The Role of the Actuary

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Actuaries have many roles in insurance companies, in health organizations, in pension plans, in risk management, in government and in regulatory regimes, as well as in non-insurance fields. Actuarial skills include a detailed understanding of economic, financial, demographic and insurance risks; the development and use of statistical models as a basis for informing financial decisions; establishing or determining the adequacy of premiums, pension contributions, tariffs or funding payments; setting the level of policy liabilities; and understanding volatility and adverse deviation. Actuaries provide advice on these items as well as on such things as the adequacy of risk assessment, reinsurance arrangements, investment policies, capital levels and stress testing of the future financial condition of a financial institution. In this paper “financial institution” includes pension plans and governmental systems, such as social security.

The roles that actuaries are expected to perform (sometimes referred to as the actuarial function) will vary over time by country, practice area, relationship to the financial institution, corporate structure and culture. With that in mind, a much longer list of roles occupied by actuaries by practice area, along with roles that actuaries could take or expand in the future, follow in the attached appendix.

Moreover, actuaries understand the issues and communicate to others how best to use and develop tools for use in real-life commercial situations. The professional judgment and value added provided by an actuary's services exceed the raw output of a software model.

Role of a Professional Actuarial Association

The major roles of a professional actuarial association are to:
• create a credential that people in the actuarial field may earn, and upon which stakeholders may rely, which shows that these people are bound to high standards of professional conduct and practice, and
• enforce professionalism requirements on such credentialed actuaries.

Professional actuarial associations establish a syllabus of actuarial knowledge required of an actuary and then determine who demonstrates a mastery of that knowledge. Persons who demonstrate that mastery and agree to abide by the code of professional conduct, the standards of practice, and the disciplinary process of the actuarial association are admitted as qualified actuaries (members) of the actuarial association.
There is generally no prohibition on any person marketing or advertising themselves as an "actuary," even though critical decisions may be made on the advice of an actuary. Some professions (e.g. lawyers, doctors, architects, and dentists) have titles reserved by law for qualified professionals, which protects their users. The users of actuarial services are not protected in that way. However, reliance on an actuary holding a designation granted by a professional actuarial association is a step in that direction.

**Role of the International Actuarial Association**

The International Actuarial Association (IAA) provides oversight of its member actuarial associations to assure that they at all times meet the standards required of them and their individual members. To become accredited as full members of the IAA, associations need to demonstrate that:

- their educational system and requirements for membership meet the IAA standards,
- they have an acceptable code of professional conduct,
- they have an acceptable disciplinary process, and
- their system for developing standards of actuarial practice (if they have one) meets the IAA minimum standards.

Once accredited, they must maintain the minimum IAA standards required of them to continue to be accredited.

The IAA cannot control the use of the term "actuary," but it can set minimum standards of professionalism for those who are members of the IAA full member associations. The IAA is prepared to assist both the local regulator and the local actuarial association wherever desired.

**A Useful Description of a Qualified Actuary**

A qualified actuary is a professional trained in evaluating the current financial implications of future contingent events. It is the actuary’s job to assist in the scientific quantification of financial risks. Given the training that qualified actuaries receive in economics, finance and risk management, their expertise in understanding the underlying business model is invaluable in tying that to their analysis of data and modeling. Actuaries are equipped to help their clients and employers to make informed choices.

Financial institutions transfer risks (such as liabilities arising from death, auto accident, liability judgment, outliving one’s assets) from an individual or company to the financial institution. By pooling large numbers of these risks the financial institution reduces, but does not eliminate, its risk. Actuaries utilize their understanding of the potential variability of these risks, the risks inherent in assets used to back these promises and the use of statistical models. In the context of insurance, for example, these skills are used
in establishing premiums, policy liabilities, and appropriate capital levels. In other contexts, these skills are used to determine pension plan liabilities and the level of contributions required to finance pension, health care, and social insurance programs. As a professional, a qualified actuary is subject to a code of professional conduct enforced by a discipline process because such actuary is a member of an actuarial association, which in turn is a full member association of the IAA.

Role of Users of Actuarial Services

The users of actuarial services are well advised to take into account the extent to which an actuary has been trained and is subject to qualification standards, professional standards of practice, and obligations for professional conduct. The appointment of a qualified actuary can greatly strengthen a financial institution’s risk and capital management, to the increased security of policyholders, shareholders and beneficiaries and the benefit of the institution and its regulators. By certifying pension liabilities and costs for statutory reporting, the work of the actuary increases the security of plan beneficiaries and other pension stakeholders. Analysis and projection of the finances of a social security arrangement by a qualified actuary can assist in the arrangement’s management by the government or other responsible agencies, and, where published, help inform a wider political discussion on the matter. When supervisors adopt other approaches to prudential regulation, appropriate involvement of qualified actuaries can still enhance the efficiency and effectiveness of the regulatory process.

