B04: GIRO / CARe International Pricing Research Working Party – Property Risk

Analyzing the Disconnect Between the Reinsurance Submission and the Global Underwriters Needs

CAE Seminar, 21 September, 2015 London, UK

Overview by: Ana Mata, MatBlas

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CAE - Agenda

1. Overview of GIRO International Pricing Research Working Party
2. Survey Results presented at CARe
3. White Paper Overview
4. White Paper Anticipated Sections
5. Sample White Paper Practitioner Detail
6. Next Steps

IFoA-GIRO Working Party Link:
http://www.actuaries.org.uk/practice-areas/pages/international-pricing-research-working-party

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Impetus for Working Party

- Focus: Property per risk insurance and reinsurance
- Insurance companies provide limited data in reinsurance submissions
- Reinsurance underwriters often make more conservative assumptions – price implications
- Potential implications on insurance premiums for commercial property insureds
- Better data from insured to insurer to reinsurers could benefit all parties to a given transaction – even the broker!

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Working Party Formation

- Joint effort between IFoA-GIRO and CAS-CARe
- Initially focus on Property Per Risk Reinsurance for 2015
- Goals of WP:
  - Analyse gaps between data and information presented in a standard reinsurance submission and data required by reinsurance actuaries and underwriters to thoroughly price a treaty
  - Improve understanding across all parties (cedant, broker and reinsurer) of impact of incomplete submissions on pricing throughout a number of examples.
  - Create a reference framework for future property primary data collection and reinsurance submissions.

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Working Party Steps thus Far

- Identified an ideal submission vs. most common submission.
  - A survey was prepared and circulated among reinsurance practitioners (actuaries and underwriters)
  - Results of the survey were presented at the annual CARe meeting in June 2015 in Philadelphia, USA.
- Preparation of a white paper with detailed examples showing illustrative price differences driven by lack of data
  - Work in progress
  - Will be ready in time for GIRO at the end of October
  - GIRO presentation

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Survey Overview

- 44 responses
  - 86% actuaries and 14% from other areas
  - 25 members of CAS, 16 members of IFoA, 13 members of other organisations (some members of multiple organisations)
  - Including representation from France, China and NZ.
- Wide variety of priced territories

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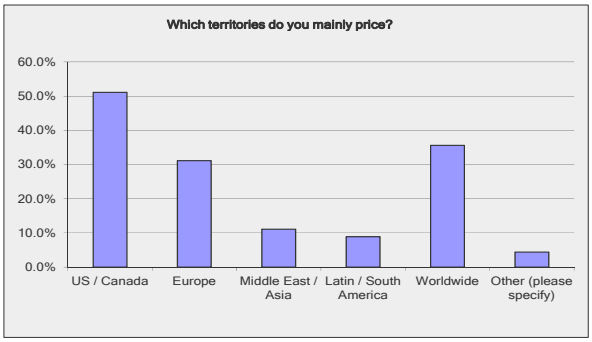
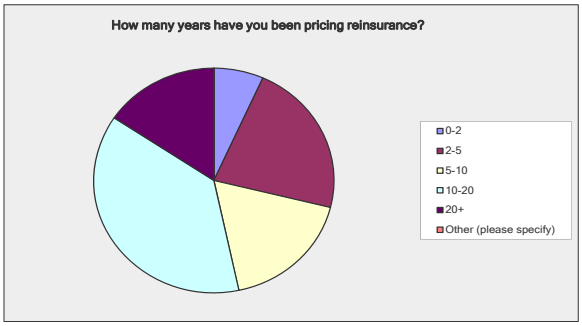
Respondent Demographics





