Appointed Actuary Seminar
Actuarial Society of Hong Kong

Recent Developments in Appointed Actuary System and Peer Review in Canada

Dave Pelletier
November 2003
What we’ll cover

• Risk management and “risk-based” regulation
• The Appointed Actuary in Canada and financial reporting standards:
  – Background
  – Recent and ongoing developments
• Peer review
Risk management

• Recognition that risk-taking is what insurance companies are all about

• But important to ensure that:
  – risks are identified
  – risks are managed
  – the overall resulting risk is maintained at an acceptable level
  – appropriate returns are earned for the level of risk assumed

• Not just lip-service
Two approaches to regulation

- **Traditional**
  - use of out-moded financial reporting approaches
  - a plethora of rules and regulations
  - limitations on new product development, including detailed approval of rates and policy forms
  - a focus on checking of details and following of formulas

- **Genuinely “risk-based”**
  - a meaningful financial reporting basis
  - a meaningful minimum capital standard
  - ensuring companies putting the right risk management procedures in place
  - ensuring right board, management, and professional responsibilities, with the right safeguards
Canadian financial reporting

• Statutory = Canadian GAAP. Responsibility of Canadian Institute of Chartered Accountants (CICA) and Canadian Institute of Actuaries (CIA), not the regulator (Office of the Superintendent of Financial Institutions – OSFI)

• Based on first principles, not arbitrary formulas

• Basic first principle: Set up as liability the present value of what you’re going to pay out, less what you’re going to take in
And so...

- All policy terms (and related decrements – i.e., including cashvalues and lapse rates) and expenses reflected.
- Actual policy premiums reflected.
- Actual reinsurance terms, **not** arbitrary approach based on “typical” reinsurance treaties, reflected.
Assumptions

• **Current, meaningful, updated assumptions** used for ALL business, both new and in-force

• Each assumption a combination of:
  – “best-estimate” and
  – a Margin for Adverse Deviation (MfAD)

• Actual assets and asset cashflows reflected. Investment “assumption” required ONLY to extent that asset/liability cashflows mismatched
Methods

• Formerly Policy Premium Method (PPM):
  – seriatim calculation, with interest assumption a weighted result of existing asset returns and assumed reinvestment returns

• Now Canadian Asset/Liability Method (CALM):
  – portfolio calculation, selecting sufficient existing assets to cover liability cashflows under specific scenarios

• So very different mechanics, but the same underlying philosophy (except that greater sophistication on investment risk treatment)
CALM reinvestment scenarios

• Base scenario
  – continuance of reinvestment and inflation rates at the balance sheet date, and
  – current investment strategy

• Seven prescribed alternate scenarios if deterministic application, or, if stochastic, a range of scenarios comprehending those prescribed scenarios

• Other scenarios appropriate for the circumstances of the insurer.
A few little problems, and some solutions

• CALM:
  – mechanics
  – rates

• Negative liabilities

• Sensitivity of results

• Treatment of mortality, and resulting strain
CALM mechanics

- Great theoretical approach, but
  - Takes good software
  - Takes good asset info
  - Requires careful definition of current and future investment strategies
  - Lots to do at yearend!

- Practical solution
  - Do all the detailed stuff say at end of Q3, or during Q4
  - Develop appropriate vectors of year-by-year interest assumptions
  - Adjust for curve movement at yearend
  - Plug vectors into PPM model!
A little problem with the rates

• Originally defined scenarios contemplate a reasonable low end of range for interest rates as:
  – long-term: 5%
  – short-term: 3%

• Current rates:
  – awfully close to that low end!
Now under study for change

- A moving range
- Definition of a Ultimate Reinvestment Rates (URR) as benchmark yields:
  - long-term URR: average of long-term (>10 yr) yields
  - short-term URR: 90-day risk free
  - benchmark for both = ½ (60-mo avg + 120-mo avg)
- Move lower end of ranges down to 90% of URR if that number falls outside the current range
- Similar upward range movement if necessary in future
Negative reserves?

