Insurance [Education Session]

IASB Board Meeting – January 2008
Agenda Paper 3
Notes for Observers

The Discussion Paper Preliminary Views on Insurance Contracts proposed three building blocks for use in measuring insurance liabilities. One of those building blocks is a margin. Representatives of Ernst & Young will brief the Board on a recent report performed by Ernst & Young at the request of the Group of North American Insurance Enterprises. The report examines one approach to determining margins (the cost of capital method) in two specific contexts:

- General purpose financial reporting purposes
- Regulatory capital standards

Summary of Risk Margins Research

Discussion With IASB

23 January 2008

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What is GNAIE?

- GNAIE is an industry organization of US, Bermudian and Canadian based insurers.

- The mission of the GNAIE is to assist North American and global standard setters and regulators in cooperation with the global insurance industry and with insurance and other financial services industry trade associations:
  - To support high quality insurance accounting standards that are useful, understandable, comparable and reliable; that preserve the insurance industry's level-playing field access to global capital markets; and that provide good disclosure to the insurance industry's diverse constituencies;
  - To support high quality insurance solvency standards that provide useful and effective statutory solvency measures to protect the interests of policyholders and other stakeholders while encouraging competitive insurance markets; and
  - To enhance cooperation, education and communication regarding insurance accounting and solvency among the insurance industry's standards setters, regulators, and diverse constituencies.

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GNAIE Member Companies

Travelers

The Importance of Risk Margins

- Fair value/current value liabilities are a central component of proposals for insurance liability valuation and required capital
- Market value margins (MVM's) or risk margins are critical for the proper determination of the fair value of liabilities with mortality, lapse, morbidity and non-life exposures
- Emerging required capital measurement methods:
  - Measure available capital with both assets and liabilities at fair value
  - Set minimum capital requirements based on the change in fair values in a distressed situation, over a one year time frame; current and 'post-distress' fair values are both critical

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Recognizing the Importance of Appropriately Measuring Risk Margins, Our Objectives Were To…

- Examine proposed methods for estimating risk margins for insurance products
- Assess the practical implications of estimating risk margins
- Consider whether current measurement principles and emerging practices were adequate for consistent implementation across risks, products and companies
- Identify additional research to support appropriate and consistent application

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Research Scope Did Not Include Several Key Issues

- The use of a one-year time horizon for measuring risk for required capital purposes
- The pros and cons of exit value, entry value or other specific measures of the liability
- The specific manner in which risk margins can be calibrated in the absence of observable market prices
- Various other matters, including the effects of risk diversification, recognition of own credit standing, and constraints on recognizing expected policy cash flows

Summary of Research - Methodology

- While various methods can be used to set risk margins, the cost of capital (CoC) method has emerged as the most widely supported approach
  - It is intuitive and easy to understand
  - It is similar to methods currently used by insurers and reinsurers to price insurance risks
- CoC method is intended to produce liability values that are consistent with market prices for insurance risk
- As with all “mark to model” valuation methods, its validity depends on the ability to calibrate model parameters and results

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Summary of Research – Methodology (Cont'd)

- CoC methodology has three principal components
  - Initial capital balance assigned to support the risks in the business
  - Estimation of corresponding capital amounts in each future year of the run-off of the liability
  - The required rate of return on capital, i.e., the CoC rate in the MVM calculation
- The values of these components will determine whether adding the MVM to the Best Estimate Liability (BEL) will produce a fair value liability estimate that is "market consistent"
- The report considers each component in the context of achieving results that are market consistent

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Summary of Research - Calibration

- For insurers, observable prices for insurance liabilities are insufficient for adequate calibration
- This suggests that comparing the components of the CoC method to companies' product and/or transaction pricing practices might produce information useful for calibrating these components
- This would facilitate decisions about how each component should be recognized to assure the liability estimate is market consistent

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Summary of Research – Initial Capital

- Various methods for defining the initial capital allocation exist; the report explores two common measures
  - One-year measure, which measures the potential impact of severe risk events occurring in the next year, including their long term consequences
  - Ultimate measure, which measures the potential impact of severe risk events occurring throughout all future years of the liability
- Subsequent to completing the report, a third method was added which measures the effect on the liability of a sudden and permanent change in an experience element
  - This is used in some EC applications and is referred to as measuring the effect of a 'shock event'
- Each method typically generates a different initial capital amount and different pattern of forecasted future expected required capital; see following slide for illustrative amounts

