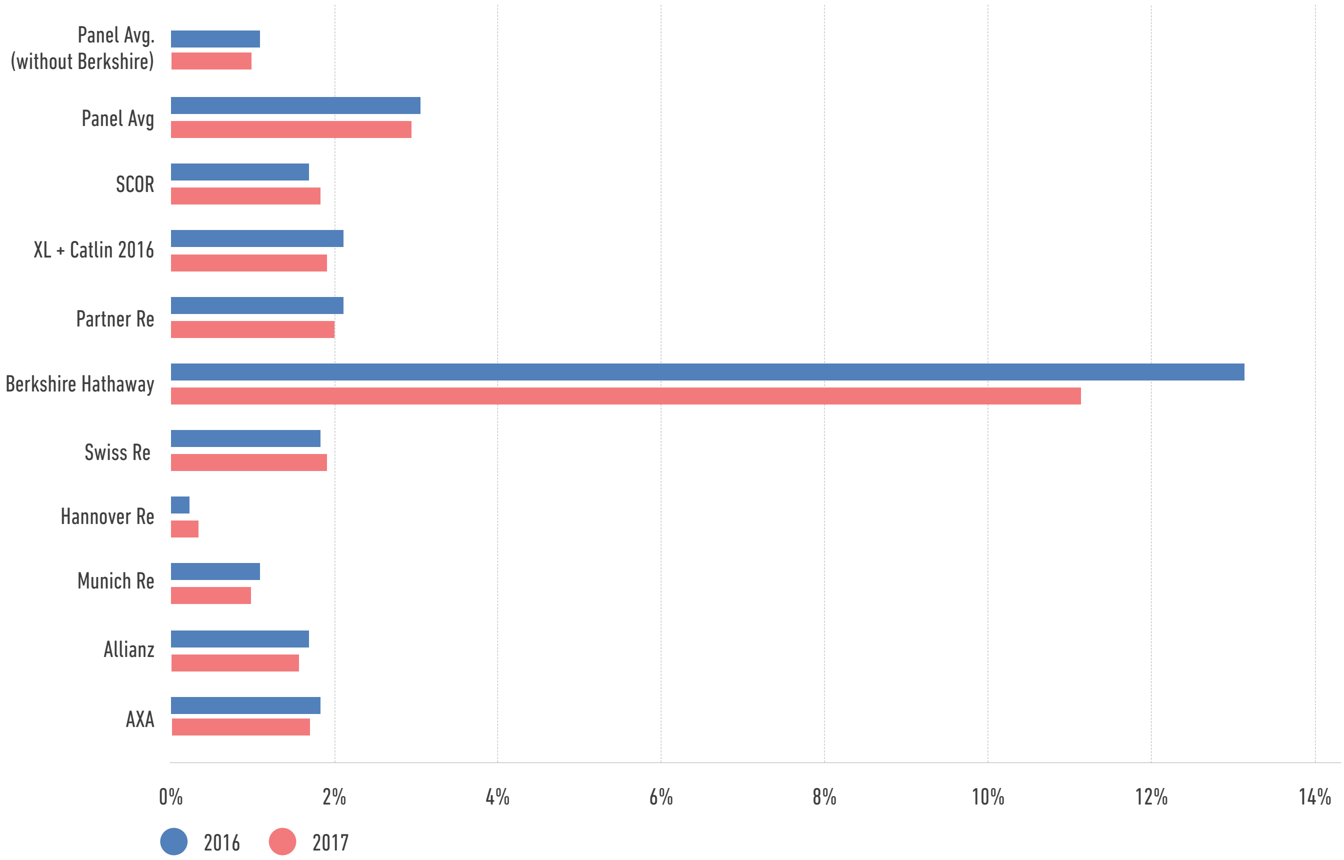
- RGA, Everest Re and Lloyd's for which no mention is made in the balance sheet given the absence (for Lloyd's and Everest Re) or the low materiality (for RGA) of this item;
- XL + Catlin discloses an aggregation of Goodwill and other intangible assets on a single line in the balance sheet. To be noted that the contribution of Goodwill on this line is 55%.
- For the direct insurance companies analyzed, we note that Allianz includes Goodwill in the "Intangible Assets", where it accounts for 89% of this item and approximately 1.3% of the total balance sheet;

The following graph presents the evolution of the weight of Goodwill in the total balance sheet between 2016 and 2017. Globally, from one year to another there are no material changes in the structure. The average panel ratio stands at 2% in 2017 (vs. 2.2% in 2016) whereas the pro-forma[2] ratio is 1% (vs. 1.1% in 2016).

However, when comparing the average ratio with the company ratio, one can note significant disparities. On the one side, Hannover Re shows a 0.1% ratio in 2017 (stable compared with 2016), whereas other companies (Swiss Re, Partner Re, XL + Catlin and SCOR) present a ratio close to 2%. As is also the case for the global analysis on intangible assets, Berkshire Hathaway has the highest level of Goodwill in the balance sheet, the ratio being 11.3% in 2017 (vs. 13.2% in 2016).

2 : This ratio does not include Berkshire Hathaway

Goodwill weight in total BS 2017 vs. 2016



The change between 2016 and 2017 for the Gross Values and Net Values are not systematically detailed, even though opening and closing positions are disclosed by each company in the panel.

When it comes to the description of impairment methods, all reinsurers, except Swiss Re, RGA, Lloyd's and Everest Re provide it in a separate note to financial statements. For instance, for Swiss Re, there is no specific explanatory note on this topic, but the company mentions in the accounting principles section general concepts on Goodwill and the impairment methodology by quoting applicable accounting standards. However, this is done without any personal touch that could individualize it specifically.

3.1.2 | Value of business acquired (VOBA)

As a main idea emerging from the financial statements, VOBA is linked, in particular, to life insurance portfolios acquired generally from insurance company mergers. Globally, it is valued as the discounted estimation of future profits, which includes life technical and investment results decreased by the expected future administrative expenses. The current value is computed based on assumptions and risk discount factors relevant at the date of acquisition. VOBA is then amortized over the lifetime of the underlying reinsurance portfolio and is subject to impairment testing as part of the LAT.

To be noted from the panel of ten reinsurers, only six disclosed VOBA for a total € 3.6bn, out of which € 1.7bn related to Swiss RE and € 1.4bn SCOR. We also note that the two direct insurance companies also book VOBA for a total amount of € 2.4bn of which 79% is linked to AXA.

We reflect in the following table the main items with respect to VOBA disclosures:

VOBA in Annual Reports							
	Report. Standard	Separate line in BS	Dedicated Note in Annual Report	Mention in another note	Impairemnt method mentionned	Amortization period mentionned	Var. Table Net
Munich Re	IFRS	X	X	√	√	X	√
Hannover Re	IFRS	X	X	√	√	√	√
Swiss Re	US GAAP	√	X	√	√	√	√
Berkshire H.	US GAAP	X	X	X	X	X	X
RGA	US GAAP	X	X	√	√	X	X
Partner Re	US GAAP	X	X	√	X	X	√
Everest Re	US GAAP	X	X	X	X	X	X
Lloyd's	IFRS	X	X	X	X	X	X
XL + Catlin	US GAAP	X	X	X	X	X	X
SCOR	IFRS	√	√	√	√	√	√
AXA	IFRS	√	√	√	√	√	√
Allianz	IFRS	X	X	√	X	√	X

We see a quite heterogeneous disclosure in respect of VOBA. Globally, the granularity of the information is in line with the weight of this item in the company balance sheet. For instance, Swiss Re and SCOR present this item on a separate line in the balance sheet and the information given is sufficient to ensure a good understanding of the financial statements. For the direct insurance companies' scope, AXA provides a full set of information in respect of VOBA whereas Allianz presents a limited number of elements.

We also note that, even though VOBA doesn't have a dedicated note in the explanatory notes, this item is mentioned either in the Goodwill note or in the other intangible assets section. Three companies in the panel indicate the amortization methods for VOBA and five indicate the impairment methodology.

3.1.3 I Deferred acquisition costs (DAC)

Globally, deferred acquisitions costs are defined as commissions and other direct costs linked to the acquisition of new contracts and booked as assets to the extent that these contracts will generate future profits. Further on, DAC is amortized:

- over the lifetime of the contract for non-life contracts as it follows the UPR consumption pattern;
- consistently with the future margin recognition for life contracts.

If we take a look at the disclosures done in respect of DAC we note the following:

DAC in Annual Reports								
	Report. Standard	Separate line in BS	Dedicated Note in Annual Report	Amortization method mentionned	Amortization period mentionned	Var. Table Net	DAC per LoB	Ceded DAC
Munich Re	IFRS	√	√	√	√	√	X	√
Hannover Re	IFRS	√	√	√	√	√	√	X
Swiss Re	US GAAP	√	√	√	√	√	√	X
Berkshire H.	US GAAP	√	X	√	X	X	X	X
RGA	US GAAP	√	√	√	√	√	√	X
Partner Re	US GAAP	√	X	√	√	X	X	X
Everest Re	US GAAP	√	X	X	√	X	X	X
Lloyd's	IFRS	√	X	X	X	X	X	X
XL + Catlin	US GAAP	X	X	X	X	X	X	X
SCOR	IFRS	√	√	√	X	√	√	X
AXA	IFRS	√	√	√	√	√	X	X
Allianz	IFRS	√	√	√	√	√	√	X

(1) Gross of impairment and amortization

Almost all companies present DAC on a separate line in the balance sheet, except for XL + Catlin given the low level of materiality compared to the total balance sheet.

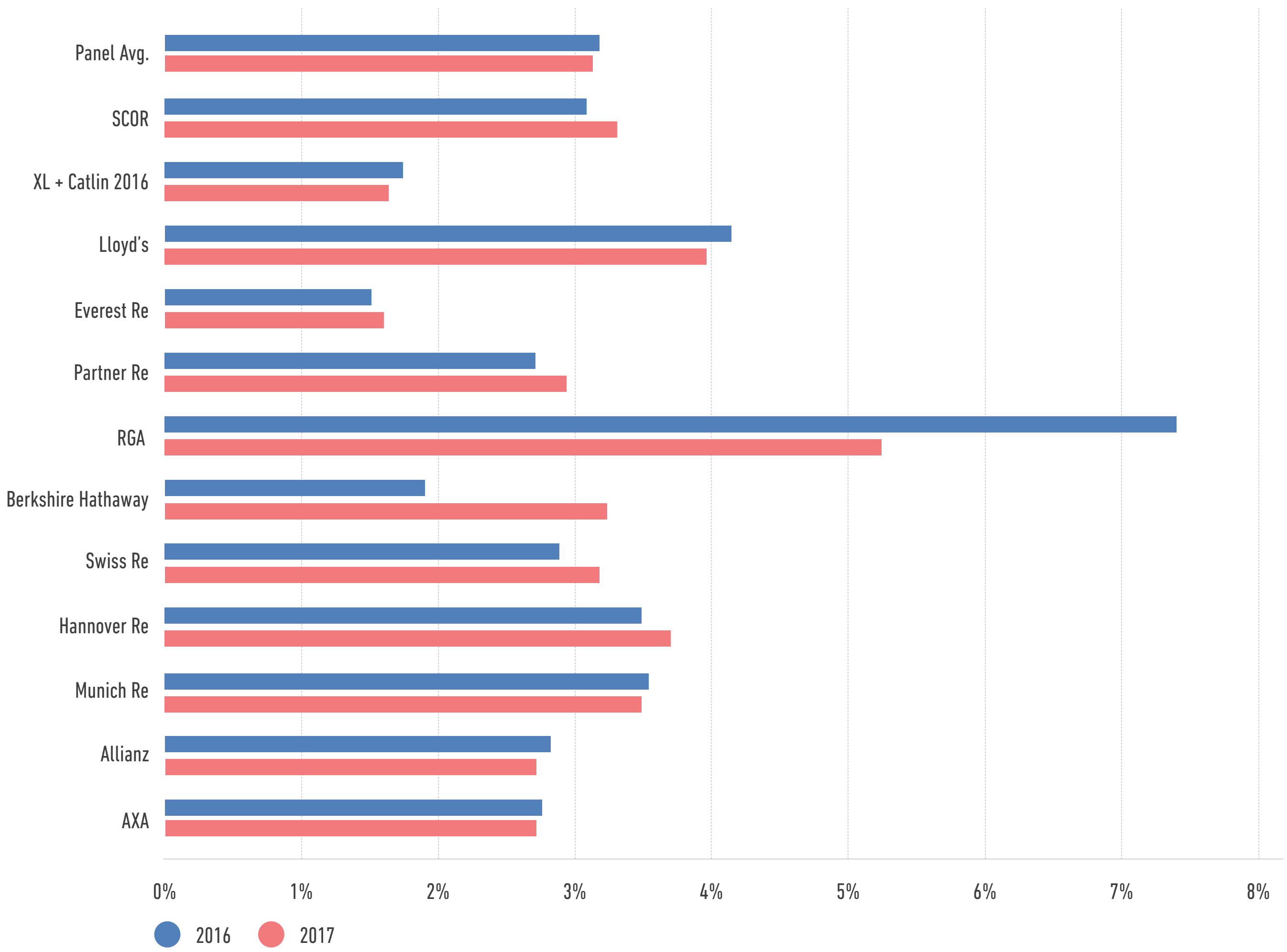
Of note for the reinsurance panel, the DAC total weighting in the 2017 "Total assets" is 3.2%. If we take a closer look at individual company level, nothing out of the ordinary can be noted.

The graph below, presents the evolution of the weight of DAC in the total balance sheet between 2016 and 2017. Globally, from one year to another there are no material changes in the structure except maybe for RGA for which we notice a significant decrease (5.4% in 2017 vs. 7.4% in 2016).