- Liability = A – B where
  - A is PV of what will pay out
  - B is PV of what will take in (including ACTUAL premiums)
  - all PVs at updated assumptions

- Liability can well be negative, especially where
  - highly profitable lines of business
  - experience (and so valuation assumptions) have improved
  - high acquisition costs
Yes, negative reserves

• At least one actual company: entire liability side of balance sheet was negative (a challenge for asset-liability matching!)

• Some discomfort by regulators at times (also by IASB)

• But now increasing recognition in Canada of validity. Haircut in calculation of “Available Capital” in MCCSR being largely phased out, beginning 2003
Sensitivity of results

• Again, Liability = A – B where
  – A is PV of what will pay out
  – B is PV of what will take in (including ACTUAL premiums)
    – all PVs at updated assumptions

• As actuary changes the assumptions
  – A moves pretty drastically (cashflows more variable, and farther in future on average)
  – B hardly moves at all (fixed premiums)
  – So A-B can move drastically!

RGA
Illustration of what can happen

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## Illustration of what can happen

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Impact of Actuarial Assumption Strengthening
Sensitivity: recent review

• Yes, good to extent that genuinely reflects emerging experience
• But bad if results in gyrating earnings and surplus
• TF on Actuarial Liability Consistency
  – appropriate vs inappropriate volatility

• Good techniques to reduce inappropriate volatility:
  – not manipulative
  – provide appropriate forward-looking balance sheet results
  – understandable by informed users
  – do not mask appropriate volatility
Some acceptable techniques to reduce inappropriate volatility

- Smoothing best estimate assumptions:
  - Use averages
  - Go partway, until know better if permanent or cyclical
- Recognize policyholder pass-thru features (par)
- Look at aggregate impact or overall PfAD, not just assumption by assumption
- Set liabilities in context of big picture. Watch separate assumption refinements in separate years, that cause undue volatility
- Small blocks – avoid spurious accuracy
- But, not appropriate to mask appropriate volatility!
Another “problem”: mortality

- CALM/PPM eminently logical
- But assumptions used within it must be too
- At the moment, grossly excessive mortality strain, caused by:
  - non-recognition of mortality improvement on the life insurance side, while enforced recognition on the annuity side
  - potentially outdated mortality MfADs
- Under review by CIA and OSFI
- Currently producing huge amounts of reinsurance!
Outcomes

• Positive
  – A largely meaningful, realistic balance sheet, understandable and usable by policyholders, stockholders, analysts, and regulators
  – Consistent treatment of assets and liabilities (whether CALM or PPM)
  – No need for a “loss recognition test”

• Other factors
  – A need for logical parameters within this logical structure
  – A more volatile income statement
  – Very significant immediate impact of assumption changes
  – Strong reliance on actuary; a need for good standards
The vital role of the Appointed Actuary

• Opinion on solvency, not merely on technical calculations

• Opinion on future, not just current, financial condition, supported by Dynamic Capital Adequacy Testing (NOT same as US-style “cash-flow testing”)

• Appointed by the board with notification to OSFI
The vital role of the Appointed Actuary (cont’d)

• Cannot be CEO, COO or CFO unless authorized
• Upon leaving, report on reasons to board and OSFI
• New appointee to request and receive report from prior actuary before accepting
• “Whistle-blowing” role if issues raised and not dealt with by management and the Board
• Protected by law against civil action if acted in good faith
OSFI expectations re the AA

• Has appropriate practical experience
• Is up to date with the CIA’s Continuing Professional Development requirements
• Has not been subject of adverse finding by a CIA disciplinary tribunal

For this and other AA requirements, see OSFI’s Bulletin E-15 at:

The vital role of the Appointed Actuary – checks and balances

- Very detailed annual report to the regulator (OSFI)
  http://www.osfi-bsif.gc.ca/eng/documents/guidance/docs/maalife03_e.pdf on:
  - the assumptions and methods utilized
  - justification for them
  - changes in them
  - any deviation from CIA standards
  - key risks
  - asset-liability management

- External peer review made mandatory by OSFI
AA Report – some changes

• More information on PfADs
• More details on assumptions and method changes, including impact split between:
  – change in expected levels
  – change in MfADs
  – introduction of new standards
  – unusual transactions
  – bulk liability changes
  – admin, systems, or other operational changes
• More disclosure by “asset segment” (ie, not asset type, but rather a block of assets used to back a block of liabilities), including comparisons of interest rates earned vs required, and ALM practices
Pretty detailed requirements!

