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The 2004 Healthcare Conference

25-27 April 2004, Scarman House, University of Warwick

PMI – Risk Based Capital


- Institute working party
 - Members from PMI insurers, reinsurers and consultancies.
- Objectives
 - Development of outline principles for factors to be considered when calculating a RBC requirement on PMI business.
- This is still a work in progress



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Executive Summary

- ECR is typically less than the MCR.
- RBC / ICA may support a slightly lower level of Capital.
- There is still a lot of work to be done.



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Outline

- Overview of Market
- Capital Requirements
- Basic Process of Defining RBC
- Consideration of Key Factors affecting the ICA
- Basics of a Model

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Summary of Key features of PMI Business

- Very short tail business.
 - Pre-notification of claims reduces IBNR further.
- Both group and individual business is written.
- Premium rates revised annually.
- There is initial underwriting / exclusions.
- A range of products is available.
 - On group business, may switch between products from time to time
- Only Acute (non A&E) conditions are covered – the NHS provides a safety net.

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Capital – An Overview

- There is a regulatory requirement to hold a minimum amount of capital, based on EC directives and UK specific regulation.
- Management have their own expectation of the Risk Based Capital required to support current and future business. This takes into account the obligation of management to ensure policyholder claims are paid.
- The link between the regulatory capital and management's capital assessment is via an Individual Capital Assessment (ICA).

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Capital - Regulatory Capital

- MCR
 - EC directive minimum capital requirement.
 - Greater of
 - Fixed amount (€2m).
 - 18%/16% of gross premiums * reinsurance ratio.
 - 26%/23% of gross claims * reinsurance ratio.
 - Reinsurance ratio is higher of 50% and (net claims over last 3 years)/(gross claims over last 3 years).
 - Informally, capital of 2*MCR has been required.

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Capital - Regulatory Capital

- ECR
 - Enhanced Capital Requirement is UK specific regulation.
 - Calculated as
 - X% of net written premium
 - Y% of Technical Provisions
 - Z% of assets
 - X and Y depend on the type of insurance written, and are 5% and 8% respectively for PMI business
 - Z% depends on the assets held, e.g. 16% for equities, 3.5% for Debt securities, 2.5% on secured loans.
 - Z% includes a haircut on debtors balances (including any reinsurance balances outstanding).

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Capital – Risk Based Capital / ICA

- Insurance risk
- Market risk
- Credit risk
- Liquidity risk
- Operational risk
- Strategic considerations

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The Basic Process of Defining RBC

- Build a basic deterministic cashflow model for a PMI company.
- Define the realistic level of solvency that the company will require in suitable terms.
 - For example, a 2% probability of insolvency over the next 5 years
- Consider likely risks that the business will face.
- Define the possible values that these risks will take, and their interaction with one another.

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The Basic Process of Defining RBC ctd.

- Model these risks, allowing for the uncertainty attached to them.
- Test and refine the model against any relevant information available.
- Calculated the capital required so that the desired level of solvency is achieved.
- Maintain the model via ongoing review.

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RBC – Issues for Consideration

- Due to the short term nature of the business, investments are typically short-dated and liquid.
- Reinsurance is not widely used.
- Reserves are not discounted.
- Any guarantees and options offered are not market related but rather insurance risk related.
- The key drivers of risk are therefore insurance risks, operational risks and strategic considerations.

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RBC – Consideration of Insurance Risks

<u>Risk</u>	<u>Impact</u>	<u>Duration</u>	<u>Likelihood</u>	<u>Correlation</u>
Volatility of Claims	Up to 5% of claims	Ongoing	Probable	Core

Claims will vary from year to year.
 These variances may affect the whole PMI market rather than specific providers. It may therefore be possible to recover some of the variance in future years through premium rate increases. This is also made possible due to the natural barriers to entry in the market.
 In addition, a proportion of expenses are directly claim related and these are likely to vary as the claims increase or decrease.
 This can also be extended to include claims inflation variances.

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RBC – Consideration of Insurance Risks

<u>Risk</u>	<u>Impact</u>	<u>Duration</u>	<u>Likelihood</u>	<u>Correlation</u>
Pricing errors	Up to 5% of claims	Ongoing	Possible	Core, but also correlated to claims volatility

Pricing errors are separate from the claim variances and relate to inadequate pricing due to the uncertainties resulting for example from:

- Incomplete / inadequate data being available
- Changes in the exposed population and incomplete rating factors

These variances are unlikely to affect the whole market and therefore cannot be recouped in future premium increases.
 In addition, the volume of business written when premium rates are too low is likely to be higher than normal, and similarly with the volume of lapses when premium rates are too high. This will mainly affect group business.

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RBC – Consideration of Insurance Risks

<u>Risk</u>	<u>Impact</u>	<u>Duration</u>	<u>Likelihood</u>	<u>Correlation</u>
Reserving errors	Up to ½ months worth of claims incurred	Ongoing	Possible	Independent? Correlated with claims variances?

This reflects the uncertainty associated with setting reserves for IBNR and to a lesser extent Claims Reported But Not Yet Paid reserves.

