

The ROLE of the ACTUARY in the LIFE, PENSION and SOCIAL SECURITY SECTORS

First CIS Actuaries Conference

Fifth RAMI International Conference

Moscow, 27-28 November 2008

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WHAT IS AN ACTUARY?

An actuary is a professional person who applies mathematical skills to financial, business and social problems, especially those which involve uncertain future events...





The Actuarial Profession

making financial sense of the future

THE ACTUARIAL PROFESSION

160
years

1848-2008



THE ACTUARY - a brief history

- Roman origins of name (*actuarius*)
- actuary of the Society for Equitable Assurances
- William Morgan, 1775-1830
- John Finlaison, government actuary 1822-1851
- Institute of Actuaries, London, 1848
- International Actuarial Association (IAA), 1895
- new constitution of the IAA, 1998



ACTUARIAL TRAINING

- mathematics
- statistics
- economics
- finance and financial mathematics
- mathematical modelling
- investment and asset/liability management
- financial management
- enterprise risk management
- professionalism



MAJOR FIELDS OF ACTUARIAL WORK

- life insurance
- general insurance
- reinsurance
- investment
- financial engineering
- corporate finance
- banking
- enterprise risk management
- pensions
- social security
- health care financing
- government service
- regulation and supervision
- personal financial advice
- expert witness
- education and research



HOW DOES THE PROFESSION SERVE THE PUBLIC INTEREST?

- it ensures quality control of qualified actuaries through
 - initial qualifications and requirements
 - Continuing Professional Development
 - practising certificates or qualification standards
- it sets a code of conduct and technical standards
- it supports statutory roles by education and standards
- it investigates complaints against members
- it disciplines where there has been misconduct



VISION STATEMENT OF IAA

The **vision** of the IAA is:

To seek worldwide recognition for the actuarial profession as a major player in the decision-making process within the financial services industry, in the area of social protection and in the management of risk, for the well-being of society as a whole.



ACTUARIAL SKILLS

- mathematical modelling
- managing and communicating uncertainty
- evaluating financial consequences
- analysis and measurement of risk
- scientific pricing and reserving techniques
- asset/liability management
- financial management
- within a framework of professionalism



ROLE OF ACTUARY IN LIFE INSURANCE - 1

- design and pricing of products
- pricing guarantees and options
- valuing liabilities
- estimating fair value for accounts
- analysis of experience
- asset/liability management
- investment strategy
- reinsurance/securitisation



ROLE OF ACTUARY IN LIFE INSURANCE - 2

- profitability measurement
- control of bonus systems
- assessing shareholder value
- disclosure to policyholders/customers
- solvency analysis
- dynamic financial analysis
- financial condition reporting
- enterprise risk management



“APPOINTED ACTUARY” or “RESPONSIBLE ACTUARY”

- adviser to Board and senior management
- responsible for assets as well as liabilities
- continuous financial monitoring
- valuation of assets and liabilities
- hot line to supervisor in case of difficulties
- operating under professional standards



CONTINUOUS MONITORING OF FINANCIAL POSITION

- product design and marketing
- premium rates and options
- current investments and continuing policy
- derivative exposures
- current and future level of expenses
- reinsurance arrangements



UK “THREE ACTUARY” MODEL

- Head of actuarial function...
 - ...to advise Board of Directors
 - With Profits Actuary...
 - ...to advise Board’s Policyholder Committee
 - ...on exercise of discretion
 - Reviewing Actuary...
 - ...to advise auditor
- plus independent peer review of each



WHISTLE-BLOWING (REPORTING)

- professional responsibility
- underpinned by legislation
- interests of policyholders
- responsibility to company
- responsibility to regulator
- need for indemnity...
- ...and protection against litigation



DYNAMIC FINANCIAL ANALYSIS (STRESS-TESTING)

- realistic future cash-flows
- impact of regulatory requirements
- alternative scenarios
- use of stochastic modelling
- identification of risks
- risk management strategies
- financial condition report



INDIVIDUAL CAPITAL ASSESSMENT (ICA)

- risk-based capital requirements
- use of internal models
- stochastic modelling of variability
- scenarios in respect of other uncertainty
- correlations between risks



THE ACTUARY AS RISK MANAGER

- Basel II emphasis on risk management
- actuaries specialise in the analysis of risk
- ...and modelling risk and uncertainty
- especially in insurance companies...
- ...but also in other financial institutions
- actuaries equipped for Chief Risk Officer role
- synthesising risk analysis
- ...and communicating risk to the Board



ACTUARIES IN REGULATION

- understanding of actuarial issues
- effective monitoring of technical reserves
- monitoring of financial strength/solvency
- able to challenge company actuaries
- ...as well as supporting statutory actuary
- interface with actuarial profession



ACTUARIES IN PUBLIC POLICY

- financial services regulation and supervision
- design and financing of social security
- pensions policy, regulation and supervision
- public sector pension arrangements
- financing of health care and long-term care
- consumer credit
- analysing and interpreting demographic trends
- projecting the population



ACTUARIES IN PUBLIC POLICY

- assessment of compensation, e.g. for injury
- appraisal of risk and financing of capital projects
- modelling catastrophes and epidemics
- assessing long-term liabilities, e.g. nuclear waste disposal
- implications of global warming
- evaluating costs of environmental damage



ACTUARIAL ROLES IN SOCIAL SECURITY SCHEMES

- demographic projections
- estimates of future benefit outgo
- estimates of future contribution income
- long-term projections of financial balance
- short/medium-term estimates of cash-flow
- development of funding strategies
- interactions with complementary plans



ROLE OF ACTUARIES IN SOCIAL SECURITY REFORM

- analysis of costs of existing arrangements
- advice on alternative structures
- modelling the transition
- advice on establishment of second/third pillars
- regulation of second/third pillars
- impact on public expenditure/borrowing
- impact on investment markets



ACTUARIAL ROLES IN COMPLEMENTARY PENSIONS

- scheme design
- advising on level of contributions
- funding and solvency management
- asset/liability management
- pricing of individual options
- individual and bulk transfers
- risk management



ACTUARIAL ROLES IN INDIVIDUAL ACCOUNTS

- design of structure
- level of contributions needed
- disclosure of expenses
- pricing and reserving for guarantees
- asset/liability management
- pricing and reserving for annuities
- design of alternative draw-down methods



OTHER ACTUARIAL ROLES

- investment
 - portfolio management
 - asset/liability modelling and management
 - strategic asset allocation
- corporate finance
 - appraisal of capital projects
 - risk analysis and control
- assessment of damages and compensation
 - value of loss of earnings, cost of care, etc



ROLE OF LOCAL ACTUARIAL PROFESSIONAL BODY

- requirements for initial education
- qualification standards
- professionalism training
- continuing professional development
- standards of practice
- interface with regulatory bodies
- promotion of the profession
- disciplinary framework



What does society gain from having an actuarial profession?

- access to specialist skills
- quality control of experts
- high standards of actuarial service
- integrity and objectivity in advice
- input into public debate
- support for statutory roles



Actuaries

The Best-Kept Secret in Business™

Turn Risk Into Opportunity™