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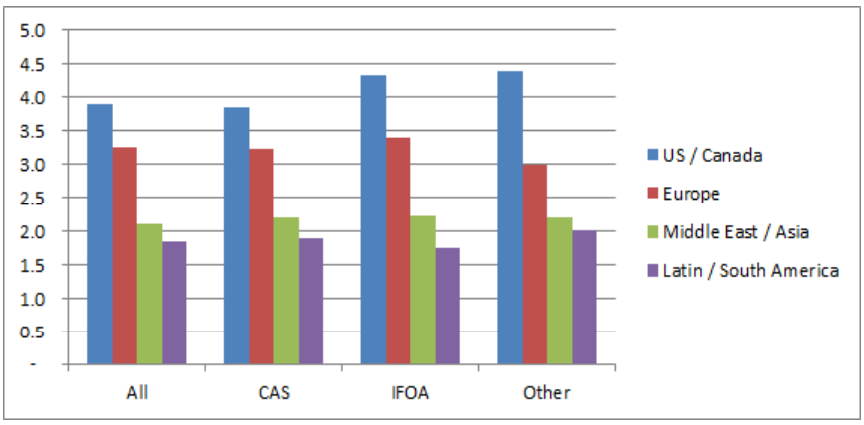

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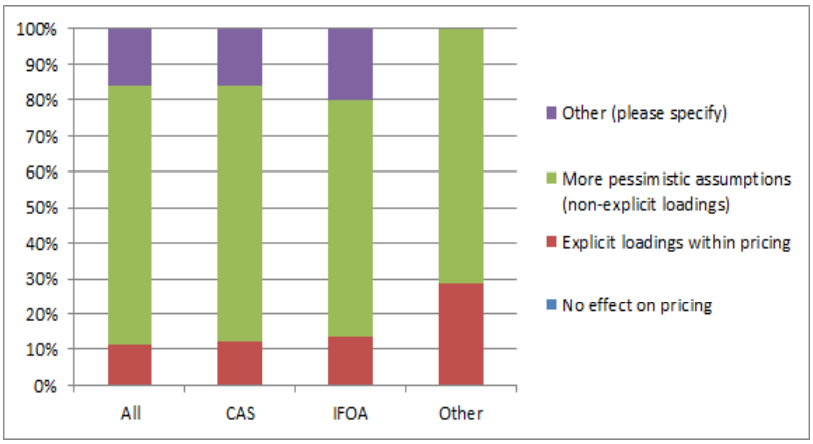
How does a poor quality submission impact price?



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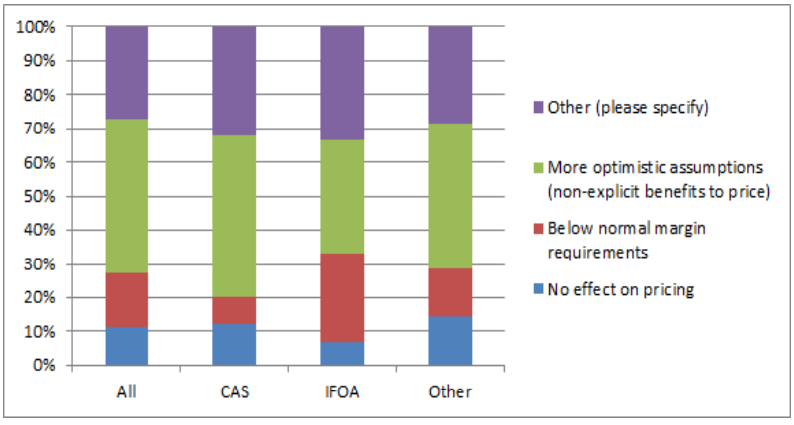
How does an excellent quality submission impact price?



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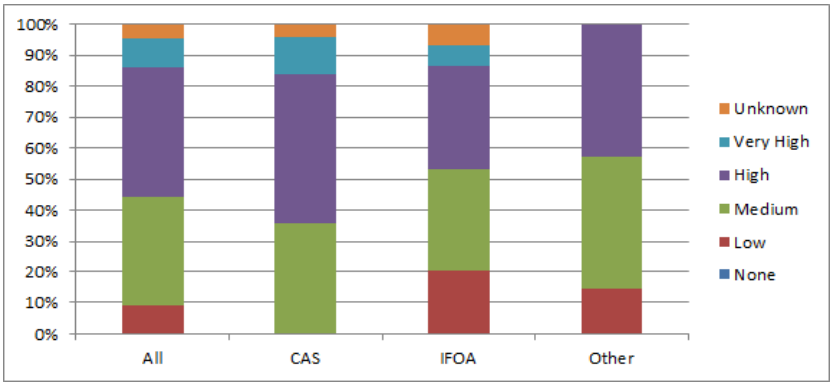
How much does quality of submission impact your price?



