What follows is a personal view of the core concepts of reinsurance
Any Q's please **Contact Us**

ABC of Reinsurance

The main aim of these notes - to explain core reinsurance principles
To help people, learn, confirm and clarify important concepts of Reinsurance

The state of the reinsurance market ?
Like any market, there are times of over and under supply and over and under demand. At the start of 2017, in general the reinsurance market continues to suffer from over-supply, lessening demand, fewer major catastrophes. Although 2016 did have a few "surprises"

The reinsurance cycle - where are we at "today"
Insurers buying less overall cover
- mergers and acquisitions, strong balance sheets

Excess Capacity - $65bn+ of "new capital"
- over last 2/3 years
p.o. $450bn ? in total.
- mainly from US Pension funds – Hedge Funds
- they looking a "reasonable return"

IF there is a market catastrophe of $125bn
- the market might harden
IF interest rates rise substantially
- the market might harden
Rates will continue to soften – albeit much more slowly
More mergers and acquisitions in 2017 ?
Some moves towards Reserve Strengthening (not releasing)

Very tough for smaller and / or weaker reinsurers

The market is changing
BUT - the core products will all still be in use – SOMEWHERE

<u>Once upon a time</u>

<u>Fixing the retention per risk.</u>
Fixing how much one can afford to lose on one "risk" – the retention

Deductible (Excess of Loss)
- how much of a loss the reinsured pays before reinsurers pay

<u>Although most people today seem to use the word retention indiscriminately</u>
It is much clearer to use words such as Deductible, Excess, Priority when referring to Non-Proportional (Excess of Loss) reinsurance

<u>Decide on a maximum retention per risk</u>
Based on a **wide range of things** including;
Capital and assets
Premium Volume
Management attitude to risk
State of the reinsurance cycle – reinsurers aggressive and in charge
– reinsurers wanting the business……..
Cost of reinsurance / availability of reinsurance…..
Say $100,000

Retentio **100,000**

<u>Step 2</u>

Facultativ**o**
Facultative Reinsurance or Treaty ?
Reinsured believes they will only have very few risks in the year that exceed $100,000
Will decide as each risk is accepted if reinsurance required or not.

If reinsurance is obtained this would be called Facultative Reinsurance.
Facultative means "optional" for both ;
Reinsured (does not have to offer the risk for reinsurance)
and
Reinsurer (does not have to accept it)
Facultativo – Italian (Medieval Latin) for optional
Facultative – French for optional

Step 3

Facultative **Proportional** or Facultative **Non-Proportional**
- sharing or A xs B

Proportional, Prop, Pro-rata three terms meaning the same thing – sharing.

All premiums and claims are shared in proportion to the allocation of the risk

The allocation of risk is based on the amount of the sum insured
Allocation could be based on the PML (Probable Maximum Loss…..)

e.g.
SI 1,000,000
Reinsured decides to retain $100,000
Needs to reinsure $900,000

Reinsured is retaining 10% of the risk $100,000/$1,000,000
Reinsurer is receiving 90% of the risk $900,000/$1,000,000

Any premium paid under the insurance would be split 10% - 90%
Any claim paid under the insurance would be split 10% - 90%

In this example they have decided on Proportional Facultative
Retention 100,000
SI 1,000,000
Premium 12,000
Split $\frac{100,000}{1,000,000} \times 12,000$ $\quad$ $\frac{900,000}{1,000,000} \times 12,000$

10%	90%
1,200	10,800

Commission

BUT the reinsured has spent money on marketing, claims division…..thus reinsurers agree to allow the reinsured to deduct a pre agreed amount as Reinsurance Commission – say 25%

Premium (OGP) due to reinsurers	10,800
Less 25% Commn	2,700
- kept by the reinsured	
Prem paid to reinsurers	8,100
Less 10% Brokerage	1,080
Due to reinsurers	**7,020**

N.B. If there was a broker involved the broker would receive brokerage as a % of $10,800

Claim ?

