The Actuarial Profession
making financial sense of the future

"A Whole New World.."

Or Implications for Life Insurers of CP06/16 on the Risk
Management and Pricing of Term Assurance

Discussion points

- CP06/16: what do the changes mean?
- Existing balance sheet
- Survey of reserving bases
- New Business: Implications for Pricing
- New Business: Risk and capital
- Competition

The Actuarial Profession
making financial sense of the future

CP06/16: Impact

- Affect 160 non-profit and with-profit offices
- Reduction in mathematical reserves of £4bn!!

The Actuarial Profession
making financial sense of the future

CP06/16: Proposed Changes

- "setting technical provisions for expenses not directly attributable to one particular contract at a homogeneous risk group level and not at an individual contract level for all non-profit business."
- "recognizing the economic effect of making a prudent lapse rate assumption within technical provisions for all classes of long term business."
- "changing the calculation of technical provisions for all long term business to allow contracts that do not include guaranteed surrender values in the contract wording to be valued as assets."

The Actuarial Profession
making financial sense of the future

CP06/16: FSA principles

- Best estimate plus risk margin
- Margin for adverse deviation > Market price for that risk
- Generate sufficiently high technical provisions to enable firms to transfer their life protection liabilities to a third party

The Actuarial Profession
making financial sense of the future

Existing balance sheet

- Reserve reductions
  - Tax implications
- Pillar 1 Capital reduction

The Actuarial Profession
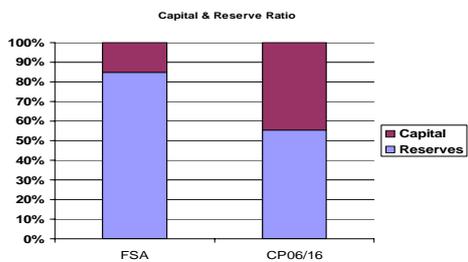making financial sense of the future

Pillar I Capital

- **Insurance Death Risk Capital Component:**
  - 0.3% x max(50%x gross sums at risk, net sums at risk)
- **Insurance Expense Risk Capital Component**
  - 1% x max(85% x gross mathematical reserves, net mathematical reserves)
- **Insurance Market Risk Capital Component**
  - 3% x max(85% x gross mathematical reserves, net mathematical reserves)

The Actuarial Profession
making financial sense of the future

Existing balance sheet

- Reserve reductions
  - Tax implications
- Pillar 1 Capital reduction
- Impact on Pillar 2
- Overall effect …

The Actuarial Profession
making financial sense of the future

Capital & Reserve Ratio

Capital & Reserve Ratio

Legend: ■ Capital, □ Reserves

Categories: FSA, CP06/16

The Actuarial Profession
making financial sense of the future

Survey of reserving bases:

- CP06/16 margin under current FSA:
  - Mortality: 5 -10%
  - Morbidity: 10 - 20%
- Persistency: average lapse rates: 9 -12%

➢ Mix of opinion: 50% or more / 20% or less

Discussion

- Will you be incorporating CP06/16 in your 2006 valuation?
- What reserve reductions are you expecting?
- How will you determine MVM?

New Business: Pricing implications

- Large QS enable life cos to use reinsurers' reserving bases to price their business
- CP06/16: will allow insurers to do all of this on their own balance sheet on 100% of the business
- Only difference is the (I – E) taxation basis = which is positive

➢ Survey Straw Poll: 0-10% price decrease

Discussion

- Will you be incorporating CP06/16 into your pricing programs?
- Technically, what sort of price reduction is justified?

The Actuarial Profession
making financial sense of the future

New Business: Risk and capital

- FSA: "..Pillar I capital requirements set in excess of minimum standards required by LAD and at a level where costs do not justify the benefits they bring.."

The Actuarial Profession
making financial sense of the future

Pillar II Capital: ICA

- Insurance risk
- Credit risk
- Market risk
- Liquidity risk
- Operational risk
- Group risk

The Actuarial Profession
making financial sense of the future

Insurance Risk

Parameter Risk
- Risk of Error
- Risk of Change
- Random Risk
  - Volatility
  - Catastrophe

The Actuarial Profession
making financial sense of the future

Parameter Risk

- Risk of Error:
Deviation of actual versus expected because the estimation of the distribution function of the total claims cost was incorrect
- Risk of Change:
The distribution function of the total claims cost might change after the initial estimation

Risk of Error and Risk of Change are proportional to the size of the portfolio

The Actuarial Profession
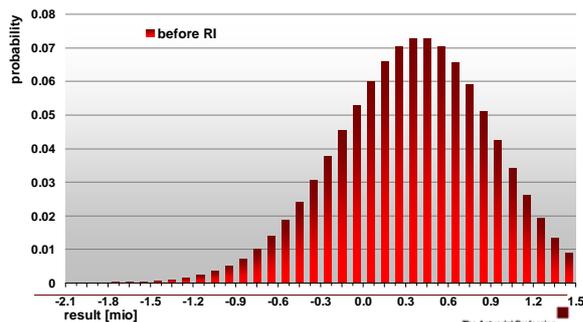making financial sense of the future

Random Risk

Volatility risk: independent risks
Variation of actual experience around the expected value of the total claims cost
Extreme Event or Catastrophe Risk: dependent risks
Unexpected accumulation of claims compared to the expected value of the total claims cost

The Actuarial Profession
making financial sense of the future

Volatility Risk

- Example: **Term Insurance**
  - Lump sum payment in case of death
  - 10,000 Insured ; Sum insured 100,000; qx = 0.003; margin 10%
  - Normal distributed random variable
  - Actual number of claims vary around expected number
  - There is a 2.5% chance that the actual result is worse than -£900,000.