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Exposure Rating

	All		CAS		IFOA		Other	
	% Receiving	Rank	% Receiving	Rank	% Receiving	Rank	% Receiving	Rank
a. In-force risk profile (banded)	93%	1	92%	1	87%	1	86%	1
b. Historic risk profiles (banded)	23%	5	8%	6	60%	4	29%	3
c. Individual risk listing (all cat/non-cat exposures)	30%	3	24%	2	33%	2	43%	6
d. Individual risk listing (above certain threshold)	48%	7	48%	7	53%	5	29%	8
e. Historic from ground up loss ratios (cat and non-cat)	57%	2	68%	3	40%	3	71%	2
f. Written explanation of risk profile	25%	4	20%	5	27%	5	29%	4
g. Risk profile detail	34%	6	32%	4	40%	7	29%	5
h. Link of claims to risk profiles	7%	8	4%	8	7%	8	29%	7

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Experience Rating

	All		CAS		IFOA		Other	
	% Receiving	Rank	% Receiving	Rank	% Receiving	Rank	% Receiving	Rank
a. Large loss listing (no triangle)	100%	1	100%	1	100%	1	100%	1
b. Historic large loss listing (triangle)	30%	3	24%	3	33%	2	29%	4
. Large loss claim description including cat/non-cat indicator	82%	4	96%	4	73%	4	71%	3
d. Historic premium	93%	2	96%	2	87%	3	100%	2
e. Historic exposures (# of risks, # of exposures / risk)	30%	6	20%	6	40%	5	57%	5
f. Projected rate change	43%	7	56%	6	27%	7	29%	7
g. Historic rate change	59%	5	84%	5	33%	6	57%	6
h. Rate monitor (renewal policies)	18%	8	24%	8	20%	8	0%	8

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White Paper Anticipated Table of Contents

IFoA / CAS International Pricing Research Working Party – Property Risk

Analyzing the Disconnect Between the Reinsurance Submission and the Global Underwriters Needs

1. **Introduction, Methodology, and Conclusions**
    1. Main survey findings
    2. Differences – e.g. CAS and IFoA, etc.
    3. Levels of "Goodness" - Acceptable, Good, Preferred
2. **Primary**
    1. Relevance / benefits to primary markets including agents and brokers
    2. Actuaries, underwriters
3. **Reinsurance**
    1. Relevance / benefits to reinsurance markets including reinsurance brokers
    2. Actuaries, underwriters
4. **Types of Submissions**
    1. Individual Exposures
    2. Banded Limit Profiles
    3. Banded Attachment / Limit Profiles (US, some other countries)
5. **Amount of Insurance**
    1. What does it really represent
    2. MPL, PML, MFL, average location, top/largest location, key location…
    3. Business interruption
    4. Shares of excess policies, ventilated layering, valued policies
6. **Historical profiles**
    1. Importance
    2. Adjusting experience for changes in exposure

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White Paper Anticipated Table of Contents (cont).

7. **Large claim information and link of AOI to Claims**
    1. Common challenges in linking claims and exposures
    2. Necessary for testing / validating size-of-loss scales
    3. Various projects: Lloyd's-IICI, FPA's; other sources
    4. ECO / XPL claims / PML Bust claims
8. **Traditional COPE and Portfolio Extensions**
    1. Traditional Definitions - Construction, Occupancy, Protection, Exposure
    2. Multi-location / policy / country issues
    3. Portfolio enhancements – individual vs. rollup (FARM)
9. **Loss ratio information**
    1. Ground-up – extending individual / banded exposures
    2. Cat / non-cat / types of cat loss ratios
10. **Price monitors**
    1. Renewal
    2. New policies / definition
11. **Using and reconciling property risk submissions with cat submissions**
12. **Various Country Issues**
    1. Emerged markets
    2. Emerging markets – BRICS, CIVETS, etc.