In terms of material deviation from the panel average (3.2% in 2017, quite stable compared to 2016) we note RGA, which could be considered normal as the company underwrites life policies almost exclusively, and Lloyd's (4% in 2016 vs. 4.2% in 2017). The lowest level of DAC in the total assets is linked to Everest Re (1.7% in 2017 vs. 1.6% in 2016).

The two direct insurance companies present comparable levels of DAC, with AXA and Allianz showing a 2.6% ratio in 2017.

DAC weight in total BS 2017 vs. 2016



3.2 | Deferred tax assets (DTA)

We will provide in this section an overview of the financial information published by reinsurance companies on deferred tax assets, with a specific focus on the tax losses carried forward and the maturity date of the associated losses.

Outside the benchmark study analysis, globally what we notice is that each reinsurer provides a detailed note in the consolidated financial statements in respect of income tax, including information on deferred tax. However, Lloyd's is the reinsurer giving almost no information on deferred taxes.

We could highlight some accounting standard differences in respect of the balance of what we are calling in our study "gross deferred tax assets". Two main streams are to be noted:

- European reinsurers and insurance companies book and present in the financial statements the gross DTA for which the temporary difference position can be offset by future profits. Thus, the amounts disclosed in the notes to the financial statements concern only a portion of the recognized DTA. An exception to this, is Hannover Re which, even though it uses IFRS as a basis of reporting, provides information on gross DTA and "valuation allowance".
- other reinsurers applying US GAAP present separately the gross DTA and the "valuation allowance". This generally corresponds to the part of DTA that is deemed not recoverable and is "impaired". This valuation allowance is subject to a yearly review depending on the evolution of the taxable future profits of the company.

In respect of the granularity of the financial information provided in the notes to the consolidated financial statements it could be mentioned that:

- all reinsurers, except Lloyd's (pro-forma financial statements), provide information on the gross and net DTA (according to applicable reporting standards). To be noted that Berkshire Hathaway only discloses gross DTA information ;
- the nature of DTA is also disclosed by all the companies in the panel, except Lloyd's. However, the granularity of the information is very heterogeneous as the item "other DTA" can be less or more impacted;
- in respect of tax losses carried forward, detailed information is provided by only six reinsurers and the two insurers within the benchmark scope. However, the information is not homogenous, as we will see further on in our benchmark study;
- besides TLCF, we also note that some companies provide, if applicable and material, information on the capital losses carried forward and tax credits;
- all companies, except Everest Re, disclose the effective tax rate in their explanatory notes

In the following table we focus on general information on DTA based on 2016 and 2017 annual reports.

Specific disclosure on DTA												
in € Bn	Munich Re	Hannover Re	Swiss Re	Berkshire Hathaway (1)	RGA	Partner Re	Everest Re	Lloyd's	XL + Catlin (2) 2016	SCOR	AXA	Allianz
Effective tax rate 2016	22.7 %	24.2 %	17.1 %	14.0 %	32.8 %	5.5 %	X	18.6 %	35.0 %	21.7 %	27.5 %	29.6 %
Effective tax rate 2017	(315.0)%	19.2 %	25.1 %	7.0 %	(59.4)%	3.8 %	X	16.6 %		16.3 %	14.6 %	29.0 %
DTA information 2017												
Deferred Tax Asset (gross)	8.4	0.8	4.5	7.1	0.8	0.2	0.2	X		0.9	16.8	56.6
Valuation allowance booked	X	(0.1)	(0.4)	X	(0v2)	(0.2)	(0.0)	X		X	X	X
Net DTA reported in the BS	0.5	0.5	4.1	0	0.6	0.1	0.0	X		0.5	0.8	0.9
Gross DTA/BS (%)	3.1 %	1.3 %	2.4 %	1.2 %	1.6 %	1.2 %	0.8 %	X		2.1 %	1.9 %	6.3 %
DTA on Tax Loss Carried Forward (TLCF)	0.6	0.1	1.9	X	0.5	0.0	0.0	X		0.4	0.9	1.9
DTA on TLCF/Gross DTA (%)	7.4%	17.0%	43.2%	X	56.4%	13.0%	5.3%	X		45.6%	5.5%	3.4%
DTA information 2016												
Deferred Tax Asset (gross)	8.2	0.8	6.1	9.8	0.8	0.2	0.2	X	0.9	1.2	23.8	51.2
Valuation allowance booked	X	(0.0)	(0.5)	X	0.1	(0.1)	(0.0)	X	(0.3)	X	X	X
Net DTA reported in the BS	0.3	0.4	5.6	X	0.7	0.1	0.1	X	0.3	0.7	1.4	1.0
Gross DTA/BS (%)	3.1 %	1.3 %	3.0 %	1.7 %	1.5 %	1.0 %	1.2 %	X	1.6 %	2.8 %	2.7 %	6.1 %
DTA on Tax Loss Carried Forward (TLCF)	0.9	0.1	2.8	X	0.3	0.0	0.0	X	0.3	0.5	1.6	2.3
DTA on TLCF/Gross DTA (%)	11.1%	13.1%	45.3%	X	39.8%	16.6%	2.5%	X	35.3%	41.5%	6.6%	4.4%
BS 2017	265.7	61.2	187.4	591.4	51.0	19.4	19.9	122.5		43.2	870.1	901.3
BS 2016	267.8	63.6	204.5	590.3	50.5	20.9	20.3	118.9	55.6	43.3	892.8	883.8

(1) As the information for the DTA was not separately disclosed for the insurance figures, the BS amounts are for the group

(2) Given the context of the acquisition by AXA of XL-Catlin, the 2017 annual report was not available. The valuation allowance includes the one on TLCF, capital loss and tax credit

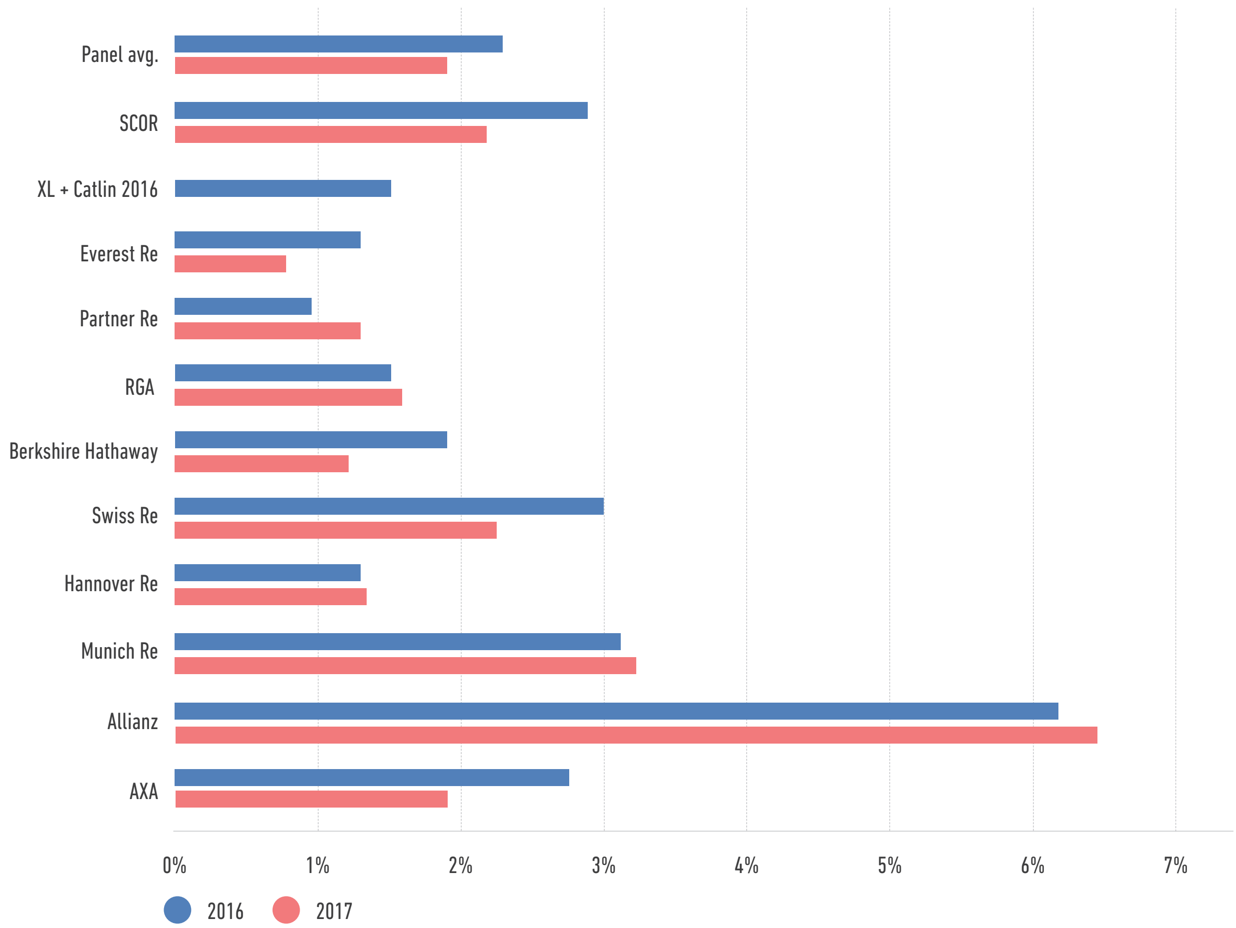
In respect of the effective tax rate, based on YE 2016, the reinsurance panel average tax rate levels out at around 21.3% with two extreme rates, XL + Catlin showing a 35% ETR (the highest of the panel) and Partner Re having a 5.5% ETR (the lowest rate).

The 2017 ETR presents some negative rates for Munich RE (-315%) and RGA (-59.4%) which can be explained by positive one-off impacts following the US federal rate reduction from 35% to 21% applied to the balance of net deferred tax liability. Globally, if we exclude the significant one-off impacts of Munich RE and RGA from the reinsurance panel, the average ETR in 2017 stands at 14.7% (vs. 21.3% in 2016) as companies underwriting business in the US benefit from the rate reduction.

As shown below, the average reinsurance panel[3] ratio of gross DTA over the total balance sheet is 1.8% in 2017 (vs. 2.1% in 2016) with Munich Re showing a higher level of DTA, 3.1% in 2017 similar to 2016 and Everest Re disclosing 0.8% ratio in 2017 (vs. 1.2% in 2016).

In respect of the two direct insurance companies included in our study, AXA has comparable figures to the reinsurance panel (1.9% in 2017 vs. 2.7% in 2016), whereas for Allianz over 6% of the total balance sheet is composed of DTA, which is more than double compared to the average reinsurance balance sheet.

Goodwill weight in total BS 2017 vs. 2016



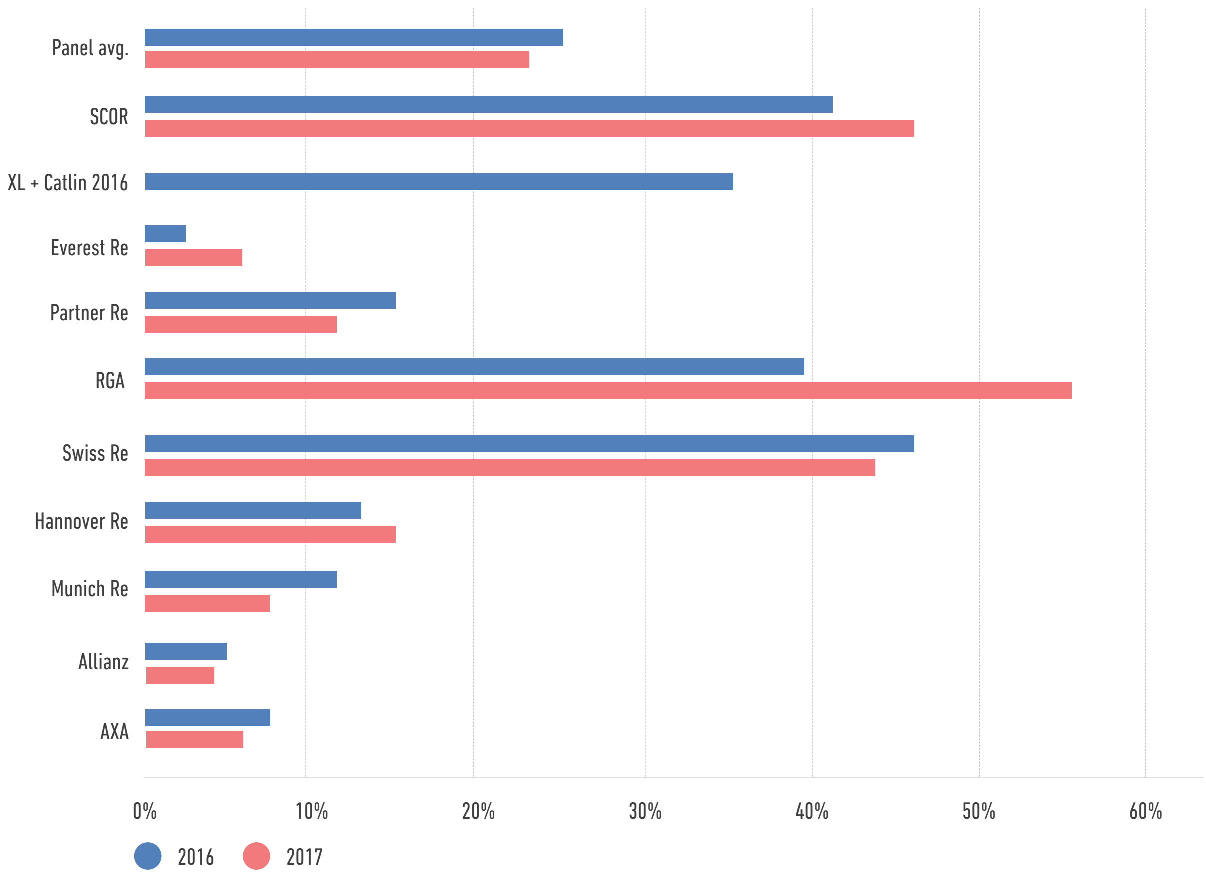
3 : The average does not include Lloyd's as the information was not available

If we focus on TLCF (gross of any valuation allowances) and as shown below the global reinsurance panel average[4] weight of activated DTA on TLCF in the total DTA stands at 22.9% in 2017 (vs. 26.8% in 2016).