The Actuarial Profession
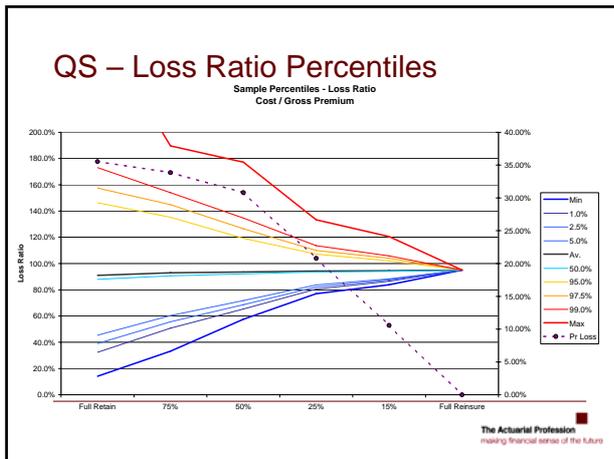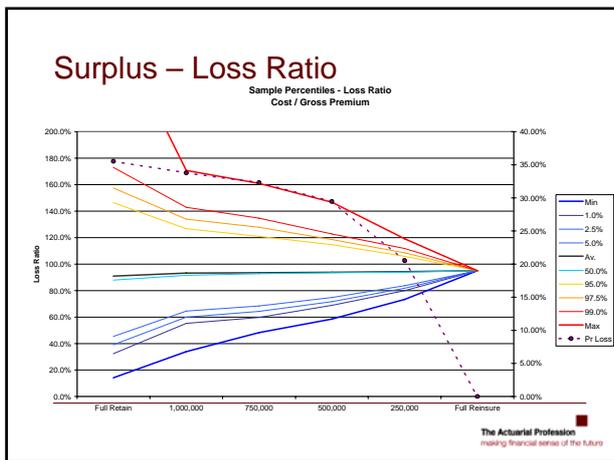making financial sense of the future

Volatility Risk

The Actuarial Profession
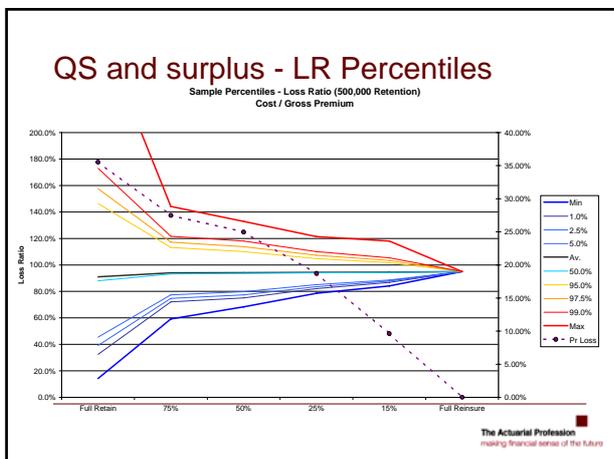making financial sense of the future
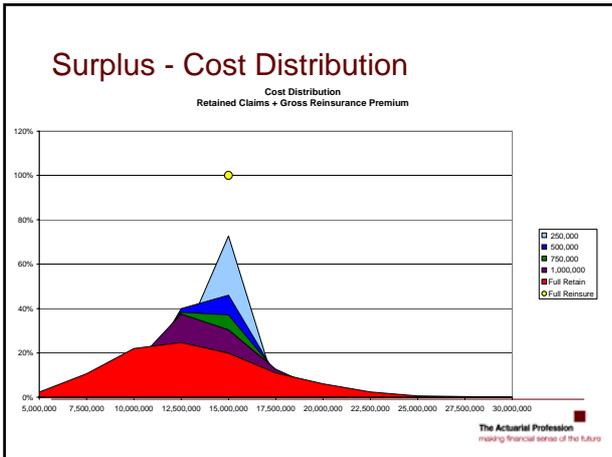
Extreme Event or Catastrophe Risk

- Natural catastrophes and larger accidents (e.g. airplane crash)
- Pandemics
- Accumulation risk
- Unknown accumulation
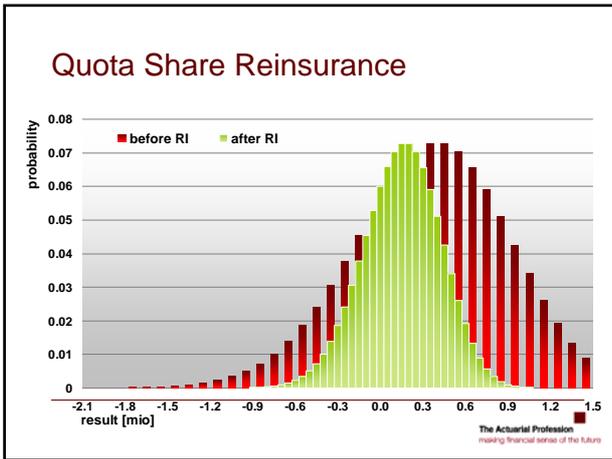- Density of insurance and market share