Appendix, References
Overall reviewers

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Chapter 6: Historical Profiles

- Increase TIVs over time main reason experience lacks credibility.
- Layer more exposed than prior years
- Traditional approach is to apply exposure adjustment based on total sum insured or premium
- Chapter shows how the use of historic TIV profile could help refine experience rating results compared to standard exposure adjustment

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Adjusting Experience for Changes in Historical Profile

2005							
Low	High	%TIV	TIV in band	Avg TIV	No Risks	% Prem	Premium
0	1,000,000	35%	437,500,000	759,549	576	44.12%	6,562,500
1,000,001	2,000,000	25%	312,500,000	1,554,726	201	24.16%	3,593,750
2,000,001	3,000,000	20%	250,000,000	2,688,172	93	16.47%	2,450,000
3,000,001	4,000,000	15%	187,500,000	3,232,759	58	11.60%	1,725,000
4,000,001	5,000,000	5%	62,500,000	4,166,667	15	3.66%	543,750
Total		100%	1,250,000,000		943	100.00%	14,875,000
2009							
Low	High	%TIV	TIV in band	Avg TIV	No Risks	% Prem	Premium
0	1,000,000	29%	507,500,000	760,870	667	38.71%	7,460,250
1,000,001	2,000,000	20%	350,000,000	1,583,710	221	20.16%	3,885,000
2,000,001	3,000,000	23%	402,500,000	2,630,719	153	19.63%	3,783,500
3,000,001	4,000,000	18%	315,000,000	3,423,913	92	14.06%	2,709,000
4,000,001	5,000,000	10%	175,000,000	4,487,179	39	7.45%	1,435,000
Total		100%	1,750,000,000		1,172	100.00%	19,272,750
2014							
Low	High	%TIV	TIV in band	Avg TIV	No Risks	% Prem	Premium
0	1,000,000	27%	607,500,000	778,846	780	35.90%	8,808,750
1,000,001	2,000,000	22%	495,000,000	1,661,074	298	22.79%	5,593,500
2,000,001	3,000,000	23%	517,500,000	2,640,306	196	19.82%	4,864,500
3,000,001	4,000,000	15%	337,500,000	3,515,625	96	11.83%	2,902,500
4,000,001	5,000,000	13%	292,500,000	4,642,857	63	9.66%	2,369,250
Total		100%	2,250,000,000		1,433	100.00%	24,538,500

Adjusting Experience for Changes in Historical Profile

						Exposure adjusted losses		
Policy year	On-level premium	Inflation adjusted TIV	Exposure rate using historical profiles	Trended ultimate losses in layer	Burn cost	With OL Premium	With adjusted TIV	With exposure rate in layer
2005	14,427,641	1,380,777,657	1.327%	1,015,706	7.040%	1,865,600	1,839,011	1,621,911
2006	13,509,518	1,725,835,360	1.327%	0	0.000%	0	0	0
2007	16,343,110	1,759,642,147	1.731%	0	0.000%	0	0	0
2008	17,100,229	1,801,187,392	1.731%	646,389	3.780%	1,001,700	897,170	791,663
2009	18,733,394	1,857,660,264	1.935%	0	0.000%	0	0	0
2010	18,592,448	2,049,469,598	1.935%	736,261	3.960%	1,049,400	898,112	806,487
2011	21,119,854	2,133,238,221	1.943%	1,926,131	9.120%	2,416,800	2,257,285	2,101,777
2012	22,383,158	2,215,147,150	1.943%	957,999	4.280%	1,134,200	1,081,191	1,045,360
2013	23,943,359	2,295,225,000	1.943%	0	0.000%	0	0	0
2014	25,274,655	2,444,200,000	2.120%	0	0.000%	0	0	0
2015 (proj)	26,500,000	2,500,000,000	2.120%		842,513	829,744	774,752	707,466
2015 Projected average loss cost excludes 2014					3.179%	3.131%	2.924%	2.670%

Chapter 10: Price Monitors (Rate changes)

- Property reinsurance submissions provide limited information about rate changes
- Cedants do not provide examples or explanations of how they calculate rate changes
- Rate changes may not be aligned with historical premium presented
- Paper presents detailed examples of how rate changes should be calculated according to Lloyd's Minimum Underwriting Standards

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Rate monitoring at Lloyd's (Underwriting Minimum Standards)

- Monthly report (PMDR)
- Breakdown overall rate change in key components
  - Change in limits, deductibles, attachments (L/D/A)
  - Change in coverage
  - Change in other factors (everything else)
- Convention
  - (+ %) means more coverage or exposure
  - (- %) means less coverage or exposure
- Prescriptive approach but not necessarily consistently followed

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Rate change example

Rate change should be done on ultimate premium on a 100% basis, not including your share of the policy.