There is a claim of $4,500 on the policy, which has an excess of $500
Claim Paid on insurance - $4,000
Share paid by reinsurers 90% = 3,600

OG or ON ?

OGP (Original Gross Premium)
OGR (Original Gross Rate)
- reinsurers get their percentage share of the premium paid by the insured to the reinsured , less Commission (As in the example above)
ONP (Original Net Premium)
ONR (Original Net Rate)
- reinsurers get their percentage share of the premium paid by the insured to the reinsured after local deductions

e.g. OGP	12,000
Local Agent Commission	1,200
ONP	10,800
90% Reinsurance	9,720

In this scenario Reinsurance Brokerage if any, would be on 9,720
Or perhaps

Non Proportional, Excess of Loss, X/L, XOL, ELC
Five terms basically meaning the same thing
– NOT sharing
Using the numbers above, reinsured would have;
Deductible (Excess, Priority) of $100,000
Cover of $900,000
This would be expressed as $900,000 xs $100,000
Any losses on the insurance below $100,000
- no claim
Above $100,000
– claim the amount above the deductible

e.g.
Claim $80,000 *fgu (from ground up)* = no claim
Claim $200,000 *fgu (from ground up)* = claim - $100,000 to the reinsurance

The premium charged ?

Based on reinsurers expectation of loss/losses
– nothing to do with sharing of the risk

<u>Step 4 – Proportional Treaty</u>

A change of plan – the reinsured is finding them selves placing quite a few facultatives which are basically very time consuming to org anise and administrate

Have become stronger so only want to lose a maximum of 600,000 but needs to workout how much automatic capacity it needs. Has to understand its full portfolio of business. Organises a list of all the risks in the Property account showing their Sums Insured (SI) – The Risk Profile

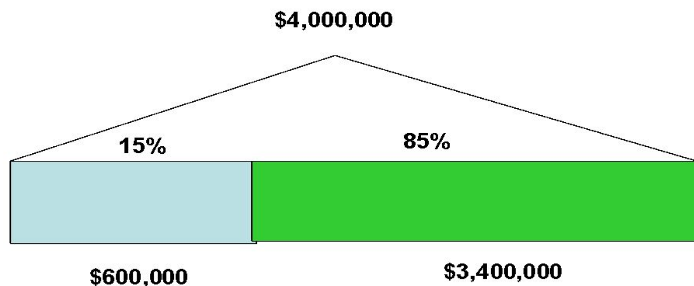
Almost all risks are below a SI $4,000,000. If there any risks above $4,000,000 in the year – they will have to revert to using facultative for the portion over $4,000,000

Change of plan
Growing up
Stronger
Too much Facultative
Want to share all risks
Most risks up to up to $4,000,000
Want to retain a **Max Share** of $600,000 per risk

100% Limit for 1 risk $4,000,000

$$\text{Retain } \frac{600{,}000}{4{,}000{,}000} = 15\% \qquad \text{Reinsure } \frac{3{,}400{,}000}{4{,}000{,}000} = 85\%$$

Equals 85% Quota Share



85% Quota Share – 85% of every risk, premium, claim, split 15% - 85%

- -

This Treaty would be called a 85% Quota Share (QS) Treaty

Thus every premium and every claim on every policy in the property account up to a SI of $4,000,000 will be shared 15% - 85%

N.B. IF Retention had been 1,000,000 and Reinsured amount $1,000,000 – it would have been called a 50% Q/S 1,000,000/2,000,000 = 50%

<u>Amount Reinsured</u>
<u>1,000,000</u>
2,000,000 (Overall limit per risk needed)
(50%)

<u>Under the 85% Q/S</u>
SI 3,000,000
Premium 6,000
Retained Premium 900 (15%) Treaty (85%) Premium 5,100
HOWEVER there will also be Commission to deduct say 20% <u>1,020</u>
Reinsurers will therefore get 4,080
If there was brokerage would be deducted from 5,100

Commission

As the reinsured (the insurer) has costs to acquire business; advertising, marketing, local brokerage, claims dept…..reinsurers allow the reinsured to deduct a percentage of the original premium to cover such costs – this figure is totally negotiable.