It is worth mentioning that some reinsurers show ratios exceeding 40% in both 2017 and 2016 including RGA (56.4% in 2017 vs. 39.8% in 2016), Swiss Re (43.2% in 2017 vs. 45.3% in 2016) and SCOR (45.6% in 2017 vs. 41.5% in 2016). On the other hand, for other companies the ratio is largely lower compared to the average panel rate: Everest Re (5.3% in 2017 vs. 2.5% in 2016) and Munich Re (7.4% in 2017 vs. 11.1% in 2016).

We also note that for the two direct insurance companies the ratio in 2017 stands at 3.4% for Allianz (vs. 4.4% in 2016) and 5.5% for AXA (vs. 6.6% in 2016).

Evolution 2016 vs. 2017 of DTA on TLCF/Gross DTA (%)



4 : The average excludes Berkshire Hathaway and Lloyd's as the information was not disclosed.

Furthermore, in 2017 six reinsurance companies disclosed relevant information in respect of the total stock of their TLCF, sometimes providing a full split between the expiring/non-expiring and recognized/unrecognized parts (SCOR and Munich Re) as shown in the table below:

Specific disclosure on TLCF

in € Bn	Munich Re	Hannover Re	Swiss Re	Berkshire Hathaway	RGA	Partner Re	Everest Re	Lloyd's	XL + Catlin (1) 2016	SCOR	AXA	Allianz
Total stock of TLCF	4.7	0.6	6.9	X	2.3	X	X	X	1.6	1.8	3.4	8.4
Recognized TLCF	2.4	0.2	5.8	X	1.9	X	X	X	1.6	1.7	3.4	8.4
Unrecognized TLCF	2.4	0.4	X	X	X	X	X	X	X	0.1	X	X
Total stock of TLCF	4.7	0.6	8.2	X	2.3	X	X	X	1.4	1.8	3.4	8.4
Expiring	0.6	0.2	7.2	X	1.8	X	X	X	0.2	0.6	3.4	0.7
Recognized	0.5	0.2	X	X	√	X	X	X	√	0.6	√	√
Unrecognized	0.1	X	X	X	X	X	X	X	X	0.0	X	X
Not expiring	4.1	0.4	0.9	X	0.4	X	X	X	1.1	1.2	0.0	7.7
Recognized	1.9	X	X	X	√	√	X	X	√	1.1	√	√
Unrecognized	2.3	0.4	X	X	X	X	X	X	X	0.1	X	X

(1) Given the context of the acquisition by AXA of XL-Catlin, the 2017 annual report was not available

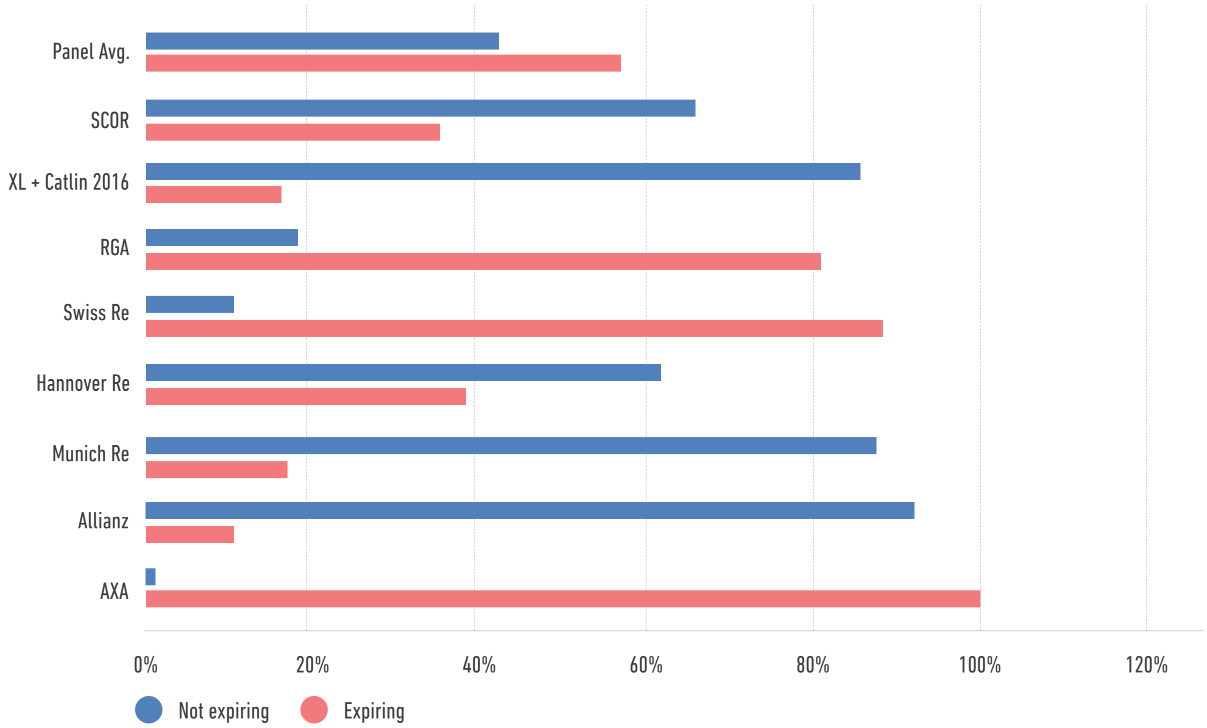
As we can see, Hannover Re clearly provides information for the total amount of TLCF mentioning the absence of expiration dates attached to the non-capitalized tax losses. Consequently, without any further indications, we considered that the recognized part has a maturity date in the range of 1 to 20 years.

As we will also see in the graph below, based on the 2017 panel average rate[5], 43% of TLCF have no expiration date. However, there are some interesting disparities if we look at individual company level:

- Two companies have more than 80% of their TLCF with an expiration date: Swiss Re (89%) and RGA (81%);
- Two companies show more than 80% of TLCF with no expiration date: Munich RE (87%) and XL + Catlin (84%).
- The two direct insurance companies differ from one another with AXA indicating that the full balance of TLCF has an expiration date, whereas Allianz has 91% of TLCF with an unlimited utilization period.

5 : The average excludes Lloyd's, Berkshire Hathaway, Partner Re and Everest Re for which the information was not available.

Expiration of TLCF in 2017



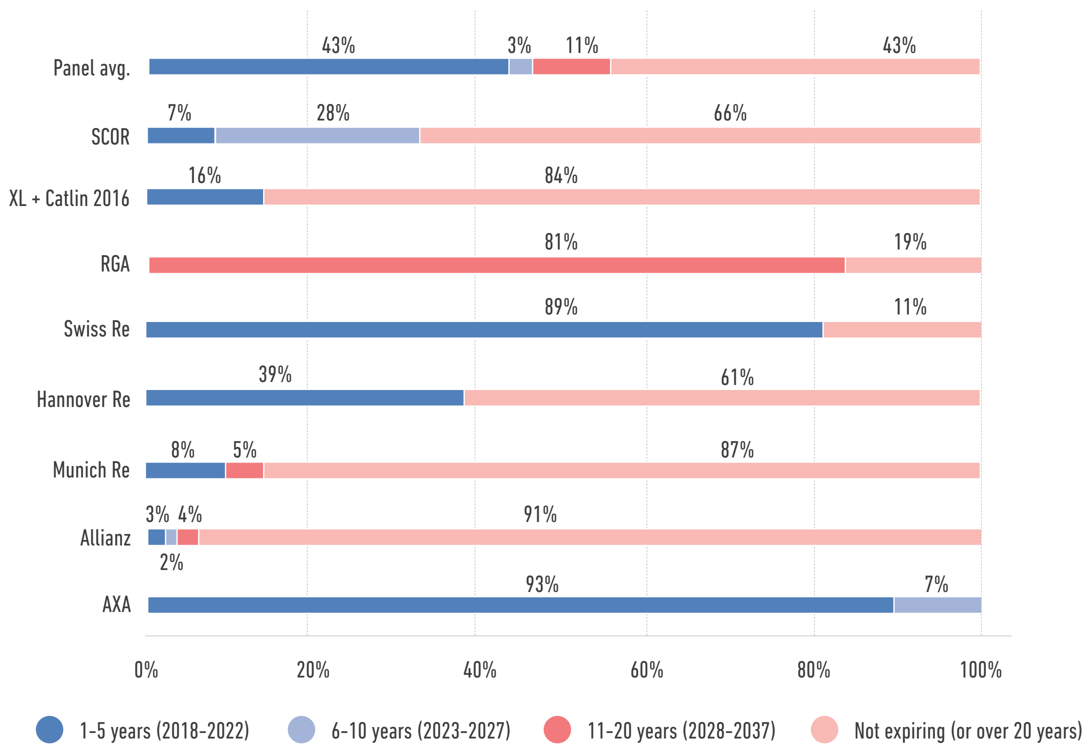
The six reinsurance companies presented above also provide information in respect of the maturity of their TLCF; some giving explicit duration tables and others using narratives in the tax income notes to address this topic. The breakdown of our analysis focused on four main areas: 1 to 5 years, 6 to 10 years, 11 to 20 years and no expiration period (or above 20 years maturity). It is worth mentioning that some companies use different analyses:

- Munich Re groups TLCF on a 10 years period reporting: 1 to 10 years, 11 to 20 years, no expiration period;
- Hannover RE only provides explicit information on TLCF with no expiration date;
- SCOR provides a more detailed breakdown which we regrouped for the purpose of our analysis;
- For XL + Catlin, the maturity of TLCF is disclosed as a narrative in the notes which presents only the maturity of significant TLCF and the part of TLCF with no expiration period.

2017 - Specific disclosure on TLCF recovrability and capital loss carry forward and tax credit												
in € Bn	Munich Re	Hannover Re	Swiss Re	Berkshire Hathaway	RGA	Partner Re	Everest Re	Lloyd's	XL + Catlin 2016	SCOR	AXA	Allianz
Capital loss and tax credit	0.1	X	0.9	X	0.1	X	X	X	0.3	X	X	X
Attached DTA	X	X	X	X	0.1	0.2	0.0	X	0.1	X	X	X
Expiring	0.1	X	(0.0)	X	X	X	0.0	X	0.2	X	X	X
Not Expiring	0.0	X	0.9	X	X	X	0.0	X	0.1	X	X	X
2017 TLCF expiration period	4.7	0.6	8.2	X	2.3	X	X	X	1.4	1.8	3.4	8.4
1-5 years (2018-2022)	0.4	0.2	7.2	X	0.0	X	X	X	0.2	0.1	3.2	0.2
6-10 years (2023-2027)			0.0	X	0.0	X	X	X		0.5	0.2	0.2
11-20 years (2028-2037)	0.2	X	0.0	X	1.8	X	X	X			0.0	0.3
Not expiring (or over 20 years)	4.1	0.4	0.9	X	0.4	√	X	X	1.1	1.2	0.0	7.7
TLCF & Capital loss, tax credit used in 2017	X	0.0	1.1	X	X	X	X	X	X	X	X	X

In respect of the maturity of TLCF, as shown in below[6], the majority of reinsurers in the panel have TLCF with no expiration period. One company, Swiss RE, shows that 89% of their TLCF has an expiration period of 1 to 5 years and RGA has 81% of their TLCF expiring between 11 to 20 years. As a reminder, the percentage of DTA on TLCF in the total amount of DTA for 2017 stands at 43% for Swiss Re and 56% for RGA.

2017 TLCF Expiration period



In respect of capital losses carried forward and tax credits, not all companies provide the information directly in the notes to the financial statements, either because they are not concerned or because the information is not material.

Also, another interesting aspect of the disclosure is related to the fact that only two companies (Swiss Re and Hannover Re) clearly indicate the amounts of TLCF/capital losses/tax credits used during the current year.

3.3 I Specific 2017 matters of interest

As we mentioned in the scope of our benchmark study, we considered that two 2017 significant matters of interest should be analyzed in this section, namely:

- The financial communication made around the significant NAT CAT events of the year such as Hurricane Irma, Maria and Harvey, cyclone Debbie in Australia, the two Mexican earthquakes and the California wildfires;
- The disclosures made in respect of the US Tax Cuts and Jobs Acts (TCJA) reform (called in our benchmark "US Tax reform")

3.3.1 I Significant NAT CAT events

Given the extent of the significant NAT CAT events of the year, the main purpose of this section is to compare the granularity of the information provided by the companies included in the panel when it comes to the impact of these events.

Overall, we note that each company, except RGA, which has very limited non-life activity, was impacted at least by one of the events mentioned above. When looking at the annual reports we will note that eight reinsurance companies indicated they were impacted by the Atlantic hurricanes (Irma, Maria and Harvey) and California wildfires and seven companies stated they were impacted by the Mexican earthquakes and Cyclone Debbie. When it comes to the direct insurance companies, AXA indicates an impact by the Atlantic hurricanes whereas Allianz by the hurricanes, California wildfires and Mexican earthquakes.

6 : For the purpose of the presentation the following shortcuts were made:
- for Munich Re, the € 0.4bn disclosed as the sum of the lines 1-5 years and 6-10 years are fully presented in under the line 1-5 years
- for Hannover Re, the € 0.2bn presented as expiring TLCF are fully presented in under the line 1-5 years
- for XL + Catlin, the € 0.2bn presented as expiring TLCF are fully presented in under the line 1-5 years
- for SCOR, the € 0.5bn presented as the sum of the lines 6-10 years and 11-20 years are fully presented in under the line 1-5 years

In terms of disclosing the impacts of these events on the accounts, six companies presented the overall gross impact with only four companies (Munich Re, Hannover Re, Swiss Re and Everest Re) presenting gross individual impacts.

