Uncertainty in an Underwriting Environment
Pricing, Capital and Reinsurance
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Beazley Specialty Lines

- Pricing support
  - Professional Indemnity
  - Medical Malpractice – Hospital
  - Treaty
  - Large Lawyers / specialists
  - Self insured retentions
    - Excess
    - Large dollar deductibles

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Pricing for Uncertainty in Excess Layers

- Lack of data in excess layer
  - Alternative data sources
  - Credibility
- Increased Limit Factors (ILFs)
  - Lack of large claims
  - Selection of appropriate ILF
  - Calculation

Link to ILF paper

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What is an ILF?

- Price of $1m limited policy $2,000
- Price of $2m limited policy $3,200
- ILF = $3,200 ÷ $2,000 = 1.6
Excess pricing – A Case Study

- A Healthcare Professional Liability insurer
  - 20,000 Occupied Bed Equivalents
  - 15 years of loss history (5000 claims, Max $8m)
  - Recent actuarial report on Loss & LAE reserves
  - 90 individual healthcare providers insured
  - Single state domicile

- Excess requirement
  - $20m xs $10m

Excess Pricing – An Approach

- Estimate Basic Limits Price per OBE e.g. $100k
- Determine appropriate ILF / Loss Distribution
- Estimate Excess Loss Cost

Excess Pricing – Basic Limits Costs

- Limited fluctuation
- Stable LDFs
- Responds to frequency more than severity
- Listed in most Healthcare actuarial reports
- Underwriters understand this cost
Excess Pricing – Understanding the risk

- Loss history credible
  - 5,000 claims
  - 98 healthcare providers
- BUT
  - 3 healthcare providers are Paediatric hospitals

Excess Pricing - Paediatrics

- Paediatrics
  - 8.5% of OBE but only 1.7% of count claims
  - Lower frequency – larger severity

Excess Pricing - ILFs
Excess Pricing – The calculation

<table>
<thead>
<tr>
<th></th>
<th>Non Paed</th>
<th>Paed</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Basic Limits Loss Cost</td>
<td>$8.0m</td>
<td>$0.9m</td>
</tr>
<tr>
<td>(b) ILF</td>
<td>0.10</td>
<td>1.67</td>
</tr>
<tr>
<td>Tot (a &amp; b)</td>
<td>$0.8m</td>
<td>$1.5m</td>
</tr>
</tbody>
</table>

Excess Pricing – End Result

- Ignoring Paediatrics
  - $0.9m loss cost
- Including Paediatric assumptions
  - $2.3m loss cost

Excess Pricing - Uncertainty

Summary
- Homogenous data required
- Understand the risk
- Get complimentary data
Excess Pricing - Conclusion

- Actuarial techniques powerful,
  BUT
- One must know where the areas of uncertainty are and how best to sail through them

Underwriting link to capital

<table>
<thead>
<tr>
<th>Risk</th>
<th>Scorecard approach</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market cycle</td>
<td></td>
<td>Upper 133%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40%</td>
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<tr>
<td></td>
<td></td>
<td>62%</td>
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<td>22%</td>
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<td>Plan 71%</td>
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</table>

Reserve strength

- Reserve strength Risk appetite = X% to Y%
Catastrophe risk appetite

Where does the uncertainty in reinsurance purchase exist?

1. In the claims the reinsurance is being bought to cover
2. Possibly in the reasons behind the reinsurance purchase
3. Possibly in whose objectives it’s being bought to cover – Group v Business units
4. In the pricing achievable/availability in the reinsurance market

Uncertainty in the claims being covered

Is it more likely that you’ll have at least 2 claims or that you’ll have less than 2 claims?
2. Uncertainty in reason for purchase

Likely to be trying to satisfy many objectives which can conflict.

- It keeps losses in check
- Improves return on capital
- Required to meet RDS requirement of 20%
- Stamp
- More likely to meet my PRP
- Keeps me in line with peers
- It seems good value for money
- If I've got it all wrong it'll save me
- More likely to meet my PRP
- Rating

2. Measuring Objectives

- Improves chance of making a profit – PRP?
- Does it really improve the tail enough to justify the cost?
- Does it really improve the tail enough to justify the cost?

2. Objectives need to be prioritised if there is conflict

1. Required to meet RDS requirement of 20% stamp
2. More likely to meet my PRP
3. It seems good value for money
4. It keeps losses in check
5. Inertia
6. Keeps me in line with peers

Rating

Inertia

3

4

5

6

2
3. Uncertainty in Group v Business Unit

Both have objectives to meet but these objectives conflict:

- 3 courses of action
  1. Satisfy the Group requirements only
  2. Satisfy the business unit only
  3. Set up a framework to satisfy them both

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4. Uncertainty in achievable price of reinsurance

<table>
<thead>
<tr>
<th>High Reinsurance Cost</th>
<th>Low reinsurance cost</th>
<th>Deal can be done</th>
<th>Pricing overlap</th>
</tr>
</thead>
<tbody>
<tr>
<td>No deal</td>
<td></td>
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<tr>
<td>Price range insurer will execute the deal at</td>
<td>Price range reinsurer will execute the deal at</td>
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Negotiations begin:
- Assumptions
- Terms & conditions
- Leverage
- Other quotes received

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Summary

- Simple linked processes
- Evolving
- …