This calculation would be done for every risk written in the quarter and shown as;
Premium
Less Commission
Less Claims
Balance due from/to reinsurers
N.B. If this Treaty had been placed via a broker the brokerage - say 2.5% would be based on the premium figure (before commission).

But a risk of $5,000,000 ?

Retention	Treaty	Facultative
600,000	3,400,000	1,000,000
	5,000,000	
12%	68%	20%

Fixed share of,
the Gross share of the reinsured

Other Proportional possibilities
In the future, as the company gets stronger they might decide that they want to keep all the small risks themselves and only reinsure risks larger than their retention – so move from a Q/S Treaty to a Surplus Treaty

SURPLUS

Surplus – a share of "larger" risks only
What does the word Surplus mean?
- in addition to
- over and above

A surplus treaty provides automatic reinsurance in addition to the RETENTION

How does a Surplus work?

Original Acceptance 1,000,000

Maximum the reinsured can afford to lose per risk
Retention 600,000
Amount it needs to Reinsure
- the "Surplus" (what is left 400,000.

All risks up to 600,000 will fall 100% into the retention
For historic reasons is called a "line"
"Line" = retention

The important difference between Q/S and a Surplus is the "flexibility" available to the reinsured.
All "small" - "good" risks should fall within the retention under a Surplus, but have to be shared under a Quota Share.

All risks with a sum insured equal or below the retention are retained.

Any surplus is placed with Treaty reinsurers and where necessary (Treaty Limit not large enough), with facultative reinsurers.

Examples;

On a Surplus Treaty - 1 Retention = 1 line

Grade	Retention (max cession)	9 Line Treaty Underwriting Capacity	Max Automatic
A1	100,000	900,000	1,000,000 (9 lines and retn.)
A2	80,000		
A3	60,000		
A4	40,000		
A5	20,000		

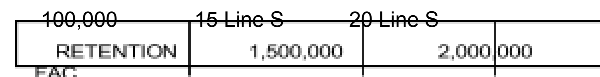
On a Surplus Treaty 1 Retention = 1 line

Grade	Retention (max cession)	9 Line Treaty Underwriting Capacity	Max Automatic	
A1	100,000	900,000	1,000,000	(9 lines and retn.)
A2	80,000	720,000	800,000	(“ “ “ “)
A3	60,000	540,000	600,000	(“ “ “ “)
A4	40,000	360,000	400,000	(“ “ “ “)
A5	20,000	180,000	200,000	(“ “ “ “)

Treaty RI and Fac

Still placing more Facultative
What to do?

Increase retention
Increase number of lines
or
Place a 2nd Surplus



Additional Capacity
Even if an insurer has a Surplus, when they start having to place too many facultatives, they could consider increasing the number of lines, increasing the retention or the possibility of another Surplus in addition to absorb the

facultatives. Thus a 2nd Surplus all based on the size of the initial retention on the risk.

In this example
Risks up to 100,000 into retention
100,000 up to 1,600,000 into 1st Surplus
1,600,001 up to 3,600,000 in 2nd surplus
Larger than 3,600,000 would need Fac

What is a Facultative Obligatory Treaty?
A contract with a very confusing set of words.
Facultative Obligatory Treaty
Facultative - optional for reinsured
Obligatory - for the reinsurer
Treaty - a contract

A variation of a Surplus

Works in exactly the same way as a Surplus – EXCEPT that the reinsured does NOT have to cede risks above its retention to the Fac Oblig – BUT if the risk is ceded, reinsurers MUST accept it – a dangerous treaty for reinsurers.
e.g. Sum Insured $4,100,000

Retention 100,000

MUST	MUST	MAY
10 Line 1st S	20L 2nd S	10L Fac Oblig
1,000,000	2,000,000	1,000,000

OR

MUST	MUST	MAY	
10 Line 1st S	20L 2nd S	10L Fac Oblig	FAC
1,000,000	2,000,000	0	1,000,000

In other words the Reinsured can cede nothing or whatever it likes up to X times its retention BUT the reinsurer must accept whatever is ceded.
The most dangerous product for a reinsurer ?
An unlined Fac Oblig
No relationship between Retention and Cession
– just a Treaty Limit per risk
Retain nothing
Make a full cession

Catastrophes and Proportional Treaties
Reinsurers Exposures to Catastrophe

Reinsurers need to be able to control their own exposures to Catastrophes so impose certain rules, especially in a hard market..