The overall net amounts are presented by five companies. We would also like to highlight that the individual amounts/event net of retrocession is disclosed by two companies, SCOR and Hannover Re.

The table below gives a better overview on the disclosures made by the companies in the panel:

Natural catastrophe disclosure in Annual Reports

	Munich Re	Hannover Re	Swiss Re	Berkshire Hathaway	RGA	Partner Re	Everest Re	Lloyd's	XL + Catlin[(1)]	SCOR		AXA	Allianz
Mention of following impacts:													
Atlantic Hurricanes (Irma, Maria & Harvey)	√	√	√	√	X	√	√	√		√		√	√
Cyclone Debbie (Australia)	√	√	√	√	X	X	√	√		√		X	X
Mexican earthquakes	√	√	√	√	X	X	√	√		√		X	√
Californian wildfires	√	√	√	√	X	√	√	√		√		X	√
Quantified impact by natural catastrophes (gross of retro)	√	√	√	X	X	X	√	X		X		X	X
Quantified impact by natural catastrophes (net)	X	√	X	X	X	√	√	√		√		X	X
Impact analysis in performance reviews	√	√	√	X	X	√	√	√		√		X	X
Dedicated note or paragraph	X	√	X	X	X	√	√	√		√		X	X
Historical combined ratio with Nat Cat impact	√	√	X	X	X	√	X	√		√		X	X

(1) Given the context of the acquisition by AXA of XL-Catlin, the 2017 annual report was not available.

Natural catastrophe quantified impact in Annual Reports

In Billions of Original Currency	Munich Re	Hannover Re	Swiss Re	Berkshire Hathaway	RGA	Partner Re	Everest Re	Lloyd's	XL + Catlin [(1)]	SCOR		AXA	Allianz
2017 combined ratio - incl. Nat Cat	114.1 %	99.8 %	111.5 %	X	X	111.4 %	104.8 %	114.0 %		103.7 %		96.3 %	95.2 %
2017 combined ratio - excl. Nat Cat[2]	92.1 %	87.5 %	96.7 %	X	X	96.0 %	93.0 %	95.5 %		88.8 %		95.5 %	X
Impact by key natural catastrophe (gross)													
Atlantic Hurricanes (Irma, Maria & Harvey)	(2.7)	(1.2)	(3.6)	X	X	X	(1.2)	X		X		X	X
Cyclone Debbie (Australia)	(0.1)	(0.1)	(0.4)	X	X	X	(0.0)	X		X		X	X
Mexican earthquakes	(0.3)	(0.0)	X	X	X	X	(0.0)	X		X		X	X
Californian wildfires	(0.5)	(0.2)	X	X	X	X	(0.1)	X		X		X	X
Other	(0.1)	(0.2)	(0.8)	X	X	X	(0.0)	X		X		X	X
P&L impact gross of retrocession	(3.7)	(1.8)	(4.7)	(2.4)	X	X	(1.5)	X		(1.4)		X	X

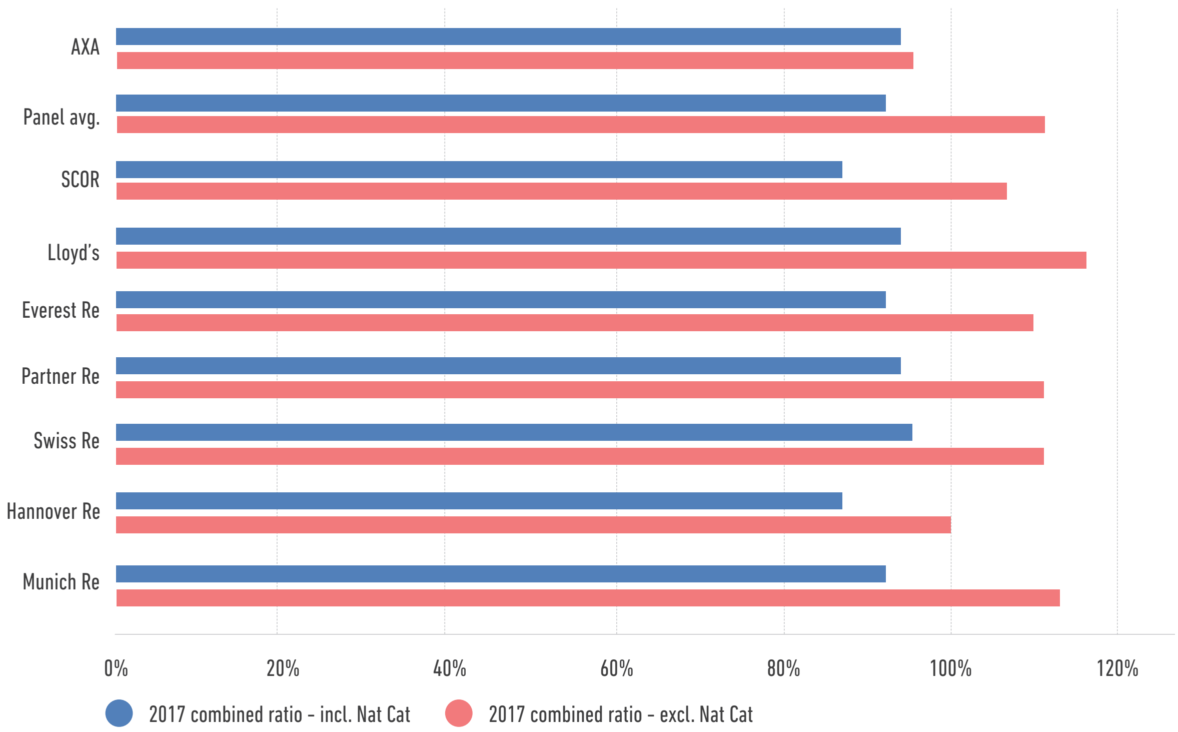
(1) Given the context of the acquisition by AXA of XL-Catlin, the 2017 annual report was not available.

(2) Information either directly discloed in the annual report or computed for the benchmark study

In respect of the combined ratio, we note that seven companies either discloed a combined ratio restated of the Nat Cat events of the year or have provided the information that allowed us to compute the ratio. For the panel, the average combined ratio stands at 108.5% whereas the restated one levels out at 92.8%. By looking at the disclosed figures, Munich Re (combined ratio of 114% vs. a restated one of 92%) and Lloyd's (combined ratio of 114% vs. a restated one of 96%) were the companies impacted the most by these events. The companies from the panel less impacted are Hannover Re (combined ratio of 100% vs. a restated one of 88%) and Everest Re (combined ratio of 105% vs. a restated one of 93%). The two direct insurance companies show similar levels of combined ratios with AXA which seems to be the least affected by the NAT CATs of the year (combined ratio of 96.3% vs. a restated one of 95.5%).

The graph below presents for the seven companies the difference between the two combined ratios:

Impact of nat cat events on the 2017 combined ratio



3.3.2 | US Tax reform

As a reminder, and quoting from RGAs' annual report which offers a full view on the main impacts, we would highlight that the Tax Cuts and Jobs Act of 2017 ("US Tax reform"), signed into law on December 22, 2017, makes broad and complex changes to the US tax code, including, but not limited to:

- reducing the US federal corporate tax rate from 35% to 21%;
- requiring companies to pay a one-time transition tax on certain un-repatriated earnings of foreign subsidiaries;
- eliminating US federal income taxes on dividends from foreign subsidiaries;
- eliminating the corporate alternative minimum tax ("AMT") and changing how existing AMT credits can be realized;
- creating the base erosion anti-abuse tax ("BEAT"), a new minimum tax;
- establishing a new provision designed to tax global intangible low-taxed income ("GILTI"), which allows for the possibility of using foreign tax credits and a deduction of up to 50 percent to offset the income tax liability (subject to some limitations); and
- changing rules related to uses and limitations of net operating loss carry forwards created in tax years beginning after December 31, 2017.

Given the significant nature of these changes, which also impact the organization (branches, subsidiaries) of the companies in the panel, we considered that this event would have a significant impact on the accounts and the business itself. Thus, we decided to analyze the extent of disclosure in the 2017 annual reports.

As an introduction, we note that all companies in the panel mention the US Tax reform in their disclosures with seven companies quoting it as a significant event of the year. From the panel, only two reinsurance companies do not have a dedicated note in their financial statements on this topic. When it comes to the quantified impacts of this reform in the accounts, only two companies do not provide this information, namely Hannover Re and Lloyd's.

We also took a look at whether the companies in the panel clearly mention the impact of BEAT as we estimate this could have a material impact given the complex internal retrocession mechanisms that some reinsurers may have in place and the global nature of their business. Consequently, only five reinsurance companies mentioned BEAT in their financial reporting: Partner Re, Everest Re, Hannover Re, Munich Re and SCOR.

The table below summarizes the key points on this topic:

Disclosure on US Tax Cuts and Job Acts (TCJA) reform	Munich Re	Hannover Re	Swiss Re	Berkshire Hattaway	RGA	Partner Re	Everest Re	Lloyd's	XL + Catlin(1)	SCOR		AXA	Allianz
Mention of the US Tax reform in the annual report	√	√	√	√	√	√	√	√		√		√	√
Disclosure as significant event	√	√	X	√	√	√	√	X		√		X	X
Dedicated note / paragraph	√	√	X	√	√	√	√	X		√		√	X
Specific mention of the BEAT and potential impacts	√	√	X	X	X	√	√	X		√		√	X
Quantified impacts for the 2017 accounts	√	X	√	√	√	√	√	X		√		√	√

(1) Given the context of the acquisition by AXA of XL-Catlin, the 2017 annual report was not available

We then looked at the main impacts for each and every company, highlighting the key information provided in the annual reports:

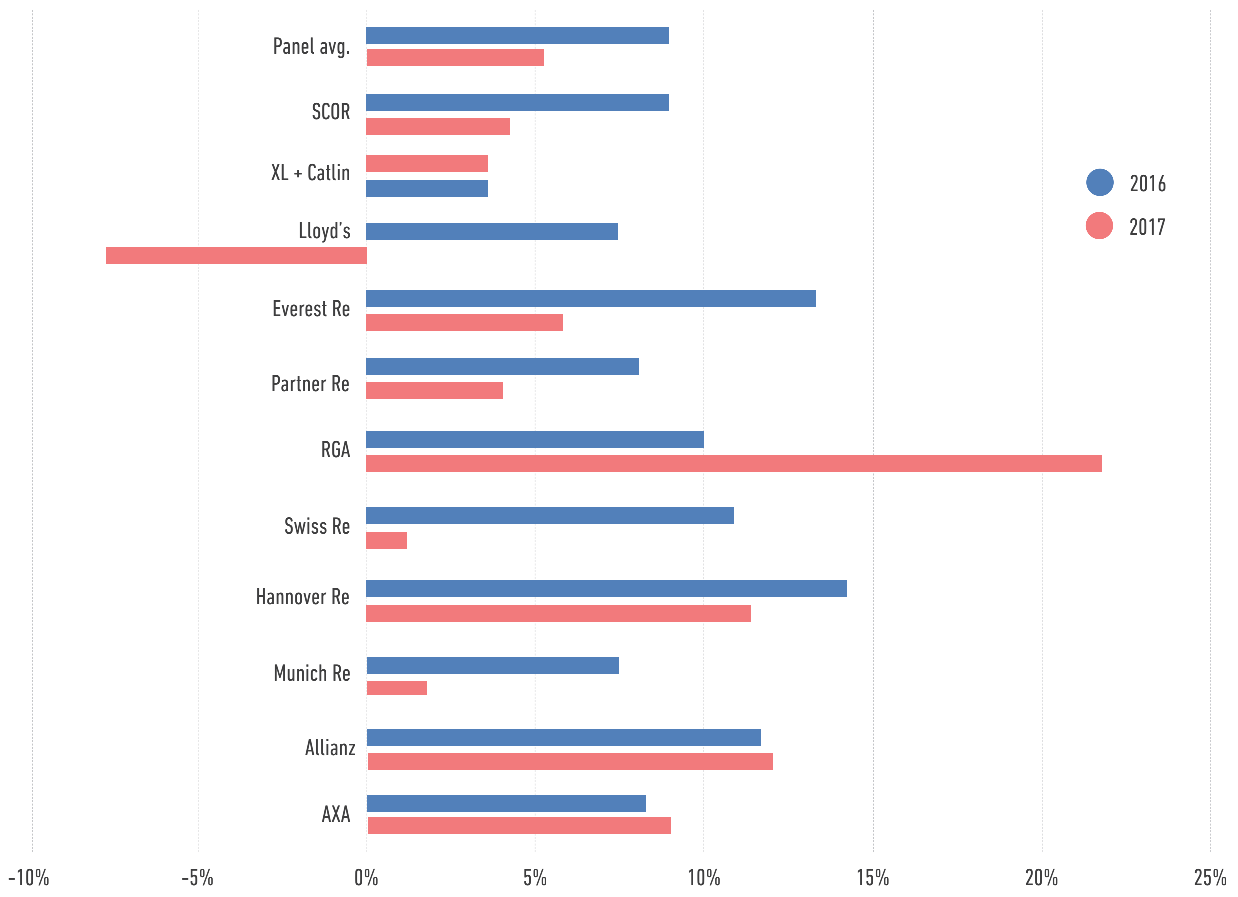
Company	Impact
Munich RE	• Overall, the US TAX reform has a positive one-off impact at group level of € 79m. No further details are provided by Munich RE. • The reinsurer mentions in its annual report, the introduction of disadvantageous tax regulations for intra-group retrocessions with non-US entities. The company indicates that it amended its internal retrocession structure for its US subsidiaries.
Hannover RE	• Hannover RE provides little information on the US TAX reforms and does not quantify the impacts at group level for the YE17. The reinsurer sticks to a brief presentation of the reform. • In respect of BEAT, Hannover RE mentions that it undertook some restructuring activities in order to avert this burden in taxation.
Swiss RE	• Swiss RE states that the new US TAX reform may imply modifications in the operating model for the US business as there could be higher cost for doing business. • The overall 2017 impact at group level is a net tax benefit of $ 93m related to the revaluation of DTA (negative $ 1.22bn impact) and DTL (positive $ 1.31bn) following the decrease of the tax rate from 35% to 21%. • The company does not mention any direct BEAT impacts.
Berkshire Hathaway	• Berkshire Hattaway provides detailed information on the provisions of the US TAX reform and the various impacts at group level. • Globally the impact is positive as the reduction in the tax rate had a +$ 35.6bn impact on DTL out of which +$29.6bn were booked through P&L and $6m as a liability of regulated subsidiaries (refunds to be made to customers). The P&L impact is negatively impacted by a $1.4bn representative of the charge deemed necessary for the repatriation of the accumulated undistributed post-1986 earnings of foreign subsidiaries. • No mentions are made in respect of the BEAT.
RGA	• RGA provides a large array of information in respect of the tax reform, firstly evocating the different provisions and afterwards disclosing the impacts at group level. For the moment, given some complex provisions of the tax reform, the company is still assessing other potential impacts. • The impact booked in the 2017 accounts stands at $ 1bn resulting mainly from the decrease of the DTL following the tax reduction. In addition, the company recorded a $ 59m valuation allowance on the DTA related to the activated TLCF. • RGA does not clearly mention any BEAT related consequences.
Partner Re	• Partner Re explains globally the impact of the tax reform and provides information on the cumulated impacts on group level resulting from TCJA reform and the tax reform in France (income tax rate reduction). • The cumulated impact of both tax reforms resulted in a negative P&L impact of $ 5million at Q4. • Partner Re mentions BEAT changes but does not mention the potential impact.
Everest Re	• Everest Re presents the global impacts of the US tax reform and provides information on the potential changes on the business and the organisation of the group. • Globally, the P&L impact is negative: -$ 8.2million (at group level). • Everest Re mentions BEAT changes but does not mention the potential impact.»
Lloyd's	Lloyd's annual report only mention US Tax reform in the introduction about its overall environment. Lloyd's states that somes aspects of the US tax reform could be viewed as an example of «protectionist policy» which could «make reinsuring US risks more expensive for some carriers». No dedicated note or paragraph is included in the annual report.
SCOR	• SCOR discloses all relevant information in respect of the booked and potential impacts of the US TAX reform at group level. • In the 2017 financial statements, the main impacts are: a net P&L loss of € 39m mainly related to the DTA on US TLCF and a net loss of € 5m booked through OCI, both in connection with the decrease of the US tax rate. • In respect of the BEAT, SCOR clearly explains the mechanisms attached and mention that the company is currently exploring alternate business structures to adapt to the new environment. Furthermore, SCOR provides a range for the day-one tax expense impact estimated between nil to € 350m.
AXA	• Based on first indications, the US TAX reform will have a positive impact at group level, with some offsetting impacts given the negative impact following the BEAT implementations; • 2017 was impacted by one-off positive impact of € 288m following the revaluation of DTL trough P&L. On the DT trough equity, the impact is not quantified but AXA mentions it is expected to be negative, given the net DTA position for the U.S. • In respect of the BEAT, AXA is currently estimating the impact and analyzing possible solutions.
Allianz	• Allianz gives very little information on the overall impacts of the US TAX reform. • The change in the tax rate had in 2017 a negative P&L impact of € 74m and in respect of DTA, Allianz highlights an increase of € 669m before netting of DTA and DTL. • In respect of BEAT, no mentions are made