Summary of Research – Initial and Forecasted Capital

Methods Illustrated

- 5 Yr Term
  - One year – measures the change in the BEL due to mortality costs in excess of expected for the single year indicated, at the 99.5% confidence level
  - Ultimate – measures the change in the BEL due to mortality costs in excess of expected for all future years, at the 99.5% confidence level, assuming independent annual experience
  - Shock – measures the change in the BEL due to the use of 120% of the expected mortality assumption in all years
- Non Life
  - One year – measures the potential increase in the BEL in the next year, at the 99.5% confidence level
  - Ultimate – measures the potential increase in the BEL over the life of the liability, at the 99.5% confidence level

Summary of Research – Initial and Forecasted Capital

Forecasted Capital Balances Using Different Calculation Methods

5 Yr Term Illustration

Yr	1 Yr	Ultimate	Modified Ult. (a)	Shock (b)
1	914k	1,828k	1,417k	1,591k
2	910	1,665	1,371	1,271
3	908	1,470	1,295	952
4	906	1,255	1,196	634
5	905	907	907	317

(a) Using a modified confidence level consistent with the exposure period

(b) Method added after report completion

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Summary of Research – Initial and Forecasted Capital

Forecasted Capital Balances Using Different Calculation Methods

Non Life Illustration

Yr	1 Yr	Ultimate
1	16,225k	39,465k
2	15,414	37,492
3	13,467	32,756
4	9,897	24,074
5	5,517	13,418
6	3,570	8,682
7	2,272	5,525
8	1,298	3,157
9	568	1,381
10	81	197

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Summary of Research – Initial and Forecasted Capital

Observations on Estimated Capital Amounts

- 5 Yr Term
  - One-year horizon measure is reasonably level as the one-year risk is similar in all years, except for the decline in exposure
  - Ultimate horizon measure recognizes the risk of adverse experience in all future years, and converges to the one year measure as exposure period shortens
  - Shock estimate measures the cost of 20% extra mortality in all remaining years, declining uniformly as exposure period shortens
- Non Life
  - The ultimate horizon measure captures the present value of the diversified effects of the series of one year measures

Summary of Research – Initial Capital

- In deep and stable markets, liability estimates should converge toward a narrow range of values
- Capitalization levels and investors' return demands are linked
  - Observed rates of return are, in part, a function of capitalization levels
  - In financial markets, greater collateralization implies less risk and less return to investors
- The interdependency of capitalization levels and returns suggests that different CoC rates should be used with each alternative capital measure to obtain market consistent liability estimates
  - In the previous examples, different CoC rates must be used with each alternative capital measure to achieve similar risk margins and liability values
  - The need for calibration may be minimized if both the capital allocation and CoC rate are consistent with market conditions and pricing methods

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Summary of Research – Estimating Future Capital Balances

- The CoC method requires estimates of capital held for each future year in the lifetime of the liability
- Some applications of the CoC method are based on simple approximations of future capital requirements, e.g., using the ratio of the initial balance to a base amount, such as the Best Estimate Liability (BEL)
- Such approximations may not reasonably estimate future required capital balances
- More sophisticated methods should be considered to improve the market consistency of results, such as application of the initial method to forecasted years

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Summary of Research – Estimating Future Capital Balances

5 Yr Term

Ratio of Capital to BEL/Lives

	1 Year		Ultimate	
Yr	BEL	Lives	BEL	Lives
1	11%	914	22%	1,828
2	13	929	25	1,699
3	18	946	29	1,531
4	26	963	36	1,333
5	51	982	52	984

Non Life

Ratio of Capital to BEL

Yr	1 Yr
1	3%
2	4
3	5
4	6
5	9
6	17
7	29
8	60
9	63
10	67

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Summary of Research –CoC Rate

- CoC rates should be evaluated to demonstrate consistency with investors' return demands for various products and markets
  - Existing US research indicates equity premiums may vary by product line
  - The treatment of debt capital should be clarified
- Further analysis is needed to determine how taxes effect the estimation of market consistent values
  - Market observed rates are after corporate taxes
  - Product and transaction pricing methods provide for such taxes
- Market observed rates of return reflect investors' view of interest rate, equity, insurance and business risk; the need for adjusting such rates to recognize insurance risk only should be considered