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RBC – Consideration of Insurance Risks

<u>Risk</u>	<u>Impact</u>	<u>Duration</u>	<u>Likelihood</u>	<u>Correlation</u>
Expense variance	5%-10% of expenses	Ongoing	Possible	Independent? Correlated with claims variances?
<p>This reflects the uncertainty associated with setting expenses.</p> <p>Variances relating to changes in claims and new business volumes are linked directly to the changes in these factors.</p> <p>Variance relating to the inability to cover fixed expenses can also be linked to new business volumes written and lapse rates.</p> <p>Another key component is the impact of unexpected expense inflation</p>				

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RBC – Consideration of Insurance Risks

<u>Risk</u>	<u>Impact</u>	<u>Duration</u>	<u>Likelihood</u>	<u>Correlation</u>
Failure of reinsurance treaty	3.5% of net reinsurance balance	Once off	Unlikely	
<p>Reinsurance failure is unlikely to be correlated to PMI claims deterioration – so it is unlikely to occur during a period of high claims.</p>				
Partial non-performance of reinsurance treaty	5% of expected recoveries * ½ year	1 year	Unlikely	
<p>Treaty wording problems may lead to the partial non-recovery of some claims. This is likely to be picked up as soon as the first claims is rejected and the treaty renegotiated.</p>				

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RBC – Consideration of Insurance Risks

<u>Risk</u>	<u>Impact</u>	<u>Duration</u>	<u>Likelihood</u>	<u>Correlation</u>
Single event catastrophe	20 lives * £10,000 claim	Once off	Possible – more likely if large group business written	Independent of other events
<p>NHS is likely to cover emergency treatment and most of ongoing treatment. PMI coverage likely to be limited to psychiatric, cosmetic, and physiotherapeutic treatment. Aggregate limits are likely to apply.</p>				

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RBC – Consideration of Insurance Risks

<u>Risk</u>	<u>Impact</u>	<u>Duration</u>	<u>Likelihood</u>	<u>Correlation</u>
Epidemic	1 in 50 policyholders * £500 claim	1-2 years	Unlikely	Independent
Again, the NHS is expected to pick up most of the cost of treatment. Further, since any cost impact is likely to be across the industry, premium increases will not be subject to pricing pressure and a portion of any loss may be recovered in the future.				
Change in NHS drug list	Limited cost	1 year	Possible	Independent
Changes notified in advance and can be allowed for in the next pricing review. Since the change will affect all PMI providers there will be no pricing pressure.				

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RBC – Consideration of Insurance Risks

<u>Risk</u>	<u>Impact</u>	<u>Duration</u>	<u>Likelihood</u>	<u>Correlation</u>
NHS doctors strike	20% * 1/12 * claims	1 month	Unlikely	Unlikely during an epidemic – so same capital may be able to cover both events
Assume a 20% increase in private claims for minor surgeries / consultations This will depend on the product, with significantly higher cost of policies with benefits linked to NHS waiting periods.				
Significant changes to the NHS are likely to be discussed well in advance. Based on these the company may re-evaluate the capital it requires. For example more capital may be required to cover a significant increase in expected new business.				

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RBC – Consideration of Insurance Risks

<u>Risk</u>	<u>Impact</u>	<u>Duration</u>	<u>Likelihood</u>	<u>Correlation</u>
Value of underwriting option	1% of premiums on individual business over 5 years old	½ year	Possible	
Individual PMI business is underwritten. Over time the health status of lives will vary. Healthy lives will be able to move to a cheaper product while unhealthy lives stay behind. Products may be re-priced, however it may be difficult for rates to catch up as more and more relatively healthy lives leave. There will therefore be a pricing lag on this business.				

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RBC – Consideration of Strategic Issues

<u>Risk</u>	<u>Impact</u>	<u>Duration</u>	<u>Likelihood</u>	<u>Correlation</u>
Competitive pricing capital	Estimated losses over coming years	1-2 years	Possible / Pre-defined	
If there is an expectation or decision that existing business will be written at a loss in the future for business reasons, capital will be required to support this business where not already reflected in the policy reserves.				
Insurance Cycle Adjustment	-2% to 2% of premiums	Cycle over time		
Further to the first point, capital will be required to support the business over the insurance cycle. However due to the specialised nature of PMI business, it has been exposed to a less severe cycle than other lines of business.				

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RBC – Consideration of Strategic Issues

<u>Risk</u>	<u>Impact</u>	<u>Duration</u>	<u>Likelihood</u>	<u>Correlation</u>
New business capital requirement	25%-35% of NB premiums		High	Correlated with pricing rates, expenses and claims ratios
Capital will be required to cover the strain of writing new business in the future. This allowance should also take into consideration managements expectation of expected future business volumes and the expected variability of sales volumes. Relevant expenses should be linked to these volumes, and an interaction with the pricing rate will also be required if high volumes are expected				

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RBC – Consideration of Operational Risks

<u>Risk</u>	<u>Impact</u>	<u>Duration</u>	<u>Likelihood</u>	<u>Correlation</u>
Operational risk loading	10%-15% of the risk capital requirement			
This is an area which requires significant development. Operational risks are likely to depend on strategic considerations as well as the structure of the company and products.				

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RBC – The Model Defined

- Definition of Capital Required
 - Probability of insolvency over next 5 years < 2%
- Calculations based on a mix of stochastic projections and deterministic margins
- Deterministic margin allowed for
 - Operational risk of 12%
 - Credit risk – based on ECR debtors balance shocks, with corporate debt getting a further shock to allow for a deterministic default risk.
 - Market risk – based on ECR asset shocks

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RBC – The Model Defined

- Stochastic Modelling of
 - Claims variances
 - Pricing variances
 - Reserve variances
 - Expense variances
 - Catastrophe events
 - New business sales
- Modelling of
 - Insurance Cycle
 - New business sales

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RBC – The Results

- MCR
 - Defined as 100%
- ECR
 - Typically 60%-70%
- RBC / ICA
 - Typically 50%-65%

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RBC – Big BUT

- Only a framework for discussion purposes
- Can be made more complicated / accurate
- Needs to be made company specific
- Needs back-testing
- We welcome any comments