3.4 | Main performance indicators

The purpose of this section is to present the key business performance indicators companies in our panel publish. Overall, highlights include:

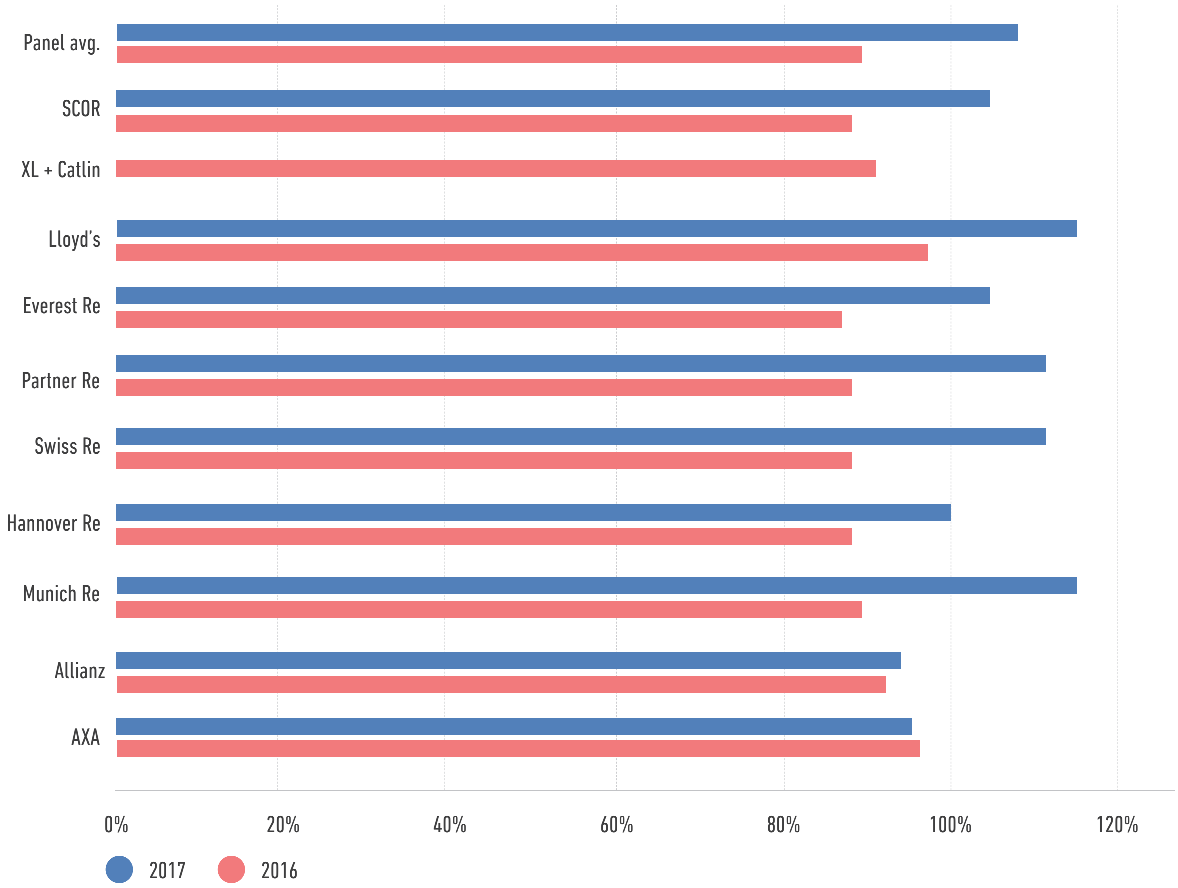
- All companies, except for Berkshire Hathaway communicate in their annual reports or investor presentations on their Return on Equity (ROE) ratio, as they are listed on the stock exchange (except Lloyd's). Of note in the 2017 annual report, RGA did not explicitly communicate the ROE (as it was the case in 2016). However, we computed it as the information was available. Globally, we note that the average ROE for the panel in 2017 and 2016 is 5.1% and 9.5% respectively. The decrease is mainly related to the large NAT CAT events that occurred in 2017 which impacted the yearly results. However, there is an interesting mix in the composition of the average as:
- On the one hand, for some companies the ROE severely decreased from 2016 to 2017 such as: Lloyd's (8.1% in 2016 vs. -7.3% in 2017), Swiss Re (10.6% in 2016 vs. 1% in 2017), Munich Re (8.1% in 2016 vs. 1.3% in 2017), Everest Re (13% in 2016 vs. 6% in 2017) and SCOR (9.5% in 2016 vs. 4.5% in 2017)
- On the other hand, we note a significant increase in the ROE of RGA (10.0% in 2016 vs. 21.9% in 2017) which benefits this year from the positive one-off impacts of the US Tax reform and the absence of NAT CAT impacts.

ROE analysis 2017 vs. 2016



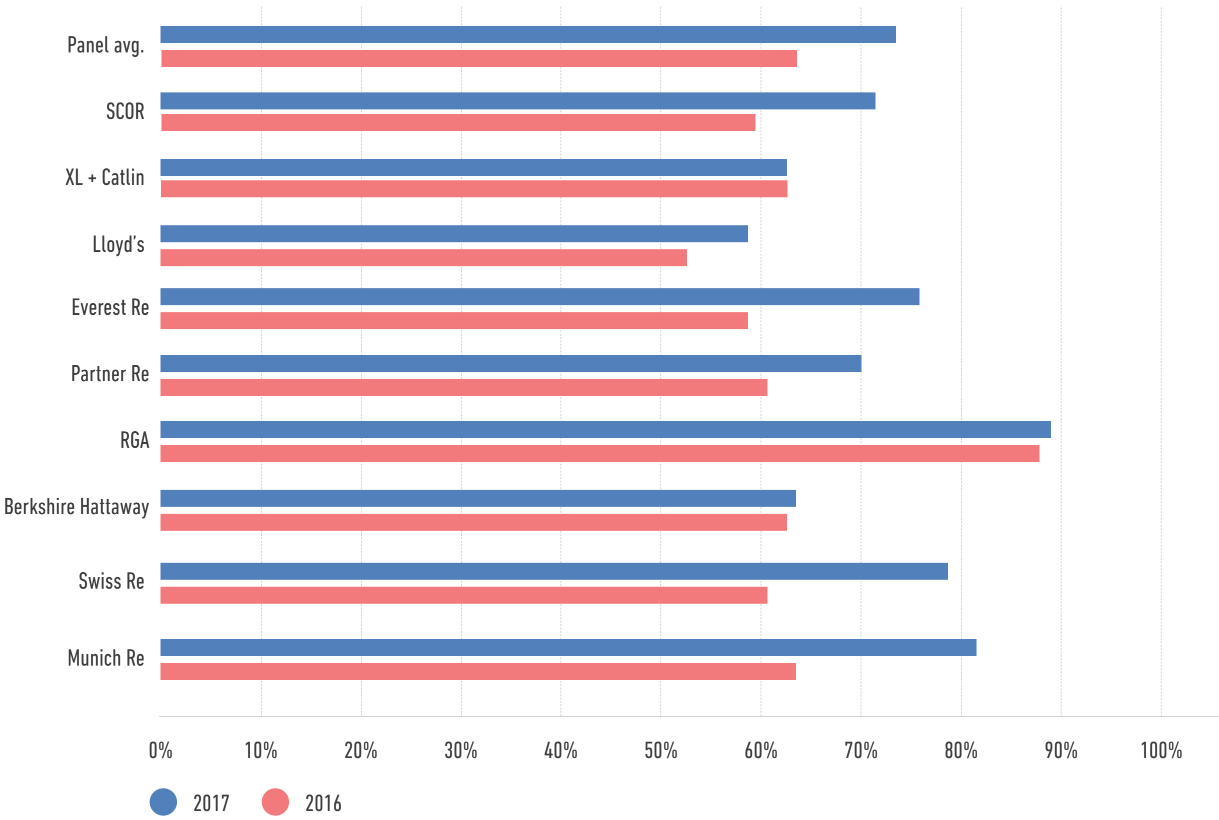
- For the non-life business, the main performance indicator is the combined ratio. From the panel, only two companies do not publish this information: Berkshire Hathaway and RGA. Consequently, for the eight remaining companies, the average combined ratio stands in 2017 at 108.5% vs. 93.6% in 2016. This deterioration is mainly linked to the significant NAT CAT events of the year. The graph below presents the comparison between this ratio for 2016 and 2017:

Combined ratio 2016 vs. 2017



- For non-life business, another indicator on which the companies in the panel communicate on is the loss ratio. We note two exceptions, Hannover Re and AXA who do not disclose a global P&C loss-ratio, but provide information of this indicator on a LoB level. Another interesting aspect is that RGA, although it is a life reinsurer, does provide the loss-ratio for the overall business which may be atypical for the life business. Overall, the panel average loss-ratio in 2017 stands at 72.2% vs. 63.1% in 2016. As presented in the graph below, companies present comparable loss ratios, except for RGA for which the loss-ratio is slightly above 88%.