Reinsurer has unlimited exposure to one event

Should consider

- Cession Limit
- Aggregate Limit - any one event (Event Limit)!

Please note that the Thai Flood Losses in 2011 (estimated insurance loss $12bn) STRONGLY impacted on this this area in 2012 – lessening impact as the market softens.

Cession Limit
The total Sums Insured that can be placed under the proportional treaty for all risks in the year is $800,000,000
IF after a major loss reinsurers decided to inspect the reinsured's records and find that the cession limit had been exceeded and was actually $1,000,000,000 they would have the right to apply average to the losses.
i.e. only 800,000,000/1,000,000 x actual loss to treaty

It is essential that accurate data entry and reporting is carried out

Cession Limit

The total Sums Insured that can be placed under the proportional treaty for all risks covering a Catastrophe Peril in the year is $800,000,000

Essential that accurate data entry and reporting is carried out
Cession Limit $ 800,000,000 x loss from Cat
Actual Exp $1,000,000,000

Swiss Re
Sometimes use these words to mean Treaty Limit
- be careful!
A Cession limit (all risks), will be a very large number
A Treaty limit – will be a comparatively much smaller number

Aggregate Limit per event – even though, in theory at least the reinsured has paid 85% of the premium for each risk to Q/S reinsurers, reinsurers have (as is common in many Catastrophe Regions) applied an Aggregate Limit / Event Limit

Aggregate Limit

Maximum amount that can be claimed from any one event e.g $12,000,000 under a proportional treaty.
If the loss from all the cessions to the Treaty from one event exceed $12,000,000 the balance will fall back onto the reinsured's retained account. ("Spillover")

It will NOT fall on Cat X/L unless this has been specifically agreed at the start of the reinsurance contract

Limits are getting larger – market is weakening

Unless special permission was sought and given the reinsured would NOT be allowed to add this to their retained losses when calculating how much they could collect from Catastrophe Excess of Loss (X/L) Reinsurance

Catastrophe X/L
We can now concentrate on the retention and;
How much protection do we need for an "event"

To pay $Y,000,000 in excess of $Z,000,000 any one event
In the example above there is a retention of 15% of every risk up to 4,000,000

Pretend the only risks the reinsured accepts are;

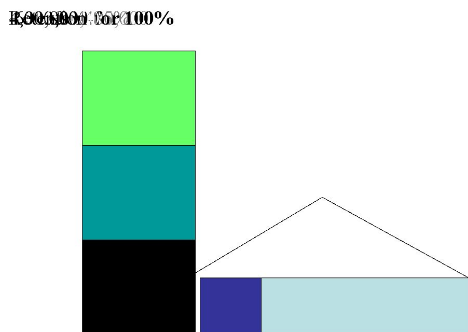
100 risks SI 4,000,000 =	Total	SI 400,000,000
Retention on every risk 15%	Total Retained risk	SI 60,000,000
Estimated Maximum Loss 30%		
	- Catastrophe Cover Required	SI 18,000,000

What deductible?
A figure that will not destroy the reinsured if they have more than one loss in a year
-nor a figure that is very too low - the cost is prohibitive - say 2,000,000

N.B Normally somewhere between 2 to 5 retentions
– in this case between $1,200,000 to $3,000,000
(2 x 600,000) (5 x 600,000)

The reinsured might therefore buy Catastrophe X/L for;
- $16,000,000 xs $2,000,000 – in layers

This would be placed in layers with different reinsurers, charging different prices e.g.
3,000,000 xs 2,000,000
5,000,000 xs 5,000,000
8,000,000 xs 10,000,000



The Hurricane Happens!!
The Q/S pays 85% of each individual claim
The reinsured accumulates together all of the 15% shares on each policy
IF total comes to more than $2,000,000 the excess (balance) comes from Cat X/L reinsurers – assuming reinsured has bought enough cover!

