



# Risk Margins in General insurance



Davies Financial and Actuarial Limited

- **NZ IFRS 4:**
- **“The outstanding claim liability includes, in addition to the central estimate of the present value of the expected future payments, a risk margin that relates to the inherent uncertainty in the central estimate of the present value of the expected future payments.”**
- **(similar words in Liability Adequacy test for unearned premiums)**



## Sample NZ risk margins

| Insurer | Risk Margin | Likelihood of sufficiency |
|---------|-------------|---------------------------|
| AA      | 5.9%        | 90%                       |
| ACE     | 22.5%       | 80%                       |
| Allianz | 16%         | 75%                       |
| AMI     | 13.9%       | 80% - 90%                 |
| FMG     | 10.1%       | 75%                       |
| IAG     | 11.5%       | 87.5%                     |
| Lumley  | 1.4%        | 85%                       |
| Medical | 17.8%       | 80%                       |
| Tower   | 15% - 20%   | 75%                       |
| Vero    | 31.7%       | 94%                       |



## Australian claim risk margins (after diversification) – APRA survey 2008

| <b>Class</b>           | <b>Average RM %<br/>(weighted)</b> | <b>Standard Deviation<br/>%</b> |
|------------------------|------------------------------------|---------------------------------|
| House / contents       | 5.6%                               | 2.0%                            |
| Private Motor          | 5.6%                               | 2.1%                            |
| Commercial motor       | 7.1%                               | 3.1%                            |
| Travel                 | 7.7%                               | 1.9%                            |
| Commercial Fire        | 8.5%                               | 3.7%                            |
| Marine                 | 9.5%                               | 9.5%                            |
| Aviation               | 5.8%                               | 4.4%                            |
| Mortgage               | 9.5%                               | 6.2%                            |
| Consumer Credit        | 8.2%                               | 5.9%                            |
| Other accident         | 8.2%                               | 3.6%                            |
| CTP                    | 9.3%                               | 2.0%                            |
| Public liability       | 11.2%                              | 6.9%                            |
| Professional indemnity | 13.7%                              | 7.1%                            |
| Employer liability     | 12.5%                              | 4.6%                            |

**Australian premium risk margins (after diversification) – APRA survey  
2008**

| <b>Class</b>           | <b>Average RM %<br/>(weighted)</b> | <b>Standard Deviation<br/>%</b> |
|------------------------|------------------------------------|---------------------------------|
| House / contents       | 8.8%                               | 3.1%                            |
| Private Motor          | 7.0%                               | 3.7%                            |
| Commercial motor       | 9.1%                               | 4.4%                            |
| Travel                 | 6.8%                               | 4.8%                            |
| Commercial Fire        | 13.0%                              | 8.7%                            |
| Marine                 | 12.3%                              | 6.7%                            |
| Aviation               | 5.8%                               | 2.0%                            |
| Mortgage               | 18.5%                              | 8.3%                            |
| Consumer Credit        | 14.5%                              | 12.4%                           |
| Other accident         | 12.3%                              | 5.3%                            |
| CTP                    | 12.3%                              | 3.0%                            |
| Public liability       | 12.6%                              | 6.7%                            |
| Professional indemnity | 17.0%                              | 8.7%                            |
| Employer liability     | 11.7%                              | 5.4%                            |

**Bateup and Reed margins (\$50m) – BEFORE diversification, vs. APRA survey**

| <b>Class</b>                  | <b>Margin (\$50m short-tail, \$100m long-tail)</b> | <b>APRA survey</b> |
|-------------------------------|--|--------------------|
| <b>House / contents</b>       | <b>9.3%</b>  | <b>5.6%</b>        |
| <b>Private Motor</b>          | <b>8.0%</b>  | <b>5.6%</b>        |
| <b>Commercial motor</b>       | <b>8.8%</b>  | <b>7.1%</b>        |
| <b>Travel</b>                 | <b>9.3%</b>  | <b>7.7%</b>        |
| <b>Commercial Fire</b>        | <b>9.8%</b>  | <b>8.5%</b>        |
| <b>Marine</b>                 | <b>12.5%</b>                                       | <b>9.5%</b>        |
| <b>Aviation</b>               | <b>12.5%</b>                                       | <b>5.8%</b>        |
| <b>Mortgage</b>               | <b>13.5%</b>                                       | <b>9.5%</b>        |
| <b>Consumer Credit</b>        | <b>11.7%</b>                                       | <b>8.2%</b>        |
| <b>Other accident</b>         | <b>10.3%</b>                                       | <b>8.2%</b>        |
| <b>CTP</b>                    | <b>15.3%</b>                                       | <b>9.3%</b>        |
| <b>Public liability</b>       | <b>12.7%</b>                                       | <b>11.2%</b>       |
| <b>Professional indemnity</b> | <b>12.7%</b>                                       | <b>13.7%</b>       |
| <b>Employer liability</b>     | <b>12.7%</b>                                       | <b>12.5%</b>       |

## **Premium liability risk margins:**

### **Bateup and Reed:**

|                             |  |
|-----------------------------|--|
| <b>Short-tail business:</b> | <b>1.75 x claim liability risk margin (for liabilities of the same size)</b> |
| <b>Long-tail business:</b>  | <b>1.25 x claim liability risk margin</b>                                    |



**Diversification discount (Bateup and Reed):**

$$51\% \times (1 - 0.5 \times C)$$

$$+ 2.4\% \times N \text{ (if } N > 2)$$

$$- 0.139\% \times S \text{ if } S < \$550\text{m}$$

$$- .0013\% \times S - 7.0\% \text{ if } S \geq \$550\text{m}$$

**Where:**

**C = coefficient of concentration**

$$= \frac{\text{Net insurance liability for largest line of business (\$)}}{\text{Total net insurance liability (\$)}}$$

**N = number of lines of business**

**S = total insurance liabilities in \\$m**



## Items for possible discussion:

**Methodologies:** Rely on technical papers  
(Bateup & Reed , Collings & White, merits?)  
Mack / “Bootstrap” / Other

## Diversification approaches

Australian General Insurance conference feedback, taskforce on risk margins

Claim risk margins vs. premium risk margins – no need to be the same basis?

Tax – current position with tax bill before parliament

ACC partnership programme valuations – use ACC’s margin or individual scheme’s margin?



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