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## ACTUARIAL LIABILITIES

**METHOD AND ASSUMPTION CHANGES BY YEAR ($,000)**

(Net of Reinsurance Ceded)

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RGA®
ALM info to be provided

- ALM objectives
- Level of immunization desired, and of what
- Immunization strategy (cashflow matching, duration gap, etc.) and exposure limits (mismatches, loss-making scenarios, etc.)
- Investment strategy
- Trading actively or not
- Asset breakdown

- Frequency of rebalancing
- Use of derivatives
- Risk metrics: duration (which? Macaulay, modified, option-adjusted, key rate, etc.), convexity, VAR, etc.
- Validation processes used
- Any use of cross-segment offsets to reduce C3 provision
AA Report – more changes

- Actual vs expected analysis
- Internal control analysis (ratios, trends, reserve build-up from one year to next, etc.)
- Reinsurance – top 10 list
- MCCSR reporting, especially with respect to reduced factors on par or adjustable business
- Source of Earnings reporting (note this something even more useful where on a more “traditional” statutory financial reporting basis)
# Source of earnings reporting

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<th>Source of Earnings Reporting</th>
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<td>Expected Profit on Inforce Business</td>
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<td>Impact of New Business</td>
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<td>Experience Gains &amp; Losses</td>
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<td>Earnings on Operations (pre-tax)</td>
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<td>Earnings on Surplus</td>
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<td>Net Income after Tax</td>
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<td>Transfer from participating accounts to shareholders (ICA sect. 461)</td>
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Peer review

• A controversial item – under development since 1995!
• Originally suggested by OSFI
• Importance due to:
  – long-term nature of our work
  – sensitivity to our assumptions (both insurance and pension)
  – protection of the ultimate (trusting) customer
• Standard now enacted regarding what a peer review should entail when requested by a user of the work of an actuary
• CIA standard does NOT require peer review, but OSFI does require it of AA work, following the CIA standard
Peer review objectives

• Continuous improvement in quality of work
• Strengthened confidence in the profession and individual actuaries, building on good practices in place
• Education of both practitioner and peer reviewer
• Reduced risk of error (CIA)
• Narrow the range of practice (OSFI)
AA work to be reviewed

- Valuation of liabilities
- Preparation of the AA Report to OSFI
- Calculation of the MCCSR
- Par account calculations, allocations, and opinions
- DCAT
Peer reviewer role

- Ascertains that work within range of accepted actuarial practice, and OSFI requirements
- Reviews appropriateness of assumptions and methods
- Determines accuracy of descriptions of assumptions and methods in the AA Report
- Reviews adequacy of procedures, systems, work of others relied upon, including checks on:
  - date integrity
  - procedures used to validate results
- Produces written report, and opinion (not on the amounts)
- NOT does detailed calculations
Other aspects of peer review

• Can be spread over three years, but material change immediately

• Post-review OK unless audit firm’s reviewer

• Qualifications of reviewer(s):
  – same as those for AA
  – exposure to two or more unrelated companies
  – not current or recent employee or investor in the company
  – not in same consulting firm as AA or another actuary who contributed to the AA’s work
  – changed at least once every two cycles (six years)
And so, in Canada ...

• Not a “trust me” philosophy
• But instead
  – a meaningful financial reporting basis
  – a heavy reliance on the good sense, judgement, training, and experience of the Appointed Actuary
  – supported by a rigorous, detailed set of professional standards
  – supplemented by a system of checks and balances put in place by the regulator and the profession
  – a truly “risk-based” approach to regulation, focused on ensuring the companies doing the right things and that the Boards of Directors overseeing that they are