The Role of the Actuary in a Life Insurance Company

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Chair, IAA Asia Subcommittee
What we’ll cover

- A key difference between (individual) life and non-life business
- Some traditional actuarial roles in life insurers
- Some non-traditional actuarial roles in life insurers
- And why these roles are important
Individual life vs non-life

Most non-life policies (and group life policies) are written for one year at a time.

Individual life policies last for many (10, 20, …, 50+) years, with policy terms determined largely at issue, often with guaranteed level premiums.
Individual life policies

Age

Probability of death
Individual life policies

Probability of death

Level premium

Age
Individual life policies

- Age
- Probability of death
- Level premium
- Profit??

Age
Some questions that arise

- How much should the insurer be setting aside as a liability now to ensure it will have enough later to pay the claim, if/when it ever happens?
- Which mortality table is to be used? and what kinds of adjustments are necessary/appropriate?
- How will the premium be invested? How will future premiums be invested? What rates will they earn?
- How many policyholders will lapse/surrender their policies before death? and when?
- What expenses will be incurred in administering the policy? What impact of inflation?
Some actuarial roles that arise

**Traditional**
- Product design and pricing
- Valuation / financial reporting
- Profitability analysis
- Setting policy dividends / bonuses
- Dynamic solvency testing
- Experience analysis
- Underwriting
- Marketing

**Non-traditional**
- Risk management
- Asset liability management
- Investment strategy
- Transformation
- Predictive analytics
Assumption-setting underlies many of these roles

- Ideally “best-estimate” the same for both pricing and valuation, but

- In valuation, a need for explicit risk margins, varying with degree of risk and with degree of uncertainty around the best estimate

- In pricing, a margin for risk and profit important, varying ideally again with degree of risk and degree of uncertainty around the best estimate

- Combination of own experience (if any), industry experience (if any), industry experience elsewhere, non-insurance-specific experience, etc., all adjusted appropriately for the product, the underwriting, the distribution channel, and the company
Product design and pricing

- Committing the company now to obligations it will still have 30, 40, 50, and more years from now!
- Current experience and economic environment is important, but how about the future?
- Translating company profit targets into profitable and saleable products – a challenge!
- Clear communication to management important – sensitivities and ranges of outcomes
- Poor pricing can come back very quickly to haunt you, and is picked up soon in valuation …
Valuation – policy liabilities

In the olden days

- “Net” premium reserves
- Assumptions locked-in at issue
- Assumptions considered conservative (but didn’t necessarily turn out to be!)
- Stable results (but masked emerging problems – Japan!)

Emerging

- Liability calculated using policy premiums
- Valuation assumptions updated as experience emerges and economic conditions change
- Explicit risk adjustment
- Volatile results (not necessarily a good thing!)
Liability (ignoring reinsurance):

- Sum of PV of:
  - Death benefits
  - Surrender benefits
  - Dividends / bonuses
  - Commissions and expenses
  - Any other disbursements

- Less sum of PV of:
  - Policy premiums
  - Any other policy-related income
Illustration of sensitivity

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This is not just theory …

Net Income in accordance with IFRS and U.S. GAAP

- IFRS\(^1\) net income is typically more volatile compared to U.S. GAAP in periods of market dislocation due to more extensive use of mark-to-market accounting

\(^1\) Effective January 1, 2010, Manulife adopted IFRS as a replacement of CGAAP. 3Q09 and 4Q09 are presented in accordance with CGAAP.
Profitability analysis

With that kind of volatility, pretty important!

Sources of earnings analysis, of interest to:
- Management
- Shareholders and market analysts
- Regulators

Understanding trends, in order to:
- Update valuation assumptions
- Update pricing assumptions for new products
- In the case of “participating”, “with-profits”, “adjustable premium” products, make appropriate changes to dividends/bonuses/premiums
Dynamic solvency testing

Emerging approaches to financial reporting give a much better picture of where the company stands today. But …

They don’t necessarily provide a good understanding of how sensitive a company’s solvency is to changes in market or economic conditions, its sales success (or failure), and other factors.

Dynamic solvency testing assesses future financial position under a variety of scenarios.

Now leading to an even broader Own Risk and Solvency Assessment approach (ORSA).
Other traditional roles

- Experience analysis
  - Mortality, lapse, expenses, …
  - Increasingly complex as more product types emerge

- Underwriting
  - A bridge between the underwriting and actuarial disciplines
  - Assessing cost-effectiveness of underwriting requirements
  - Ensuring underwriters understand what’s priced into the product, and actuaries understand how the underwriters are classifying the risks

- Marketing
  - Technical assistance to the sales force
  - Interpreting sales force needs to the pricing or corporate actuaries
Moving to non-traditional roles

Areas:

- Enterprise risk management (ERM)
- Asset-liability management (ALM – really one component of ERM)
- Investment strategy
- Transformation of platforms, processes, and organization
- Predictive analytics, especially around new business

In fact, these not really that non-traditional, but merely an evolution of these functions over time

In life insurers, asset-liability management the most critical piece of ERM, given the long-term nature of the business
In summary, an actuary is

- With appropriate qualification, a provider of formal opinions to the regulator and public
- The producer of the key elements of the financial reports
- Instrumental in projecting future solvency
- The developer of the company’s products
- Often the Chief Risk Officer
- A key advisor
- Often a key player in management, and sometimes the CEO!
Equipping the actuary for this

- Education, at the outset and continuing thereafter
- Professionalism, including
  - A meaningful code of conduct
  - A discipline process
- Guidance for actuarial practitioners
  - Standards of practice
  - Educational notes

Given the long-term nature of the obligations of an insurer, and the extreme sensitivity of the company’s financial position to the actuary’s work, these are critical!