

GI in a GFC World

General Insurance Impacts of the Global Financial Crisis



Institute of Actuaries of Australia

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Valuation assumptions

Discount rates

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Discounted value of liabilities

- Economic value or regulatory value?
- Let's start with economic

Financial economics

- What is the economic value of a set of liabilities?
- Various **equivalent** approaches, including:
 - Expected cash flows discounted at **CAPM** rates
 - Expected **risk neutral cash flows** discounted at risk free rates
 - Value of **replicating portfolio** of assets

CAPM

$$r_L = r_F + \beta_L [r_M - r_F]$$

Liabilities
discount rate

Risk free
discount rate

Liabilities
beta

Expected share
market return

$$\beta_L = \text{Cov}[L, M] / \text{Var}[r_M]$$

- Discounting expected liabilities at risk free rate involves implicit assumption that they are not correlated with share market returns

CAPM (cont'd)

- If liabilities positively (negatively) correlated with economy, then
 - Liabilities beta is greater (less) than zero
 - Value of liabilities is less (greater) than value at risk free discount rates
- e.g. PI liabilities may be negatively correlated
 - Discount rate below risk free
- Regulatory requirements of risk free rates assume no correlation

Replicating portfolio of assets

Asset cash flows ^d = liability cash flows
(equal in distribution)

Value of liabilities = value of assets

- If liabilities beta is zero, then (for valuation purposes)
 - Liabilities may be treated as if risk free
 - Replicating portfolio may consist of risk free assets
 - Though note that zero beta does not imply risk free

The Life Insurance approach

- See
 - IIAust Life Insurance & Wealth Management Practice Committee (2008). Information Note: Risk-free Discount Rates under AASB 1038
- Basic argument
 - High liquidity of Commonwealth Government bonds increases demand for them (relative to other fixed interest vehicles) and lowers their yields anomalously
 - Or, equivalently, the lower liquidity of the other vehicles drives their yields up



The Life Insurance approach (cont'd)

- Equivalent form of the argument
 - Replicating portfolio may consist of either:
 - Cash flow matched CGBs (risk free); or
 - Cash flow matched corporate bonds (risky) plus credit default swaps (CDSs) to eliminate risk
 - The cost of the latter replicating portfolio will be less than the cost of the former
 - Equivalent to valuing liabilities at discount rates above risk free
- Academic research indicates considerable merit in this argument



Construction of a replicating portfolio

- Achievability?
 - Availability of corporate bonds of required terms to maturity?
 - Availability of CDSs of required terms to maturity?
 - Effectiveness of CDSs?
 - Counter-parties AA at most, not risk free
- If replicating portfolio is not achievable, we need to construct it hypothetically using financial instruments that do not exist in the real world
 - Contrast with use of CGBs
- Is this acceptable as a basis for such a fundamental process as liability valuation?