N.B. IF the loss to the Q/S exceeds the event limit of $12,000,000 the extra amount un-claimable from the Q/S **cannot** be added to all the retained losses from the event to form part of the claim from Cat X/L reinsurers – unless this has been pre-agreed.

Any thing else to consider?

What is an event?
There is a specific clause in Cat X/L that defines an event as far as reinsurers are concerned – The Hours Clause.
A hurricane would normally be shown as 72 consecutive hours. Thus records have to be kept on date and time of loss. The reinsured will add up all the losses from the event and chose the 72 hours where the cumulative total comes to the most – if the hurricane blows for longer than 72 hours the reinsured is allowed to start again – with a 2nd deductible or even a 3rd – assuming they have reinstatement(s) e.g. Katrina hit the cost line of US twice with about 80 hours between the first landing and it hitting New Orleans – thus the damage caused by the 1st and 2nd landings can not be accumulated together as one event.

Reinstatement
Cat X/L will normally have reinstatement(s) provision pre-agreed at the start of the year – The methodology for calculating them differs in one area from insurance.

<u>Commercial Insurance and Reinstatement</u>
SI 1,000,000
Premium 20,000
Claim to the insurance 500,000

Date of Loss 1/7/07
Policy incepts 1/1/07

Calculation

$$\frac{500{,}000}{1{,}000{,}000} \times \frac{6}{12} \quad 20{,}000 = 5{,}000$$

Thus would pay 5,000 to rebuy (reinstate) 500,000 of cover for the last 6 months of the year to bring the available coverage back to 1,000,000

Catastrophe Reinsurance and Reinstatement
It is normally the case that the date of loss is ignored
It is often the case in Cat X/L that only 1 reinstatement is given

So as an **example**

Cover 16,000,000 xs 2,000,000
Premium for the reinsurance 700,000
Claim from one event 8,000,000 to layer
Date of loss – 1/9/2011

What would the calculation be?

$$\frac{8,000,000}{16,000,000} \times 100\% \times 700,000 = 375,000$$

Thus the cover has been put back to 16,000,000 but the Date of loss has been ignored (x 100%) – if time had been taken into account the 100% would have been replaced with 4/12 (buying cover for the last 4 months of the year.

What does 1 reinstatement mean? – Can only claim once in the year ? NO!
Can reinstate the full amount of cover only once

16,00,000 of cover
1 reinstatement means that the reinsured can claim 32,000,000 in a year
Premium for 16,000,000 of cover
Reinstatement premium for a further 16,000,000 of cover

Super cautious

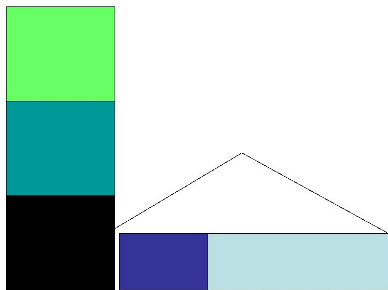
N.B. This reinsured has 1 reinstatement in its Cat Programme. To ensure simple budgeting of reinsurance costs – they bought a Reinstatement Premium Protection Cover. Thus in the example above – claim of 8,000,000

Collect 8,000,000 from Cat X/L reinsurers – less 375,000 reinstatement premium
Collect 375,000 from Reinstatement Premium Protection Reinsurers

Other possibilities

Per risk X/L

Retention 15% of Max 4,000,000 = 600,000
Reinsured is happy to keep 15% of every risk up to 4,000,000 but is concerned that a loss on a large risk could unbalance the results – so has bought a Per Risk X/L for 150,000 xs 450,000 per risk.



e.g.

