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Regulating for solvency

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Scope of Presentation

- purpose of returns
- content of returns
- Monitoring of solvency
- Investigating solvency

Purpose of Returns

- primary purpose is to demonstrate solvency of company to regulator
- also provide lots of other information to allow regulator to form view as to soundness of company, its business and its management
- format and content of returns need to be specified in law to allow meaningful comparisons to be made:
 - year by year
 - between companies
- content of returns described in the following slides

Content of Returns: Overview

- summary revenue information
- analysis of main revenue items
- year-end asset and liability information
- summary information:
 - valuation result
 - solvency
 - asset-liability matching
- details of valuation basis
- lots of other information in narrative form

Monitoring of solvency

- Appointed Actuary has ongoing professional responsibility to monitor solvency
- Regulator also interested in reported solvency position, as informs regulatory response
- Statutory and realistic solvency position both important

Measures of financial strength

- Key solvency indicators:
 - Cover for solvency margin (SM) = (admissible assets – liabilities)/SM
 - Free assets ratio = (admissible assets – liabilities - SM)/admissible assets
- But need to consider wider context:
 - Strength of valuation basis
 - Hybrid capital, financing, implicit items, etc.
 - Access to capital
 - Reliance on reinsurance
 - Group solvency

Financial indicators for life insurers

- Free assets ratio
- Cover for SM
- $\text{NBI} = \text{new regular premiums} + 10\% \text{ single premiums}$
- $\text{Initial commission ratio} = \text{initial commission} / \text{NBI}$
- $\text{Acquisition expenses ratio} = \text{acquisition expenses} / \text{NBI}$
- $\text{Renewal commission ratio} = \text{renewal commission} / \text{regular premiums received}$
- $\text{Renewal expense ratio} = \text{renewal expenses} / \text{regular premiums received}$

Financial indicators for life insurers

- Yield on long term fund = $2I/(F_0+F_1-I)$
- Yield on major linked funds, similarly
- Overall exit rate = $RP(\text{exits})/(RP_0+\text{new } RP/2)$
- Surplus emerging in long term fund = change in long term assets – change in long term liabilities

Financial indicators for general insurers

- Free assets ratio
- Cover for SM
- Solvency ratios:
 - $(\text{admissible assets} - \text{liabilities}) / \text{net written premiums}$ (called solvency ratio, solvency margin, solvency margin ratio)
 - $(\text{admissible assets} - \text{liabilities}) / \text{technical provisions}$
 - $(\text{admissible assets} - \text{liabilities}) / \text{reinsurance debtors and reserves}$
 - $\text{admissible assets} / \text{liabilities}$

Financial indicators for general insurers

- Profitability ratios:
 - net profit/net assets
 - investment income/average invested assets (called investment return)
 - net profit/net earned premiums (called profit margin)
 - net profit/free assets at year start

Financial indicators for general insurers

- Liquidity ratios:
 - Liquid assets/gross annual claims
 - Liquid assets/total net liabilities
 - Debtors as number of days outstanding
- Reserving ratios:
 - Emerging under-provision/net assets
 - Estimated deficiency/net assets

Financial indicators for general insurers

- Premium ratio = $\frac{\text{net written premiums}(t+1)}{\text{net written premiums}(t)}$
- Reinsurance ratio = $\frac{\text{reinsurance premiums paid}}{\text{gross written premiums}}$, also called proportion reinsured
- Claims ratio = $\frac{\text{claims incurred}}{\text{earned premiums (net of DAC)}}$
- Expense ratio = $\frac{\text{net expenses and commission}}{\text{net written premiums}}$
- Commission ratio = $\frac{\text{net commission paid}}{\text{net written premiums}}$
- Combined ratio = claims ratio + expense ratio, also called operating ratio and underwriting ratio

Realistic solvency

- Especially for companies with with-profit business, realistic solvency position should be monitored as well as statutory solvency position
- In a realistic valuation:
 - statutory with-profit liabilities are replaced by asset shares: effect of this is to effectively treat terminal bonus cushions as a liability
 - embedded value of non-profit and unit-linked business allowed for as an asset
 - inadmissible assets likely also allowed for