Loss ratio 2016 vs. 2017



- If we look at the performance indicators for the life business, we will note that the presentation is not as straight forward as this may be for the P&C part. Generally, the indicators are named differently, are computed based on divergent methods and can be expressed either as a percentage of the premiums or in absolute values. However, each annual report clearly discloses the way the indicator was computed and provides explanation in respect of the changes from one year to another. To be mentioned, that for four companies (Berkshire Hathaway, Everest Re, Lloyd's, XL+ Catlin), no performance indicators are given as either there is no life business underwritten or its weight in the total GWP is not material. The table below summarizes the main indicators as described in the annual reports:

Company	Life Performance indicator	Definition of the indicator	YE17	YE16
Munich RE	Life and Health operating result (expressed in currency)	The operating result is defined as the sum of the technical result (NEP plus the income from technical interest less the net expenses for claims and benefits and net operating expenses) and the non-technical result (investment result, insurance related investment result net of income from technical interest, other operating result)	€ 708m	€ 635m
Hannover RE	EBIT margin	Is defined as the ratio between the EBIT (NEP less claims & claims expenses, change in reserves, commissions, own administrative expenses and other income/expenses) and NEP.	3.8%	5.3%
Swiss RE	Life&Health net operating margin	Operating result divided by total operating revenues. The operating result is before interest expenses, taxes and net realised gains/losses.	13.1%	10.4%
RGA	Loss Ratio	Claims and other policy benefits as a percentage of net premiums for traditional reinsurance only	88.9%	88.3%
Partner Re	Allocated underwriting result	The allocated underwriting result is defined as the sum of : - Technical result (net earned premiums minus losses, expenses and acquisition costs) - Net investment income - Other income (fee income on deposit accounted contract and longevity swap) and other expenses.	€ -52m	€ 61m
SCOR	Life Technical margin	It is calculated as a percentage of the net technical result plus income from funds held by ceding companies and the net of gross and ceded earned premiums.	7.1%	7.0%

Company	Life Performance indicator	Definition of the indicator	YE17	YE16
AXA	Life & Savings Net inflows (expressed in currency)	Defined as the collected premiums (including risk premiums, fees and revenues), net of surrenders, maturities, claims paid and other benfits.	€ 3.9bn	€ 4.4bn
Allianz	Life /Health operating profit (expressed in currency)	The opertaing profit is defined as the sum of the loading and fees, investment margin, expenses, technical margin, impact of changes in DAC and the losses arrising from the South Korean business.	€ 4.4bn	€ 4.3bn

- For the life business another key performance indicator is given by the value of new business. In this respect, as compared to the six reinsurers presented above, all companies provide this information, except SCOR which sticks only to the presentation of the net technical margin. The table below presents the key information given around new business:

Company	Indicator name	Comment	YE17	YE16
Munich RE	New Business Value	The indicator is disclosed in the « Analysts' and investors' call 2018 ». No clear definition is given.	€ 1.1bn	€ 1.2bn
Hannover RE	Value of New Business (VNB)	The ratio is based on Solvency 2 principles and pre-tax reporting	€ 364m	€ 893m
Swiss RE	Life&Health EVM profit - new business Life&Healt Profit margin - new business	Economic Value Management (EVM) is Swiss Re Group's proprietary integrated economic valuation and accounting framework for planning, pricing, reserving and steering. The new business profit margin is computed as the ratio between the new business profit/loss EVM capital allocated to the new business over the lifetime of the business.	$ 987m 8.6 %	$ 1.095m 11 %
RGA	Reinsurance « New business »	The term « new business » refers to insurance policy face amounts or net amounts at risk.	$ 395.4bn	$ 404.8bn
Partner Re	Life value in force (Life VIF)	The life value in force (Life VIF) is the present value of the profits that will emerge from life policies over time and is comprised of the present value of future after-tax profits and the cost of capital. The Company's Life VIF is calculated on a going concern basis and is the sum of (i) present value of future profits on a U.S. GAAP basis which represents the net present value of projected after-tax cash flows based on Life reserves, net of deferred acquisition costs and gross of value of business acquired; (ii) cost of non-hedgeable risks; (iii) frictional costs; (iv) time value of options and guarantees; and (v) cost of non-economic excess encumbered capital.	$ 308.2m	$ 176.2m

Company	Indicator name	Definition of the indicator	YE17	YE16
AXA	New business value New business value margin Annual Premium Equivalent (APE)	The value of newly issued contracts during the current year. It consists of the present value of future profits aft er the costs of acquiring business, less (i) an allowance for the time value of financial option and guarantees, (ii) cost of capital and nonfinancial risks. AXA calculates this value net of tax. New Business Value Margin is the ratio of the New Business Value representing the value of newly issued contracts during the current year; to Annual Premium Equivalent. APE represents 100% of new regular premiums plus 10% of single premiums, in line with EEV methodology. APE is Group share.	€ 2.8bn 43.1% € 6.5bn	€ 2.6bn 39.8% € 6.6bn
Allianz	Present value of new business premiums New business margin Annual Premium Equivalent (APE)	Present value of new business premiums, correspond to the present value of total sales (premiums) confirmed to receive from present to future.	€ 55.5bn 3.4% € 8.1bn	€ 53.6bn 2.7% € 7.7bn

3.5 I Solvency II reporting

If we look at the financial strength of a reinsurer, the Solvency II composition and value are essential in understanding the way the companies manage their risks. This is the reason for which, in this last part of the benchmark study, we focus on the risk management of the companies in the panel expressed via Solvency II disclosures. For the purpose of this section we have analyzed Solvency II group figures and for non-EU companies we have taken the solo disclosures of the subsidiary operating in Europe. The table below presents the subsidiaries and its contribution to the group premiums:

Prudential Data in 2016 - Subsidiaries contribution in group premiums					
	Berkshire Hathaway	RGA	Partner Re	Everest Re	XL + Catlin
Contribution in %	1%	6%	54%	3%	16%

Our study is based on the 2016 figures, as at the date of our benchmark study, the 2017 SFCR were not yet available. In order to have a coherent analysis we will split the SII benchmark in three parts: EU group figures, EU subsidiaries of non-EU companies and two EU direct insurances companies.

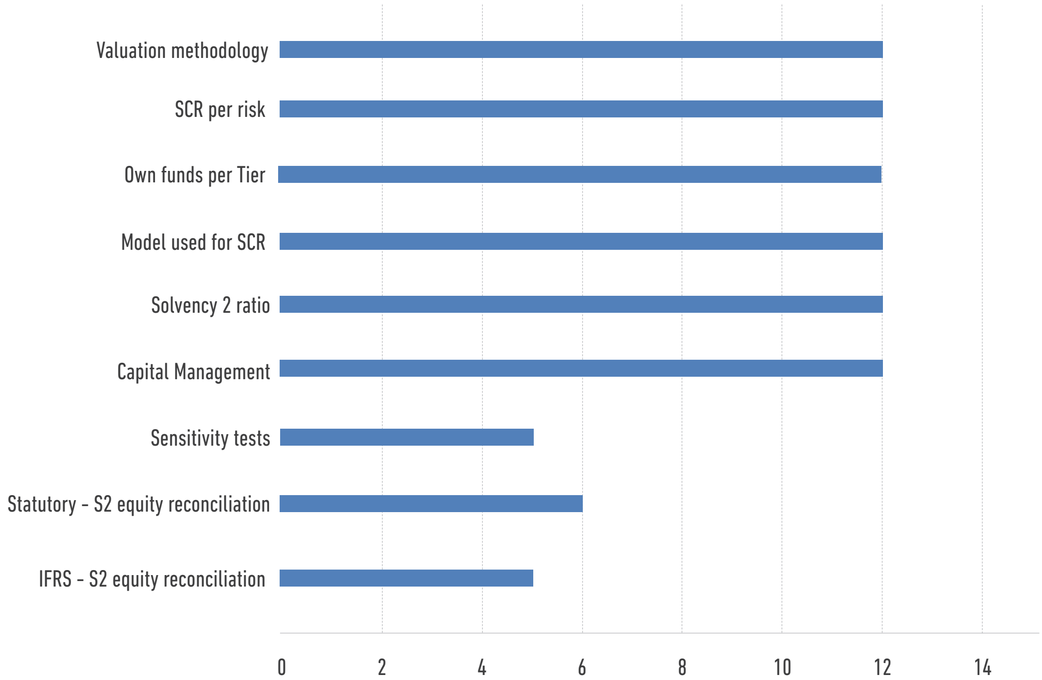
We focus on five main items: firstly, we analysed the overall disclosures done in respect of some items we considered to be key. We then looked at global SCR coverage and the breakdown of SCR per risk and finally the analysis of the quality of own funds.

3.5.1 I Solvency II disclosures

Based on the twelve published SFCRs we checked whether the key information was disclosed. Overall, information such as the valuation methodology, SCR per risk, the own funds per Tier, the capital management, the model used for the SCR computation and the Solvency II ratio is disclosed by all of the companies in the panel.

When it comes to the bridge from IFRS accounts to Solvency II, only five companies show the main restatements. It is to be noted that 6 companies present the bridge from local GAAP and Solvency 2.

Disclosure of Solvency 2 information (sample of 12)



3.5.2 | Solvency II ratio

Insurance and reinsurance companies communicate their solvency ratio as this has become a key indicator for their financial health and strength in covering bicentenary events. As a reminder, it is obtained by dividing the own funds and SCR. Each insurer in Europe is required to maintain its Solvency Ratio which should be at least 100%.

The table below summarizes the Solvency II ratio for each company in the panel and also the model used for the computation of SCR. For Lloyd's we have presented in the table the MWSCR as it includes also the syndicates and thus it better represents the risk profile of the company. If we only consider the CSCR solvency ratio for Lloyd's it would stand at 215%.

Prudential Data in 2016 - European reinsurance groups					
€Bn	Munich Re	Hannover Re	Swiss Re Europe	Lloyd's MWSCR	SCOR SE
Coverage of SCR (%)	316%	242%	276%	144%	225%
SCR	15.3	5.2	1.0	19.4	4.5
Eligible Own Funds	48.2	12.7	2.7	28.0	10.1
SCR Model	Internal Model	Partial Internal Model	Internal Model	Internal Model	Internal Model

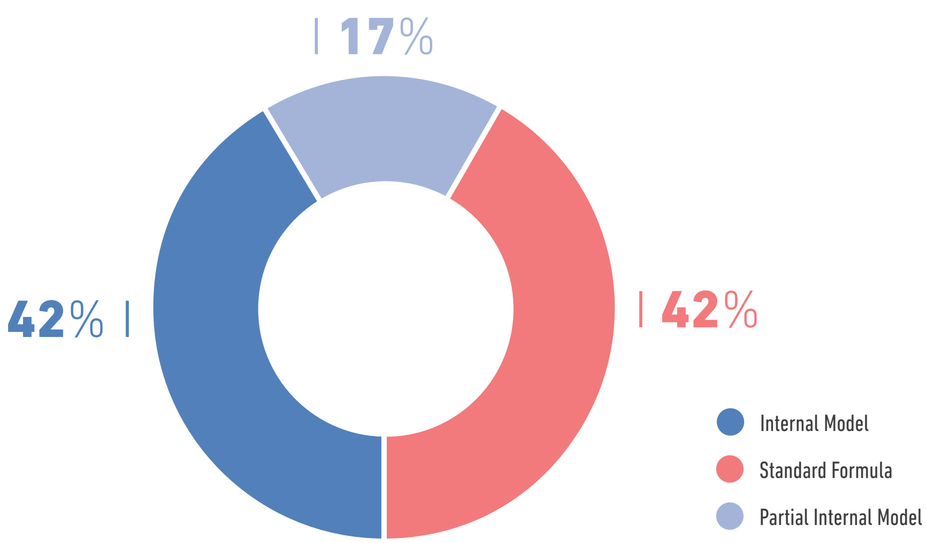
Prudential Data in 2016 - Subsidiaries					
€Bn	Berkshire Hattaway	RGA	Partner Re	Everest Re	XL + Catlin
Coverage of SCR (%)	236%	141%	116%	230%	126%
SCR	0.1	0.3	1.4	0.1	0.5
Eligible Own Funds	0.3	0.5	1.6	0.3	0.7
SCR Model	Standard Formula	Standard Formula	Standard Formula	Standard Formula	Standard Formula

Prudential data - Insurance groups		
€Bn	AXA	Allianz
Coverage of SCR (%)	197%	218%
SCR	29.4	34.6
Eligible Own Funds	57.9	75.3
SCR Model	Internal Model	Partial Internal Model

If we look at the model itself, we note that:

- European reinsurance groups use their own internal model. It is to be noted that Hannover Re uses a partial internal model (operational risk is on standard formula);
- Subsidiaries of non-European groups use standard formula as they only fulfil Solvency II requirements for local reporting purposes to the regulator.
- AXA and Allianz have their own internal model. It is to be noted that Allianz uses a partial internal model as the group SCR is emerging from entities either using a full internal model or the standard formula.