The Actuarial Profession
making financial sense of the future

Last update: 02/2006		**Fatalities in the last 15 years**														
		Note: fatalities and hull losses unrelated to traffic amount / Foreign aircraft accidents included.														
COUNTRY	**TOTAL Fatalities**	grey = 0 - 19; blue = 20 - 49; orange = 50 - 99; red = 100 and more														
	last 15 years	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991
EUROPE (all countries)	1725	142	2	221	23	146	127	74	28	70	200	112	103	211	229	37
Austria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No of hull losses >>	3	0	0	0	0	0	1	0	1	0	0	1	0	0	0	0
Belgium	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No of hull losses >>	2	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
Bosnia Herzegovina	7	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0
No of hull losses >>	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
Czech Republic	2	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
No of hull losses >>	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
France	237	0	2	1	0	0	117	0	15	0	0	0	11	4	87	0
No of hull losses >>	21	0	1	1	0	0	4	4	1	1	0	0	3	3	2	1
Germany	99	0	0	71	0	0	0	0	0	0	0	0	0	0	0	28
No of hull losses >>	9	1	1	3	1	1	0	0	0	0	0	0	0	0	0	2
Greece	198	121	0	0	0	0	0	0	0	70	0	0	0	7	0	0
No of hull losses >>	8	1	0	0	0	0	1	2	0	3	0	0	0	1	0	0
Hungary	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
No of hull losses >>	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Ireland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
No of hull losses >>	2	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
Italy	191	19	0	0	0	118	0	4	0	0	5	45	0	0	0	0
No of hull losses >>	12	2	0	0	0	3	0	2	1	1	2	1	0	0	0	0

Source: JACDEC Jet Airliner Crash Data Evaluation Centre

How should these risks be managed?

- When is what type of risk-sharing appropriate?

Exercise

- We recently conducted an exercise with a client to examine the effect of various reinsurance levels on their volatility
- Client's actual portfolio
- Monte-Carlo simulations
- Effect of
  - Quota Share
  - Surplus
  - Combination

QS – Loss Ratio Percentiles

Surplus – Loss Ratio

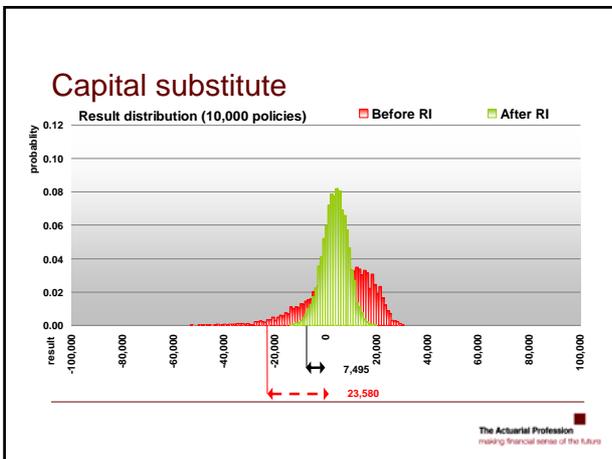QS and surplus - LR Percentiles

Reinsurance decision

- Risk appetite
  - Mortality
  - Morbidity
  - Income Protection
  - Long term guarantees
  - Persistency
- Structure: risk premium or level premium
- Structure: QS, QS + surplus, Surplus
- Capital: availability and return

The Actuarial Profession
making financial sense of the future

Discussion

- Will reinsurance buying change?
- What risks will life insurers retain:
  - More of?
  - Less of?
- Are returns on capital from term assurance more attractive than other lines?

The Actuarial Profession
making financial sense of the future

Operational Risk

- Underwriting execution risk
  - Quality
  - Process
  - Technology
- Claims management risk
  - Support

The Actuarial Profession
making financial sense of the future

Liquidity risk

- No more capital or reserving strains
- Large upfront commissions + set up costs
- There will be liquidity strains!!
  - Securitisations
  - Cashless reinsurance
  - Insurance Special Purpose Vehicles

The Actuarial Profession
making financial sense of the future

Competition

- Lower capital requirements:
  - No constraints on growth of the bigger players
  - No barriers to entry for big European players ?

The Actuarial Profession
making financial sense of the future

Conclusion

- Reserve reductions
- Reserve + capital neutral on ICA basis
- Price reduction possibilities
- Risk + Capital based reinsurance buying

The Actuarial Profession
making financial sense of the future

Contact

Jules Constantinou – Gen Re Life UK Ltd
E mail: jules.constantinou@genre.com
Office: +44 20 7426 1829

The Actuarial Profession
making financial sense of the future