Capital Requirements for Risk Business Risk Margins

Risk Capital Taskforce

Purpose of this Session

- Outline proposed framework
- Simple examples
- Discuss key issues & seek feedback
- Next steps

Risk Capital Taskforce
Terms of Reference

- Established by Life Insurance Wealth Management Practice Committee (LIWMPC)
- Review the capital requirements for protection business
- Review annuitant mortality basis - out of scope for this presentation

Work Split into Two Parts

1. Review the use of minimum termination values (MTV/CTV) – Insights Oct ’07
2. Review mortality and morbidity margins in LPS 2.04 & LPS 3.04

CTV / MTV – Recap

- Insights session (Sept ’07) discussed 4 options
- Feedback from Insights sessions was strongly in favour of Options 2 (below) or Option 4 (do nothing)
- Taskforce recommend Option 2

  Cap Ad max of:

  Prospective liability with margins, and

  CTV (without margins)

- To be applied at a Category (Par/Non Par level)
- CTV test consistent with the extreme Stress Test

IFSA Task Force

- IFSA relying on Institute Task Force to review capital requirements
- IFSA Task Force reviewing types of capital used to back risk business
  - DAC cannot be covered by sub-debt
  - Equity main source of funding
  - Inconsistent with international practice

Starting Point

Capital Adequacy margins designed to meet a 1 in 400 year event

- over the next 12 months
- at a statutory fund level
- Solvency 1 in 200

Risk Margins
5 Step Framework

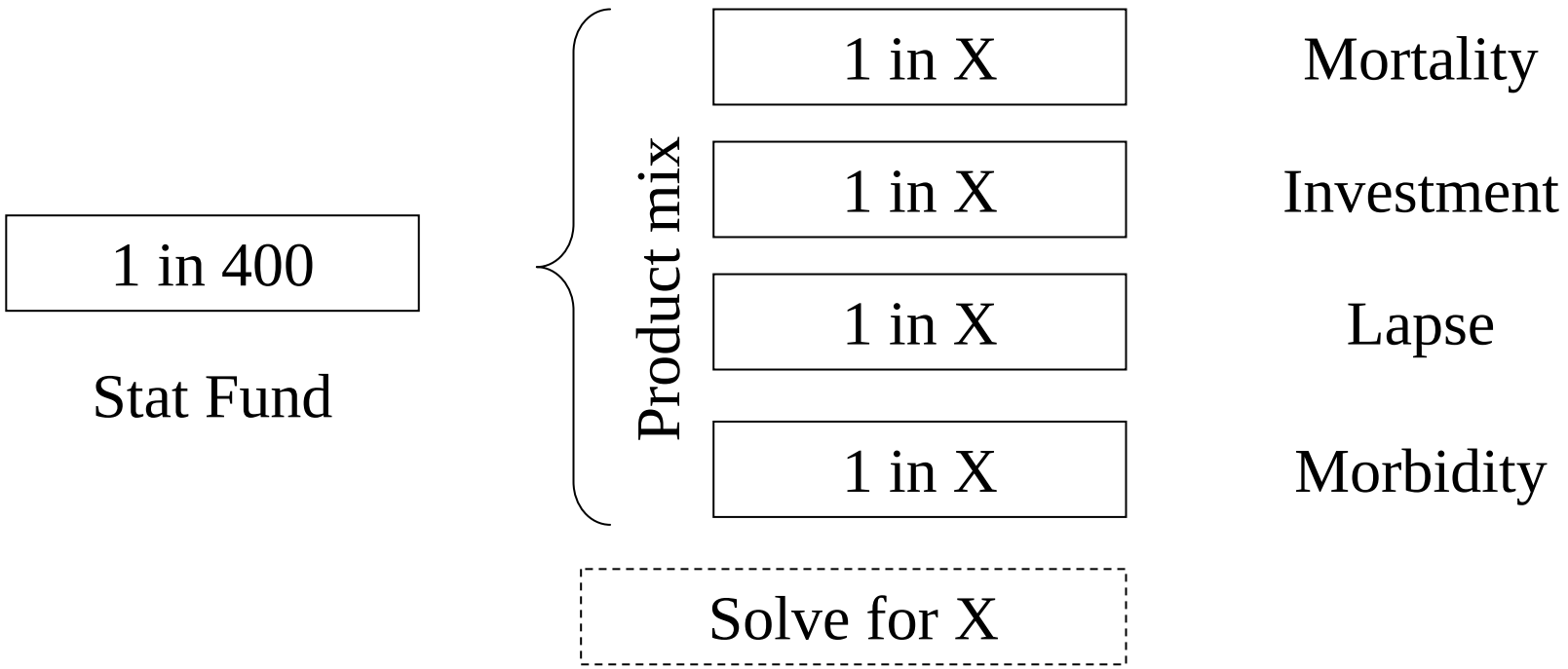
1) Identify material risks
2) Set individual risk confidence levels
3) Quantify individual risk margins
4) Consider the base to use
5) Consider extreme shock events