SCR computation model used

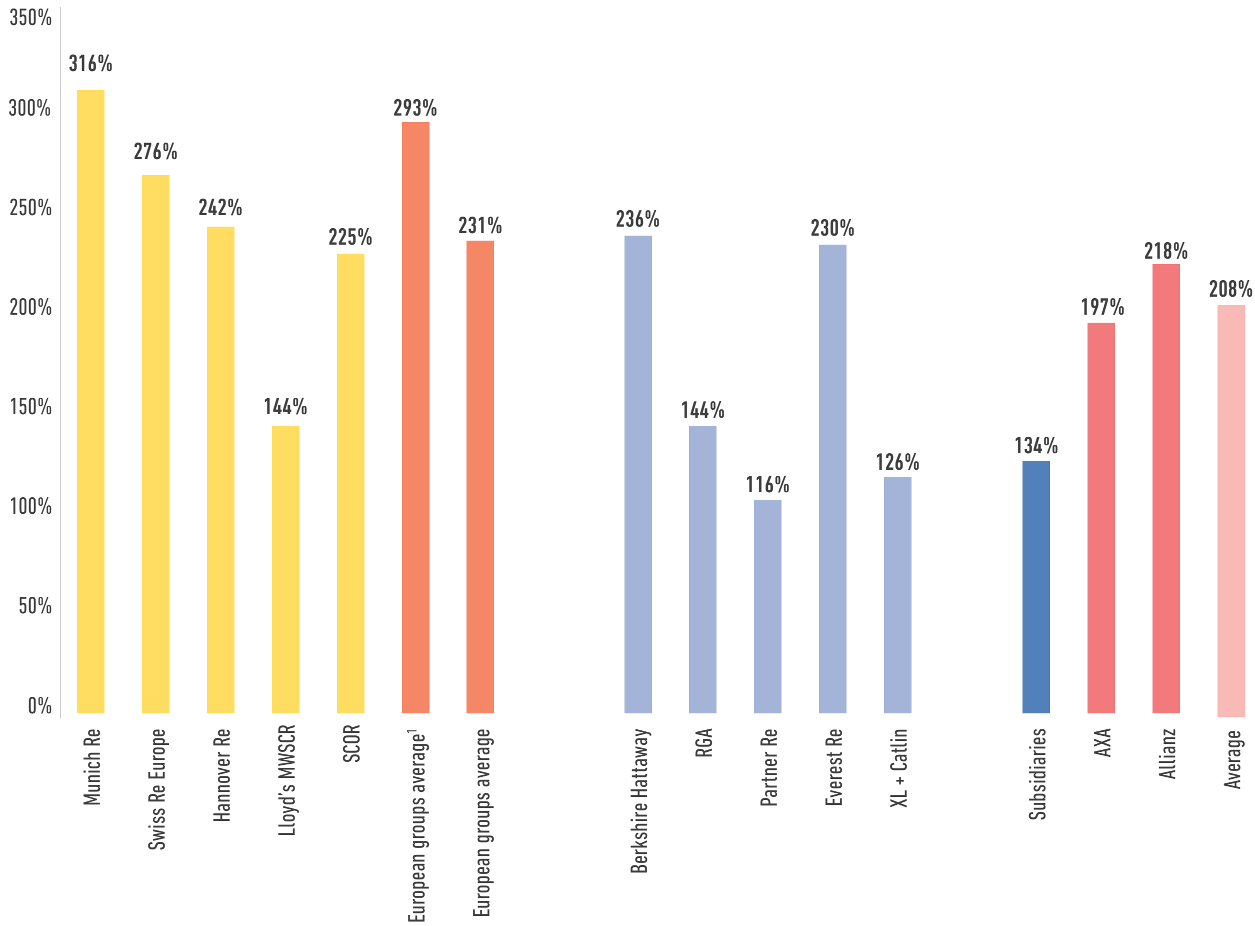


For the European reinsurance groups, SCR stands between 144% (Lloyd's MWSCR) and 316% (Munich Re) with the average solvency ratio for reinsurance groups 231%. If we exclude Lloyd's, the ratio would be at 293%

Concerning subsidiaries of non-European groups, except for Berkshire Hathaway and Everest Re, SCR is significantly lower since there is no direct interest to have a high level of eligible own funds in the country. The average ratio of these companies stands at 134%.

AXA and Allianz present coverage ratios of respectively 197% and 218%.

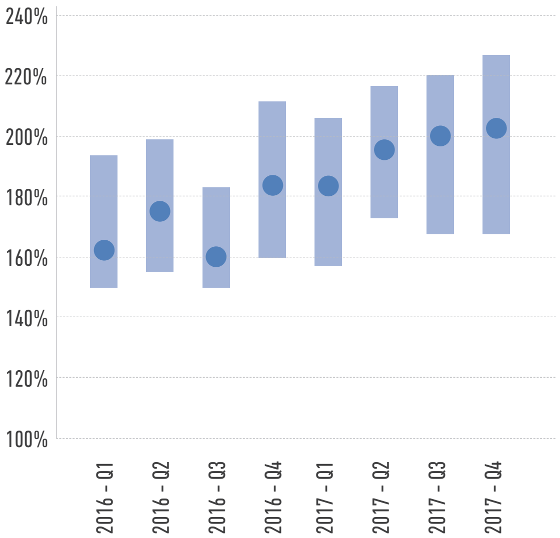
Solvency II ratio for 2016



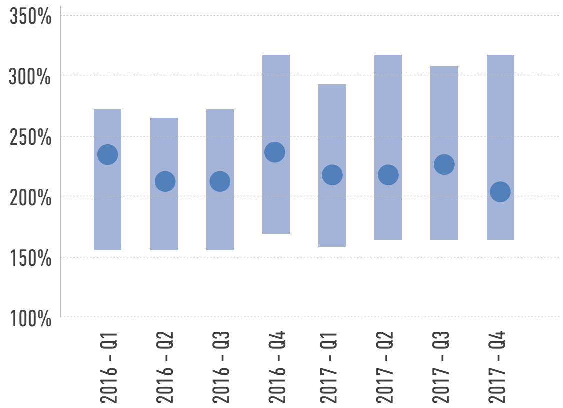
(1) Without Lloyds

It is also interesting to compare these solvency ratios with the figures provided by EIOPA 2018 risk dashboard. Based on this, we note that globally reinsurance groups are above the 200% solvency ratio at Q4 2017. For the EU subsidiaries, the ratio for some companies is lower than the average 200% benchmark ratio in connection with the capital management of non EU groups.

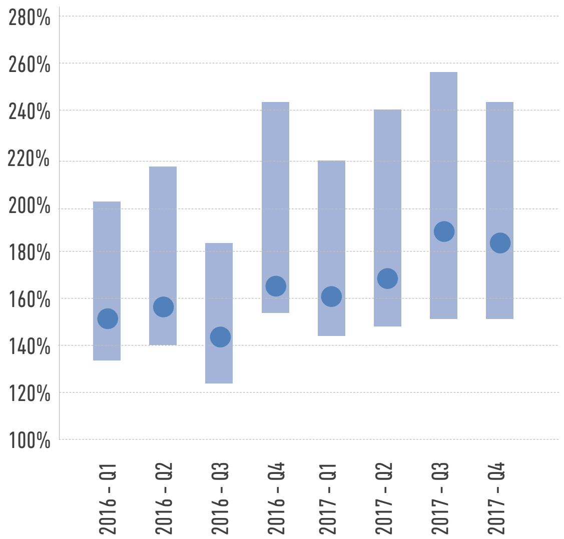
SCR ratio - groups



SCR ratio - non - life



SCR ratio - life



Source: EIOPA – Risk Dashboard under Solvency II

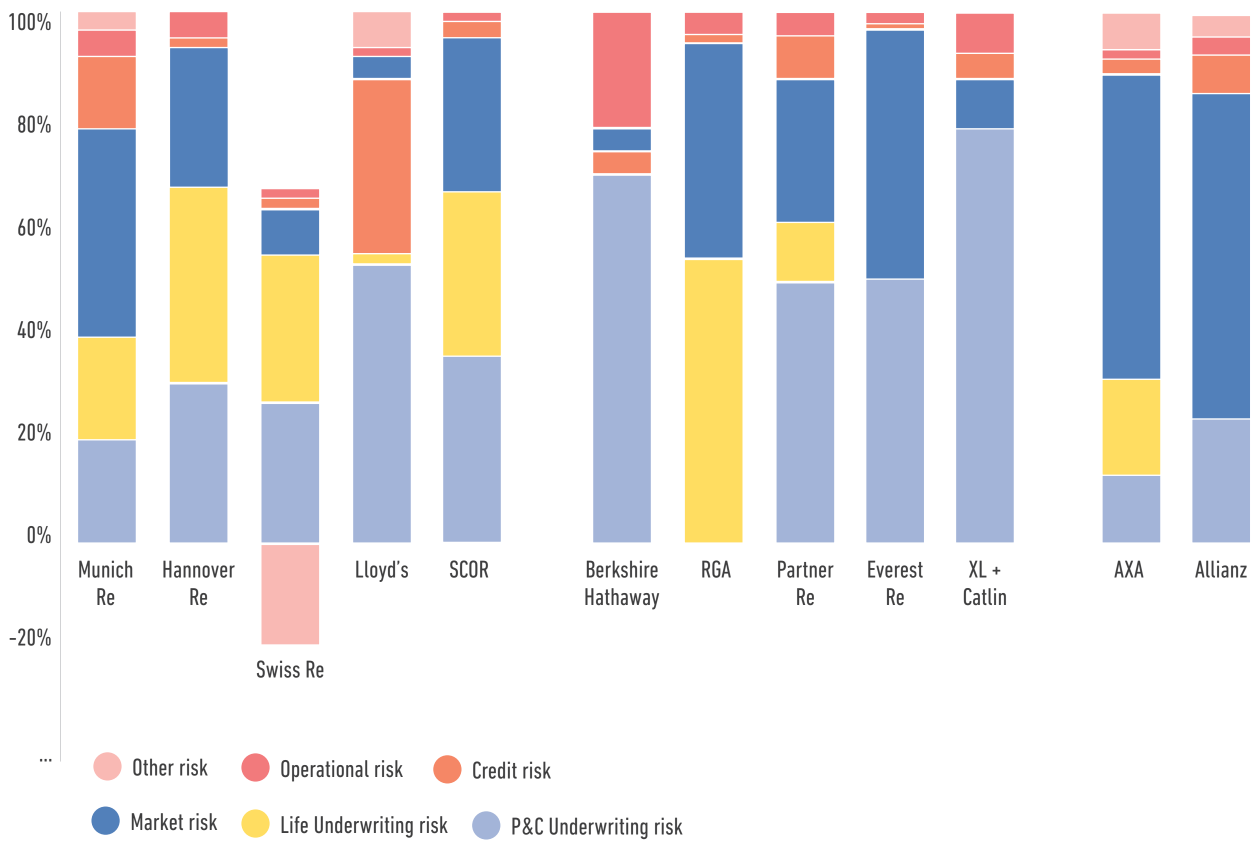
To be noted that Partner Re, Everest Re and XL+ Catlin also publish their own solvency figures based on Bermudian rules:

Prudential Data in 2016 - Subsidiaries				
€Bn	Partner Re	Everest Group Everest Re	Everest Group Bermuda Re	XL + Catlin Bermuda
Local prudential rules	Bermuda MA	Bermuda MA	Bermuda MA	Bermuda MA
Coverage (%)	332%	258%	146%	194%
SCR equivalent	2.1	1.2	1.7	5.3
Eligible Own Funds	6.9	3.0	2.5	10.3
Model	BSCR (standard)	BSCR (standard)	BSCR (standard)	BSCR (standard)

3.5.3 | SCR breakdown and analysis

We analyzed the composition of SCR for each company included in the benchmark study. On average for reinsurance groups, 95% of the required capital before diversification is composed by three risks, first the underwriting life & non-life risk (57%), followed by market risk (28%) and credit risk (9%). For reinsurance subsidiaries, 91% of SCR is composed by the three risks already mentioned with similar contributions. If we look at direct insurance companies, the contribution of underwriting, market and credit risk stands at 82% for both Allianz and AXA. Figure 19 shows the contribution of each risk in SCR before diversification.

SCR breakdown by risk



The breakdown of the SCR before / after diversification is presented in the table below:

<table>
<tr><th>SCR breakdown per risk</th><th colspan="5">European reinsurance groups</th><th colspan="5">Non-European subsidiaries</th><th colspan="2">European Insur. groups</th></tr>
<tr><th>€Bn</th><th>Munich Re</th><th>Hannover Re</th><th>Swiss Re</th><th>Lloyd's</th><th>SCOR</th><th>Berkshire Hathaway</th><th>RGA</th><th>Partner Re</th><th>Everest Re</th><th>XL + Catlin</th><th>AXA</th><th>Allianz</th></tr>
<tr><td>P&C Underwriting risk</td><td>6.8</td><td>3.3</td><td>2.4</td><td>17.1</td><td>3.4</td><td rowspan="2">0.1</td><td>0.0</td><td>0.9</td><td rowspan="2">0.1</td><td rowspan="2">0.4</td><td>7.5</td><td rowspan="2">18.6</td></tr>
<tr><td>Life Underwriting risk</td><td>5.2</td><td>2.1</td><td>1.2</td><td>0.3</td><td>3.4</td><td>0.3</td><td>0.3</td><td>9.4</td></tr>
<tr><td>Market risk</td><td>9.9</td><td>4.0</td><td>0.7</td><td>6.0</td><td>1.9</td><td>0.0</td><td>0.1</td><td>0.5</td><td>0.1</td><td>0.2</td><td>15.2</td><td>21.4</td></tr>
<tr><td>Credit risk</td><td>4.0</td><td>0.3</td><td>0.2</td><td>2.2</td><td>0.6</td><td>0.0</td><td>0.0</td><td>0.3</td><td>0.0</td><td>0.1</td><td>3.2</td><td>8.1</td></tr>
<tr><td>Operational risk</td><td>1.4</td><td>0.5</td><td>0.1</td><td>0.7</td><td>0.3</td><td>0.0</td><td>0.0</td><td>0.1</td><td>0.0</td><td>0.1</td><td>1.9</td><td>4.7</td></tr>
<tr><td>Other risk</td><td>0.6</td><td>-</td><td>(1.6)</td><td>2.4</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>6.0</td><td>5.8</td></tr>
<tr><td>Required capital before diversification</td><td>27.9</td><td>10.3</td><td>2.9</td><td>28.6</td><td>9.6</td><td>0.1</td><td>0.4</td><td>2.1</td><td>0.2</td><td>0.8</td><td>43.1</td><td>58.6</td></tr>
<tr><td>Diversification</td><td>(10.0)</td><td>(3.3)</td><td>(1.8)</td><td>(9.2)</td><td>(4.7)</td><td>(0.0)</td><td>(0.1)</td><td>(0.6)</td><td>(0.0)</td><td>(0.1)</td><td>(11.6)</td><td>(18.4)</td></tr>
<tr><td>Diversification risk % of SCR</td><td>36%</td><td>32%</td><td>62%</td><td>32%</td><td>49%</td><td>9%</td><td>21%</td><td>30%</td><td>20%</td><td>18%</td><td>27%</td><td>31%</td></tr>
<tr><td>Deferred taxes impact</td><td>(2.6)</td><td>(1.8)</td><td>(0.1)</td><td>-</td><td>(0.4)</td><td>-</td><td>(0.0)</td><td>(0.1)</td><td>-</td><td>-</td><td>(2.1)</td><td>(5.6)</td></tr>
<tr><td>Total SCR</td><td>15.3</td><td>5.2</td><td>1.0</td><td>19.4</td><td>4.5</td><td>0.1</td><td>0.3</td><td>1.4</td><td>0.1</td><td>0.6</td><td>29.4</td><td>34.6</td></tr>
<tr><td>Operational risk % of SCR</td><td>9%</td><td>10%</td><td>15%</td><td>3%</td><td>6%</td><td>20%</td><td>7%</td><td>10%</td><td>4%</td><td>19%</td><td>6%</td><td>13%</td></tr>
<tr><td>Coverage of SCR</td><td>316%</td><td>242%</td><td>276%</td><td>144%</td><td>226%</td><td>235%</td><td>141%</td><td>116%</td><td>230%</td><td>126%</td><td>197%</td><td>218%</td></tr>
</table>