Insure a house $1,000,000
Retention 15% = loss 150,000
No claim on the risk X/L
BUT
Insure a factory SI 4,000,000
Retention = 15% = loss of 600,000 fgu
Claim on Risk X/L 150,000 (600,000 – 450,000)

If all the claims in the year (whether from one event or individual fires….) on the retention are below 150,000 – no claims on the Risk X/L

This product should have;
- aggregate limit any one event
    - very limited – this is not a Cat X/L)
- aggregate any one year
    - 2 or so times the event limit ?

Historically – quite a high figure
- in the 1970's "unlimited"

Today a VERY LOW amount or even no cover at all for an event
- "A **reverse** two risk warranty clause"

A very weird title for this clause – better perhaps if it had been called an EVENT exclusion clause – not that common but certain reinsurers trying to impose

<u>Where are we at ?</u>
Decide Retention per risk

Few risks larger = Facultative

<u>Proportional</u> = sharing of risk, premiums, costs, claims

<u>Non-Proportional</u> = A xs B (Cover xs Deductible) for a price

Decide to SHARE ALL RISKS = Q/S Treaty

- share of <u>every risk</u>

Changes mind !
– wants to keep all smaller risks

Surplus Treaty
- automatic reinsurance for all risks larger than the Retention

Cessions (amount given – ceded) based on Multiple of Retention (Line)

Retention getting larger – keeping more risk

Concerned that an individual RISK loss will unbalance their results

<u>Per Risk X/L</u>

<u>Cover Xs Deductible</u> any one RISK
- very low limit any one event
– pays for risk losses NOT Catastrophe Losses

<u>Catastrophe X/L</u>

Retentions will accumulate in a catastrophe
- needs protection - any one event

Stop Loss

Moved into a new class
e.g. Hail
Wants protection at the end of the year IF loss ratio worse than x%

Think of it as an Excess of, Loss Ratio Cover
10% Loss Ratio xs 70% Loss Ratio
Losses (as defined) <u>6,900,000</u> = 69% = No Claim
Premiums (as defined) 10,000,000
BUT
10% Loss Ratio xs 70% Loss Ratio
Losses (as defined) <u>7,500,000</u> = 75% = 5% Claim
Premiums (as defined) 10,000,000
5% of what ?
5% of PREMIUM = 500,000

In many cases the contract will say;

To pay 95% of;
(95% of = co-reinsurance – want some of the loss to be paid by the reinsured)

10% Loss Ratio in excess of 90% Loss Ratio

Losses	6,000,000
Premiums	10,000,000

= Loss Ratio 60%
No claim as falls below deductible of 90%

Losses	9,500,000
Premiums	10,000,000

= Loss Ratio 95%
Claim as falls above deductible of 90%

Losses	95% of premiums	9,500,000
Deductible	90% of premiums	9,000,000
Claim on reinsurers	5% **of premiums**	**500,000**

Reinsurers will pay 95% of 500,000

Lastly the **Aggregate X/L**
Same basic purpose but based on $ not loss ratio
To pay if losses in the aggregate in the year exceed $xx,xxx,xxx up to a further $yy,yyy,yyy

A variation of the Stop Loss except, cover and deductible are in $
If an underwriter would want to protect their Loss Ratio they would consider a Stop Loss. If a Finance director wanted to protect the company against a financial hit of more than $xx,xxx,xxx they would consider an Aggregate X/L

And lastly, lastly!

A trendy newer product

Catastrophe Aggregate X/L
To pay if the accumulation of individual event losses (as defined) that are larger than $50,000,000
Exceed in the aggregate in the year $200,000,000

<u>Cover</u> up to a further $300,000,000 in the aggregate in the year

Event Loss $40,000,000 - not accumulated
Event Loss $150,000,000 - accumulated
Event loss $60,000,000 - accumulated

<u>Total of Event Losses – accumulated</u> $210,000,000

<u>Claim</u> $10,000,000

The Reinsurance Structure