Step 1
Identify Mortality & Morbidity Risks

- Statistical fluctuation
- Trend risks
- Concentration risk
- External shocks
- Estimation risk

Step 2 – Set individual risk confidence levels

- Determine the required level of capital sufficiency for each risk



Individual Capital Sufficiency for Different Product Mixes

	Death Only	Risk Only	Risk & Trad	Risk, Trad & Annuities
Solvency	3.3%	4.1%	4.7%	5.0%
Cap Ad	2.2%	2.9%	3.4%	3.7%

Recommendations for "X"

	Current Standards	Our View
Solvency	5%	5%
Cap Ad	1%	3%

Diversification: individual risks @ 3% level convert to 1:400 when combined.

Step 3 – Quantify Individual Risks

- Split into:
  - mis-estimation of the mean
  - trend uncertainty
  - statistical fluctuation

- Based on 3% (1 in 33.3) sufficiency (Cap Ad)

Total Risk Margins

	Trend Uncertainty (ongoing)	Mean Uncertainty (ongoing)	Statistical Fluctuation (1 year)	Minimum Risk Margin (ongoing)
Mortality – Term	Low (5%)	Low (5%)	15%+	15%+
Mortality – Group	Med (10%)	Med (15%)	15%+	25%+
TPD – Term	Med (15%)	Med (10%)	30%+	30%+
TPD – Group	High (20%)	Med (15%)	30%+	40%+
Trauma – Term	High (20%)	Med (10%)	25%+	35%+
DI	High (20%)	Med (15%)	30%+	40%+
GSC	High (25%)	High (20%)	25%+	45%+

One year Statistical fluctuation is converted into an ongoing margin

Assumes 50% correlation

Solvency

- Solvency follows similar principles to Cap Ad
- No longer on prescribed assumptions
  - Except for companies without credible best estimate assumptions
- Solvency margins 85% of Cap Ad margins
  - Simple approach
  - Based on normal distribution

Step 4 - Base Assumptions

- Methodology based on applying margins to best estimate assumptions

Step 5 – Extreme Shock Events

- Steps 1-4 exclude severe external shock
- International trend is to allow for Pandemics (Solvency II & UK Internal Capital Assessments)
- Impossible to predict
- Used Pandemic as a proxy
  - 1.7 per mille SI (Cap Ad)
  - 1.0 per mille SI (Solvency)
- Applied similar loading on Disability Income
- Capital based on greater of Lump sum and DI

Determination of Margins: An Example

Mortality margin for a medium sized insurer:

1. Identify significant mortality risks
2. Consider diversification
3. Quantify margins identified

Determination of Margins: An Example

2. Consider diversification

   a) Stat Fund includes all types of risk cover, but no other products

	Death Only	Risk Only	Risk & Trad	Risk, Trad & Annuities
Solvency	3.3%	4.1%	4.7%	5.0%
Cap Ad	2.2%	2.9%	3.4%	3.7%

	Current Standards	Our View
Solvency	5%	5%
Cap Ad	1%	3%

Determination of Margins: An Example

3. Quantify margins identified –

   Mis-estimation of Mean

   a) Company conducts it's own experience investigation using 3 years of data (150 claims)

   b) Also uses information from reinsurers and industry studies to help set rates

   -> 5% (base) + 5% (company specific)

	Mean Uncertainty	Trend Uncertainty	Statistical Fluctuation	Minimum Risk Margin
Mortality – Term	Low (5%)	Low (5%)	15%+	15%+

Determination of Margins: An Example

3. Quantify margins identified –

   Trend Uncertainty

   a) Subjective

   b) Not necessarily size dependent, but size has implications for identification period

   c) Company has recently increased u/w limits

   -> 5% (base) + 5% (company specific)

	Mean Uncertainty	Trend Uncertainty	Statistical Fluctuation	Minimum Risk Margin
Mortality – Term	Low (5%)	Low (5%)	15%+	15%+

Determination of Margins: An Example

3. Quantify margins identified –

   Statistical Fluctuation

   a) 30,000 lives

   b) Reinsure everything over $250K (approx normal distribution)