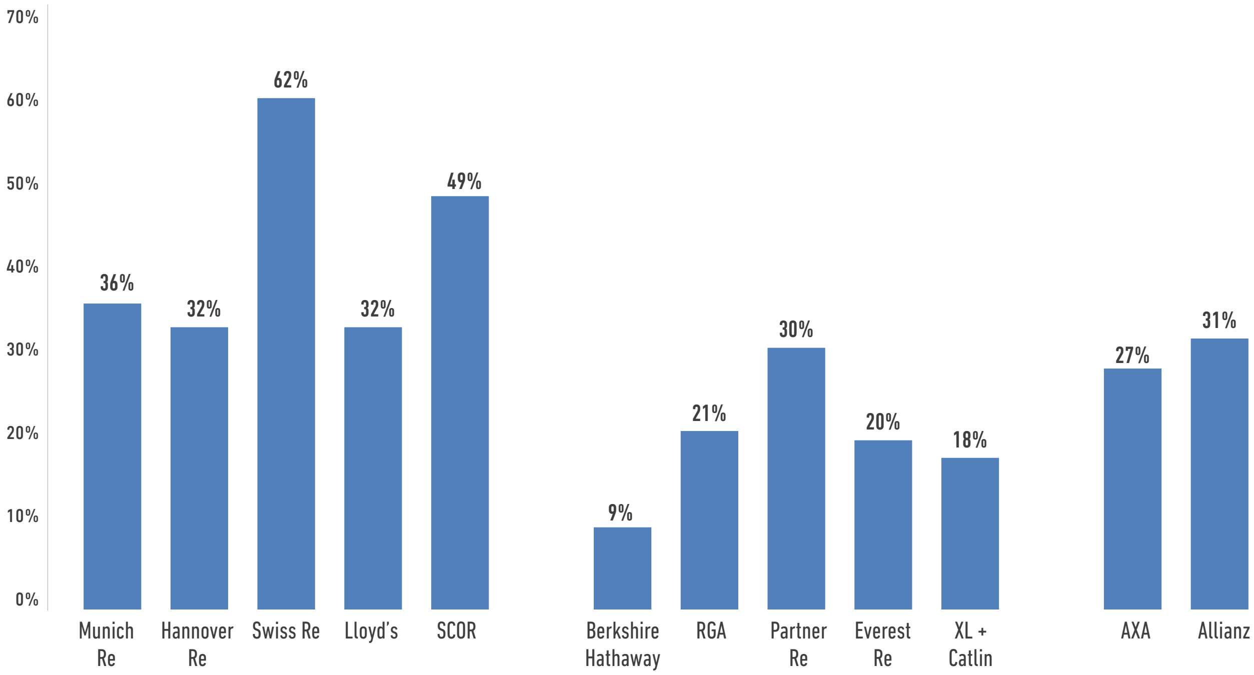
In the table above for Berkshire Hathaway, XL and Allianz the split between life / P&C was not given in the SFCR. Based on this analysis and the panel of 12 companies we could highlight the following :

- Eight companies for which the top three risks represent more than 90% of the required capital before diversification
- Three companies for which the underwriting risk represents more than 65% of the composition of the required capital before diversification, namely SCOR (71%), Swiss Re (78%) and Berkshire Hathaway (66%);
- One company, Everest Re, for which the market risk has the largest contribution (57%) whereas the underwriting risk represents 39%.
- For Swiss Re we see a negative contribution from the "other risks" which is explained by the internal operational that are restated from the group figures.

If we focus on the percentage of diversification risk of SCR, globally the panel average stands at 37% for European reinsurance groups, 25% for subsidiaries of non-European groups and 28%/31% for AXA/Allianz.

We note that diversification is particularly important for Swiss Re and SCOR with respectively 62% and 49% which is mainly explained by portfolio mix and geographical diversification.

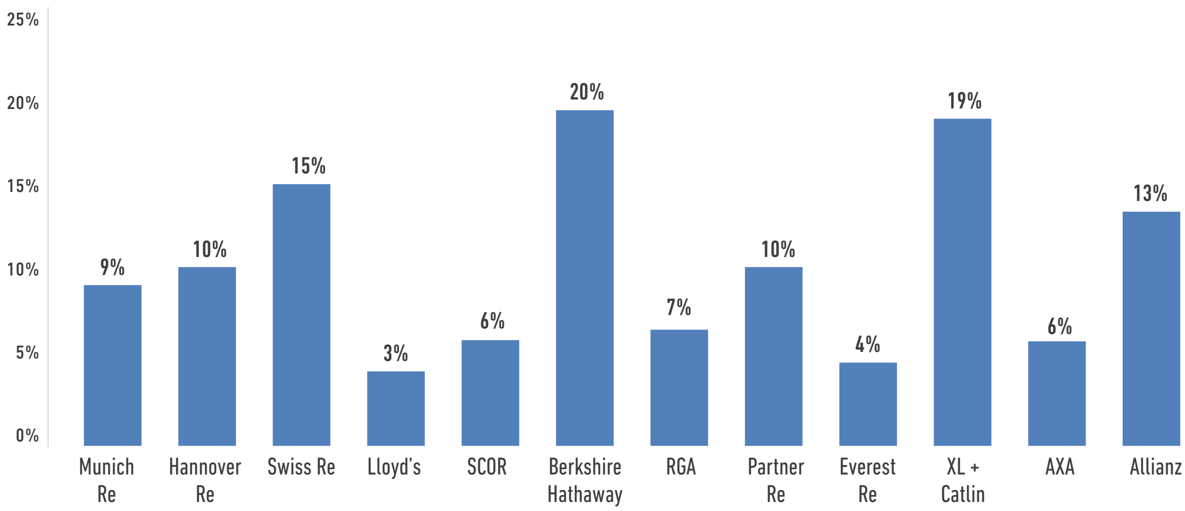
Diversification % of SCR



In respect of the operational risk, the average contribution of SCR before diversification is:

- 7% for the European reinsurance groups: ranging from 3% for Lloyd's to 15% for Swiss Re;
- 12% for the non-European groups subsidiaries with Everest Re showing a 4% contribution and Berkshire Hathaway 20%;
- 6% and 13% for AXA and Allianz respectively.

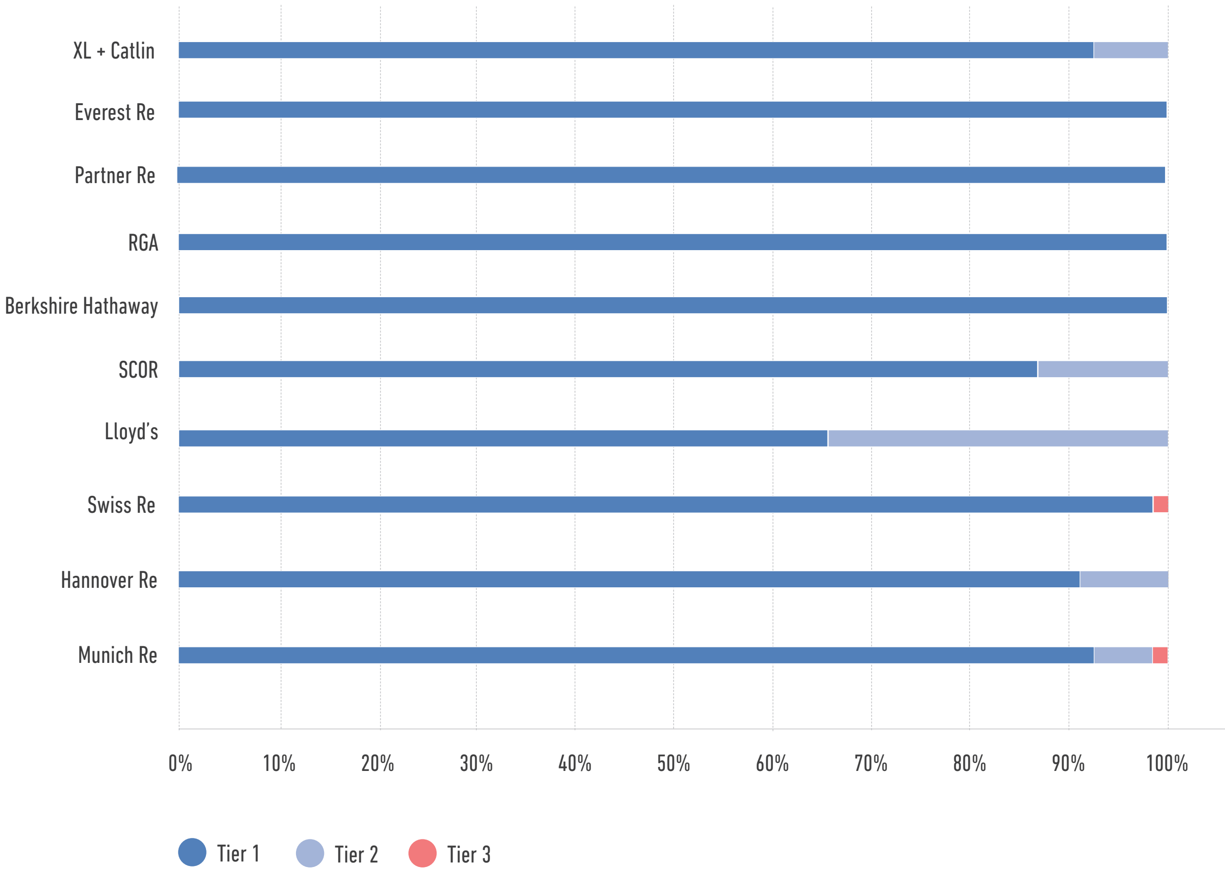
Operational risk % of SCR



3.5.4 | Own funds analysis

This information is important as rating agencies closely monitor the quality of own funds. As a reminder, SCR must have a minimum of 50% Tier 1 capital and can be funded by up to 50% with Tier 2 or a combination of Tier 2 and Tier 3 capital. The tiering of own funds for each company in the panel is presented below:

2016 Own funds breakdown



Concerning European reinsurance groups, except for Lloyd's, contribution of Tier 1 own funds is comprised of between 86% for SCOR to 99% for Swiss Re. For subsidiaries of non-EU groups, all companies have exclusively Tier 1 own funds except XL+ Catlin.

Concerning Lloyd's, it is to be noted that Tier 1 represents 65% of the total amount of own funds, the remaining 35% being Tier 2 and corresponds to letters of credit and guarantees provided by credit institutions which are held in trust independently for the benefit of insurance creditors.

AXA and Allianz show respectively: 79% and 86% Tier 1,15% and 13% Tier 2 and 6% and 2% Tier 3.

CONCLUSION

Overall we note that reinsurance companies are transparent when it comes to financial disclosures. Information provided is also in line with requirements that have to be provided either under IFRS or US GAAP. We could mention that IFRS financial reporting seems to be more dense in respect of some topics, namely intangible assets and deferred taxes.

Information is, in most areas, homogenous, enhancing the comparability of the companies presented in the benchmark study.
As we have seen, the most significant discrepancies were noticed on the recoverability of the tax losses carried forward where few reinsurers disclose the full set of information. Moreover, communication in respect of significant Nat Cat events are divergent, as some companies communicate global impacts gross or net of retrocession and other provide a breakdown at individual event level. Life performance is differently disclosed as performance is not always defined on the same basis.

Concerning the US Tax reform, all companies reported on impacts already booked or yet to come. However, the strategies in place to mitigate potential significant future tax effects are not clearly defined and is, without a doubt, a hot topic to follow-up in the future.With Solvency II, significant information has become public. All reinsurance groups show ratios significantly higher than the EIOPA benchmark, a statement of their solid financial position.

When it comes to potential areas of improvements we could mention that SFCR disclosures could be enhanced, but as 2016 was the first year reports were published there is still room for improvements.Overall, we consider this benchmark study allows a better understanding of the risk profile and strategy of each reinsurer via the different metrics disclosed.

In term of performance, the introduction of IFRS 17 in 2021 will dramatically change the KPIs used and is an opportunity to reach a harmonized approach in this area.

APPENDIX 1: FX RATES USED

EUR exhange rate 2017		
in EUR	Closing 31/12/2017	Closing 31/12/2016
USD	0.84	0.84
GBP	1.13	1.17
CHF	0.86	

GLOSSARY

Abbreviation	Explanation
NAT CAT	Natural Catastrophe
ILS	Insurance Linked Securities
SPV	Special Purpose Vehicle
GWP	Gross Written Premiums
SFCR	Solvency and Financial Condition Report
FX	Foreign Exchange
DAC	Deferred acquisition costs
VOBA	Value of business acquired
BS	Balance Sheet
GW	Goodwill
LoB	Line of business
Geo.	Geographical
UPR	Unearned Premium Reserve
IFRS	International Financial Reporting Standards
US	United States
EU	European Union
DTA	Deferred Tax Assets
TLCF	Tax losses carried forward
BEAT	Base erosion anti-abuse tax
LAT	Liability Adequacy Test
BN	Billion
ROE	Return on Equity
MWSCR	Market Wide SCR
CSCR	Central SCR
SII	Solvency I I
SCR	Solvency Capital Requirement
GAAP	General Accepted Accounting Principles

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