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Summary of Research - Calibration

- Comparing CoC risk margins to product/transaction pricing practices might produce information useful for setting the values of the three components of the CoC
- For example, assume product pricing practices are based on
  - Assigned capital at the “ultimate” level
  - Use of a regulatory reserve that is different than the best estimate liability, which implicitly modifies the capital allocation
  - Recognition of the impact of taxes
- Pricing risk margins may be reconciled to CoC risk margins, which might be based on
  - Allocated capital at the “one year” level
  - Carrying an underlying reserve at the best estimate level, to which is added an investor’s risk margin (the CoC)
  - No provision for taxes

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Summary of Research - Calibration

- Alternative approaches to calculating risk margins should be reconcilable as market consistency implies convergence of fair value liability estimates
- CoC risk margins and pricing margins can be reconciled by recognizing the differences in the measurement methods
- One key area of potential difference is the capital allocation
- The paper illustrates, for two simplified products, how the effects of different capital allocations can be reconciled

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Summary of Research – Estimating Parameters

- Full analysis of differences in the calculation of risk margins would consider other items
  - Implicit capital allocations embedded in pricing reserves
  - The implicit investor return included in pricing
  - Taxes
- Once these items are understood, decisions can be made about which items should be recognized in the liability estimate; for example
  - Investor return expectations may vary by product or market
  - Pricing returns may vary from investors' target return on capital
  - Pricing reserves may vary from best estimate provisions
  - Tax costs may need to be considered more thoroughly

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Reconciliation of Liability Estimates Based on CoC Margins and Pricing Margins

- Subsequent to completing the research paper, reconciliations of the two liability estimates were prepared for the life and non – life illustrations
- Liability estimates at contract initiation using pricing margins were defined as the initial premium less acquisition costs, adjusted for the related tax effects
- The premium calculation used regulatory reserves and ultimate capital assignment
- 5 year term product – 'entry value' is $ 14.6 m
  - Gross premium of $18.5m, acquisition costs of $5m, maintenance costs and taxes produces an internal rate of return on capital flows of 18.91%
- Non – life product – 'entry value' is $ 89.1m
  - Gross premium of $ 125m, acquisition costs of $33.7m, maintenance costs and taxes produces an initial combined ratio of 95% and an internal rate of return on capital flows of 19.37%

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Reconciliation of Liability Estimates Based on CoC Margins and Pricing Margins

5 Year Term	
BEL, benefits/expenses	12.7m
MVM, 1 Yr capital, 6%	.2
Liability	$ 12.9m
Provision for taxes	1.6
Cost of Cap, ult @ IRR	.6
Cost of implied cap @ IRR	.4
Difference in CoC metric	<.3>
Value of spread, after tax	<.6>
Entry Value	$ 14.6m

Non Life	
BEL, benefits/expenses	$72.3m
MVM, 1 Yr capital, 6%	3.6
Liability	$ 75.9m
Provision for taxes	6.5
Cost of Cap, ult @ IRR	19.1
Cost of implied cap @ IRR	2.7
Difference in CoC metric	<7.8>
Value of spread, after tax	<7.3>
Entry Value	$ 89.1m

Note: This analysis was completed after completion of the research report

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Summary of Research – Other Findings

- Risk margins also are important to required capital, as risk margins typically increase in distressed situations
  - Amount of capital typically increases due to re-assessment of risk, e.g., recalibration of cat models post-Katrina
  - Cost of risk usually increases as well, e.g., increased margin in post-Katrina reinsurance prices and current credit crisis
- Required capital measures should recognize the likely increase in risk margins in post-distress measures of liabilities
- Other findings include
  - The proper treatment of taxes in the calculations should be further considered
  - Approximations for measuring the change in the fair value of liabilities for solvency purposes should be demonstrated to be consistent with the solvency framework's desired confidence levels and measurement horizons

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Summary of Research - Conclusion

- Significant calibration of the capital base and the cost of capital rate is needed to demonstrate that estimated fair values of insurance liabilities are market consistent
- Each component of the CoC method should be addressed
  - Amount of capital
  - Assumed run-off of capital each period over the lifetime of the liability
  - Cost of capital rate per period

Complete report available at www.gnaie.net/research.htm

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