   -> 15% (base) + 15% (company specific)

	Mean Uncertainty	Trend Uncertainty	Statistical Fluctuation	Minimum Risk Margin
Mortality – Term	Low (5%)	Low (5%)	15%+	15%+

Determination of Margins: An Example

3. Quantify margins identified – Result

	Mean Uncertainty	Trend Uncertainty	Statistical Fluctuation	Minimum Risk Margin
Mortality – Term	Low (5%)	Low (5%)	15%+	15%+
Medium Life Insurer	10%	10%	30%	30%

One year Statistical fluctuation is converted into an ongoing margin

Impact of Changes on Capital - (1)

Capital Adequacy Margins

	Current	Proposed
YRT Term	**YRT Term**	
Death	20%	15%
TPD	25%	30%
CI	40%	35%
Average	**23%**	**19%**

	Current	Proposed
Group Life	**Group Life**	
Death	20%	25%
TPD	25%	40%
CI	25%	40%
Average	**22%**	**30%**

	Current	Proposed
Disability	**DI & GSC**	
DI	40%	40%
GSC	30%	45%
Disabled Life Res	20%	20%

Impact of Changes on Capital - (2)

Product	Current Capital Adequacy					Proposed Capital Adequacy				
	Prem	Margin CAL / IBNR / DLR	Capital on CTV	Capital on CAL	Final Capital	Margin CAL only	Capital on CTV	Capital on CAL	Capital for Pandemic	Final Capital
YRT Term	100	23%	60	-39	60	19%	52	-47	-22	
Group Life	50	22%	9	17	17	30%	-0	28	55	
DI	30	40%	14	71	71	40%	-23	71	29	
GSC	15	30%	17	21	21	45%	2	26	15	
Total	195		101	70	169		31	78	44	78

Margins on IBNR, DLR

No margins on IBNR, DLR

Higher of lump sum & DI pandemic

Take highest of 3 amounts at Category level

Points for Discussion

- Use of internal models
- Grouping at a category level
- Solvency no longer on a prescribed basis
- Solvency margins 85% of Cap Ad margins
- Stress test & its application
- Any other comments

Next Steps

• Feedback from FS Forum	20 May
• Written feedback on risk margins	15 June
• Review feedback and submit to LIWMPC	30 June
• Annuity recommendations to LIWMPC	31 Aug
• Report to APRA	30 Sept

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Appendices

Relative Standard deviations

Product Mix within the Statutory Fund

	Term Only	Risk Only	Risk & Trad	Risk, Trad & Annuities
A. Mortality	100	100	100	100
B. Market	25	25	50	75
C. Morbidity	0	100	100	100
D. Business	50	60	70	80
Total	175	285	320	355

Correlation Table by Risk Type

Risk Type	A. Mortality	B. Market	C. Morbidity	D. Business
A. Mortality	1.0	0.0	0.3	0.2
B. Market	0.0	1.0	0.3	0.2
C. Morbidity	0.3	0.3	1.0	0.2
D. Business	0.2	0.2	0.2	1.0

Mis-estimation of the mean

Depends on

- Quality of experience investigation
  - (Number of lives, quality of data) => margin 5%+
- Systemic variability in population => ?%+

Trauma, TPD & DI:

- Trauma & TPD generally higher than mortality
- Disability income higher due to complexity of benefit features, rating factors etc.

Trend Risk

Product	Risk Category	Reasoning for Risk Category	Implied Margin
Term – mortality	Low		5%
Term – TPD	High	Economic cycle	15%
Term – Trauma	Very High	Medical advances	20%`
Disability Income	Very High	Unemployment , behavioural changes. Long claim durations	20%
Group Business	Low to Very high	Workplace safety, moral hazard	Individual Margin + 5%

Statistical Fluctuation

- Simple stochastic model
- Probability of death modelled as binomial dist.
- 1,000 random results
- Various sum insured distributions used
- Various levels of reinsurance investigated
- Cap Ad results based on 97 percentile

CTV / MTV - Recap

Insights session (Sept ’07) discussed 4 options:

Option 1 - Max of:

- Prospective liability with margins, and
- Prospective liab on a distressed sale basis with risk margins on remaining business

Option 2 – Max of:

- Prospective liability with margins, and
- CTV (without margins)

CTV / MTV – Recap

Option 3 - Max of:

- Prospective liability with margins, and
- Prospective liab on a distressed sale basis with risk margins on remaining business
- CTV (without margins)

Option 4 – Current basis – Max of:

- Prospective liability with margins, and
- CTV (with margins)