Actuarial Education – The Business Need

A Case Study from the General Insurance Industry

Introduction
As someone with over 30 years experience in the insurance industry in both technical and managerial roles – mainly for general insurers and consulting firms – and who has more recently had a minor role in actuarial education, I can speak with a dual perspective on the way that actuarial skills are blending with business needs and to comment on any perceived gaps and mismatches in that interaction.

My perception is firstly of an increasing desire by educators to tie in their “products” (i.e. the students emerging from university and their research topics) with business aims and development. Importantly though, I feel there is still too great a gap between the technical “tools” being developed in the university environment and their practical employment in the general insurance market.

Evidence of this gap emerges in a number of ways. At the annual ASTIN Colloquium, which was established at a global level to enable the development of actuarial science in a business context, too many academic papers are still being produced without enough grounding in potential practical application and data availability. So, although conclusions from the academic work may be advancing actuarial science, there is not enough collaboration with business minds to ensure that this advancement is in tune with development of business. (Why aren't more of these papers based on joint discussion between business and universities?)

But at least academics are mixing with business actuaries globally. At the local level, arguably for general insurance there is no longer a forum for business-based actuaries and other business leaders to mix with academic leaders on a regular basis in Australia. In such an environment, it is hard to see how the situation may improve.

Within the business environment, the standard “model” is still for actuaries to “stick together” in actuarial support roles and departments. This set-up further retards the potential for greater mixing between actuaries and non-actuaries and for new actuarial students emerging from university life to learn more about the industry in which they have chosen to work.
My intention is to attempt to demonstrate the gap between academic intent and business need by the use of a case study based on my more recent experience in the industry.

The Actuarial Education/Business Interface (General Insurance)

- Global
  - ASTIN
  - IME
  - Other
- Australian
  - IAAust GI Seminar
  - Institute Sessions
  - CPE (e.g. Enterprise Risk)

Case study background – Modelling of capital needs for general insurers
Traditionally the capital base of a general insurance company has been founded on pragmatic lines and subjective thinking. This was as a result of the leadership of the industry by practical managers, grounded on the more “artistic” world of the underwriter, rather than the more scientific structure of the actuary.

More recently, and particularly over the last ten years, there has been a realisation that capital can be a more active and accurate proxy for risk through modelling of the range of outcomes from the various risk incorporated in the general insurance business. Ideally, a capital model of this type can be used as an important tool in the overall management of the business.

A general insurer can take a range of approaches towards use of capital modelling technology. I am going to demonstrate two such approaches.
Case Study Scenario 1 - The Technically Correct Approach

Step 1: Use the actuarial resources to examine each of the risks of the general insurer's business. Determine the best technical modelling approach for each risk. Build a modelling structure to accommodate the needs of each area of risk.

Step 2: Collect data for each area of risk. Where data is not available, postulate an alternative approach to the modelling of risk (e.g. through fitting of curves or other formula-based methods).

Step 3: Establish a technical actuarial unit to develop maintain and monitor each of the modelling needs for various areas of the insurer's risk

Step 4: Deliver the model to the business through the appropriate business forum or committee (e.g. asset/liability committee)

Step 5: Investigate potential ongoing improvements to the model through discussion with operational and financial management.
Case Study – Scenario 1

• Focus on Actuarial Approach to Modelling of Risk
• Data Requirements for Model
• Model Management Revolves Around a Technical Actuarial Unit
• Delivery to the Business Through an Appropriate Forum
• Ongoing Improvement/Change to Modelling

Advantages:
- A sound technical grounding
- Opportunities for development of modelling value
- Iterative improvement in data to “fuel” the models

Disadvantages:
- Danger of a “black box” perception
- Difficult to obtain business “buy in”
- Likelihood of “patchy” coverage of risk (ie strong modelling opportunities tend to overshadow less technically-viable options)

Scenario 1 – Pros and Cons

• Plus
  – Technically Sound
  – Value Improvement Potential
  – Iterative Change

• Minus
  – Black Box
  – Little Business Buy-in
  – Uneven Focus on Risk
Case Study Scenario 2 – The Business-Driven Approach

Step 1: Use the operational business management resources (e.g. subcommittee of appropriate management committee) to determine how to best model each of the business risks

Step 2: Employ the firm’s actuarial resources to help with the modelling approach.

Step 3: Design a modelling approach based heavily on scenario testing and “shock” analysis.

Case Study – Scenario 2

- Based on Operational Business Management Approach
- Employment of Actuarial Resource for Focused Technical Model Development
- Design Based on Scenario Analysis and Shock Testing

Advantages:
- Business buy in virtually guaranteed
- Sound practical understanding of model

Disadvantages:
- Difficult to obtain iterative improvements
- Scenarios may just represent current business view (and therefore add little value)
Scenario 2 – Pros and Cons

• Plus
  – Guarantee of Business Buy-in
  – Sound Practical Basis

• Minus
  – Difficulty of Iterative Improvement
  – Little Added Value

Case Study Comparison - Which is the Better Approach?

The answer, of course, is that neither approach is optimal and it would be difficult to say which would be better without knowing more about the management approach of the company concerned.

The lesson to be learned here is that, although any development of capital modelling capability within the company should be based on a sound technical foundation, it should also be sufficiently easy to understand and accessible to enable the range of the areas of management of the business to claim at least joint ownership of the modelling approach.

Actuarial Education Essentials

In order for this optimal capital modelling approach to be applied the actuarial requirements are:
  - Sound technical knowledge
  - Ability to convert this knowledge into business-specific modelling needs
  - Flexibility of approach to enable adjustment for different business cultures
  - Communication (ie not only the ability to explain actuarial modelling in terms that other business leaders can understand, but also an ability to listen
Actuarial Education Essentials

- Sound Technical Knowledge
- Good Business/Technical Interface
- Flexibility of Approach
- Communication
Actuarial Education – The Business Need

A Case Study from the General Insurance Industry

Dave Finnis Ernst & Young
The Actuarial Education/Business Interface (General Insurance)

• Global
  – ASTIN
  – IME
  – Other

• Australian
  – IAAust GI Seminar
  – Institute Sessions
  – CPE (e.g. Enterprise Risk)
Capital Modelling of a General Insurer – The Challenge

Strategic Planning and Forecasting Process

Business Strategic / Budgeting and forecasting process

Risk Strategy and appetite

Risk Management Tools and Techniques

Consolidated and stressed risk capital quantification

Capital Planning

Acquisitions / Investments

New Business Development

Pricing

Business Decision Making

Customer Selection

Optimal product / business mix to achieve business strategy

Business performance measured against capital
Case Study – Scenario 1

- Focus on Actuarial Approach to Modelling of Risk
- Data Requirements for Model
- Model Management Revolves Around a Technical Actuarial Unit
- Delivery to the Business Through an Appropriate Forum
- Ongoing Improvement/Change to Modelling
Scenario 1 – Pros and Cons

- **Plus**
  - Technically Sound
  - Value Improvement Potential
  - Iterative Change

- **Minus**
  - Black Box
  - Little Business Buy-in
  - Uneven Focus on Risk
Case Study – Scenario 2

- Based on Operational Business Management Approach
- Employment of Actuarial Resource for Focused Technical Model Development
- Design Based on Scenario Analysis and Shock Testing
Scenario 2 – Pros and Cons

• Plus
  – Guarantee of Business Buy-in
  – Sound Practical Basis

• Minus
  – Difficulty of Iterative Improvement
  – Little Added Value
Actuarial Education Essentials

- Sound Technical Knowledge
- Good Business/Technical Interface
- Flexibility of Approach
- Communication