Expiring premium	£100,000
Change due to L/D/A	120%
Change due to coverage	110%
Other factors Change due to exposure Change due to mix Change due to other factors	 130% x 90% 117%
Risk Adjusted Expiring premium	£100,000 x 1.2 x 1.1 x 1.17 = £154,440
RARC = (Renewal Premium / RA Expiring Premium)	£125,000/£154,440 = 80.94% (19.06% rate reduction)
Renewal premium	£125,000

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Rate monitoring at Lloyd's (Underwriting Minimum Standards)

- Property insurance limit is the same as TIV (exposure)
- Excess policies difficult to split change due to layering and change due to TIV
- Need individual locations to measure exposure in layer

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Change in layer and in exposure base (relevant loss costs)

		Policy Layer	
		2014	2015
TIV Profile	2014	Loss cost from 2014 pricing (A) ✓	Loss cost for new layer/old profile (B)
	2015	Loss cost for old layer/new profile (C)	Loss cost from 2015 pricing (D) ✓

1) D/A = Change in risk exposure (layer and TIV)
2) D/B = Change in TIV exposure in layer (B may not be practically possible to calculate)
3) D/C = Change due to layer

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RARC Example

2014

- Layer $25m xs $75m
- 3 locations: $55m, $85m, $125m
- No flood coverage
- Net premium charged $200k

2015

- Layer $50m xs $50m
- 5 locations: $55m, $85m, $125m, $65m, $45m
- Flood coverage included (loss cost 10% of non-flood)
- Net premium charged $665k

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Expected loss cost

Limit	25,000,000	Limit	50,000,000
Attachment	75,000,000	Attachment	50,000,000
Loss cost rate on TIV	3%	Loss cost rate on TIV	3%

CHANGE IN LAYER STRUCTURE

2014 Profile/2014 Layer

Building ID	TIV	% loss in layer	Loss cost in layer
1	55,000,000	0.00%	0
2	85,000,000	1.03%	26,371
3	125,000,000	3.15%	118,109
Total	265,000,000		144,480

2014 Profile/2015 Layer

Building ID	TIV	% loss in layer	Loss cost in layer
1	55,000,000	0.83%	13,686
2	85,000,000	5.41%	138,034
3	125,000,000	8.39%	314,483
Total	265,000,000		466,203

2015 Profile/2014 Layer

Building ID	TIV	% loss in layer	Loss cost in layer
1	55,000,000	0.00%	0
2	85,000,000	1.03%	26,371
3	125,000,000	3.15%	118,109
4	65,000,000	0.00%	0
5	45,000,000	0.00%	0
Total	375,000,000		144,480

2015 Profile/2015 Layer (incl Flood)

Building ID	TIV	% loss in layer	Loss cost in layer
1	55,000,000	0.83%	15,054
2	85,000,000	5.41%	151,838
3	125,000,000	8.39%	345,932
4	65,000,000	2.45%	52,594
5	45,000,000	0.00%	0
Total	375,000,000		565,417

Total change in risk exposure = 565,417/144,480 = 391.35%
Change due to L/D/A = 466,203/144,480 = 322.68%
Change due to coverage = 110% (flood)
Change due to TIV (other) = 565,417/(110% x 466,203) = 110.26%

Risk Adjusted Rate Change

Expiring premium	£200,000
Change due to L/D/A	322.68%
Change due to coverage	110.00%
Change due to other factors (TIV Change in layer)	110.26%
Risk Adjusted Expiring premium	£200,000 x 3.2268 x 1.10 x 1.1026 = £782,695
RARC = (Renewal Premium / Expiring Premium) RA	£665,000/£782,695 = 84.96% (15.04% rate reduction)
Renewal premium	£665,000

Questions