Financial condition reports

- Examine effect of possible adverse scenarios
 - sudden fall in asset values
 - sudden rise or fall in new business
 - sudden increase in expenses
- Produced by Appointed Actuary for Board
- Currently best practice, to become mandatory
- Dynamic financial analysis used in practice

Dynamic financial analysis

- Main applications:
 - Monitoring of solvency
 - Production of Financial Condition Reports
 - Asset-liability matching / formulating investment policy
 - Bonus recommendations

Basic procedure

- build model of the business
 - large enough to produce reliable results
 - not so large as to take up excessive computer time
- build model investment portfolio
 - based on contracts in model and proposed investment strategy
- project forward assets and liabilities

Fundamental modelling decisions

- allowance for new business:
 - depends on purpose of investigation
 - exclude if looking at suitability of current asset distribution to current liabilities
 - include if looking at future solvency position or determining future bonus distribution policy
 - when included, assumptions needed for both volume and mix
 - investment strategy should not rely on particular level of new business to be sound
- actual data or model data?
 - more efficient to model where lots of business in force
 - choice of model data very difficult but critical

Investigating solvency

- project liability outgo:
 - claims, expenses
 - allow for reinsurance and bonuses
- project asset proceeds
 - fixed interest, equities, property, cash
- determine suitability of existing assets
 - deterministic model
 - sensitivity analyses/scenario testing
 - take care to recognize approximate correlations
 - stochastic model
 - “deterministic simulations”

Investigating solvency

- extend model to include values of assets and liabilities on statutory basis in each future year
- really need to model assets stochastically
 - e.g. Wilkie Model
- must take care to consider changes which might be made in hypothesised investment scenarios:
 - strength of statutory valuation basis
 - type and level of bonus rates
 - modified investment strategy
 - volume and mix of new business
- in practice, cannot incorporate all these but interpret results carefully

Investigating solvency

- projection period
- number of simulations
- results of investigation:
 - look at excess of assets over liabilities
 - derive statistical distribution for this
 - hence estimate probability of insolvency
 - determination of initial level of free assets needed
 - effect on investment strategy and bonus strategy on transfers to shareholders
 - solvency objectives vary by type of office

Regulatory monitoring of solvency

- Periodic statutory valuation and report
- Trigger levels of solvency margin or regulatory capital cover for response
- Critical analysis / scrutiny with weaknesses queried
- Particular care over certain issues, e.g.
 - mismatching, asset and counter-party exposures, connected party transactions, options and guarantees, derivatives, reinsurance and financing, hybrid capital, implicit items
- Group solvency / avoidance of double-gearing
- More frequent reporting in some circumstances
- Intervention powers

Intervention by the regulator

- Powers of intervention needed to make monitoring worthwhile
- Desirable powers include:
 - Restoration plans if SM breached or close to being breached
 - Limitation of premium income
 - Withdrawal of authorisation
 - Closure to new business
 - More frequent reporting

Intervention by the regulator

- Request for valuation
- General investigations
- Entry and search of premises
- Reports from external experts
- Restrictions over investments
- Assets to be held locally
- Assets to be held in trust
- General residual power

Grounds for intervention

- To protect policyholders and potential policyholders from risk company unable to meet its liabilities or, for life business, PRE
- Lack of sound and prudent management
- Failure to meet requirements of insurance company law
- Supplied misleading or inaccurate information
- Inadequate reinsurance arrangements
- Ceased to be authorised
- Would be prohibited from being authorised now
- Substantial departure from business plan

Restoration plans

- Timescale should reflect seriousness of breach
- Effectively a revised business plan
- Should show breach as corrected within term of plan
- Might involve:
 - Capital injection
 - Closure to new business
 - Financial restructuring
 - Increased use of reinsurance
 - Other

Intervention relating to assets

- Grounds likely to be narrower: probably main one related to solvency
- Useful where concerns over:
 - investment policy
 - close matching of linked liabilities
 - security of assets
 - fitness and propriety of directors

Other intervention

- Restriction of premium income and more frequent reporting commonly used for:
 - new companies
 - companies following a change of control
- Investigations, valuation requests, external expert reports primarily used for:
 - information gathering
 - specific concerns, e.g. IT systems, internal systems of control
- Closure to new business, withdrawal of authorisation, entry and search
 - generally limited to serious cases