Supervisors and other users of actuarial services are encouraged to work with the IAA member associations to determine the appropriate functions for qualified actuaries providing professional services in their jurisdictions.
APPENDIX

Roles (a non-exhaustive list) typically filled by actuaries currently include:

a. Life and general insurance
   - Reserving for unpaid losses, unearned premium and other estimated liabilities (technical reserves) and certifications
   - Insurance product premium pricing
   - Surrender value calculations
   - With-profit attributions
   - Reinsurance policy definitions and management
   - Underwriting policy definitions
   - Life groups underwriting
   - Solvency calculations and reports
   - Internal modeling, including stochastic asset-liability modeling
   - Strategic asset management
   - Value management (embedded value)
   - Corporate strategy and planning and control management, including mergers and acquisitions

b. Health insurance, public health and healthcare management
   i. Topics that apply to all lines
      - Product development, pricing, product management, premium adjustments, marketing and competition studies from all stakeholder’s perspectives
      - Underwriting and reinsurance
      - Modeling, profit testing, reserving (including with-profit attributions), solvency calculations. embedded value, financial forecasts and controls
      - Catastrophic claim, reinsurance, stop-loss insurance and high-risk pool analysis
      - Calculation of reserve for long term guarantee provisions
      - Calculation of implicit debt
   ii. Topics that are health specific
- Health utilization, benchmarking and cost trend forecasts
- Health risk status analysis and revenue risk adjustment
- Disease management return on investment and predictive modeling
- Medical provider reimbursement analysis, including provider capitation, financial incentives and episode payments
- Population disease prevalence forecasts
- Medical device, pharmacy and new technology efficiency studies
- Behavior change studies related to health issues
- Wellness and preventive care impact studies
- Evidence based treatment protocols

c. Private pensions and other employee benefits
- Advice to stakeholders on the design of occupational pension schemes and other long term employee benefits
- Funding requirements of occupational pension schemes and other long term employee benefits
- Solvency requirements of occupational pension schemes
- Internal modeling, including stochastic asset-liability modeling
- Strategic asset management
- Evaluation of the pension liabilities involved in company mergers and acquisitions
- Design and cost early retirement incentive schemes

d. Social insurance and other similar benefits
- Reporting the projected financial status of a Social Security Plan (SSP)
- Statements of opinion on SSP policy matters (e.g. adequacy of contributions)
- Calculations concerning actuarial aspects of benefits (for instance, commutation functions if this is permitted, or annuity rates in notional defined-contribution SSPs)
- Production of numbers for inclusion in the formal financial reports of the SSP
- Production of short-, medium- and long-term projections of the finances of the SSP for wider government budgeting purposes
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- management of or input into the investment of the assets of a funded SSP, including asset-liability management
- Calculating Implicit Health Liabilities (IHL)
- Projecting the cost of welfare benefits for widows and orphans, etc.
- Costing unemployment benefits

e. Enterprise Risk Management (ERM)
- Responsibility for the risk management/CRO function
- Setting company risk appetite and risk limits
- Creation of financial condition reports
- Building company models
- Evaluating impact of acquisition on risk profile
- Performing stress tests
- Identifying and planning for emerging risks
- Valuation of risks and risk interaction
- Valuation of risk mitigation solutions
- Execution of risk mitigation programs
- Reporting on ERM programs to investors and rating agencies

f. Other financial services
- Design and pricing of financial products (in particular more complex products such as those based on derivatives)
- Analysis of investment performance
- Building internal models of the business

g. General roles
- Various support functions for different stakeholders, i.e. ministry of health, regulators, supervisors, expert witness services, hospitals, medical professions, etc.
- Providing advice to regulators and legislators
- Representing employer, employee groups or union, or serving as an expert witness before court litigations
- IT-Development, establishment and management of datasets
- Infrastructure projects
- Energy pricing
• Interactions with rating agencies

Roles that actuaries might take if they do not fill now

Note that the opportunity for the potential application of actuarial skills is virtually unlimited. What is listed below includes some things that are done in some regions, but not others.

a. Life and general insurance
   • More actuarial opinions can be required in more jurisdictions for loss reserves, unearned premium reserves and other estimated liabilities
   • Provide risk management and governance in life with new solvency regulations
   • Expand the role of risk assessment during mergers and acquisitions and other transactions
   • Expand existing roles or develop new roles where the actuary works with auditors and performs the role of 'reviewing actuary'

b. Health insurance and health care management
   • A greater actuarial function under Solvency II
   • Actuarial controlling and accounting (IFRS II)
   • Supporting health and care management activities in private or government affairs (i.e. health reforms)
   • In the private sector, more work with the drug industry and on research
   • In the public sector, pre-funding of healthcare for retirees

c. Private pensions and other employee benefits
   • Governance and risk management for retirement plans
   • Work with auditors and/or tax advisors
   • Measurement and reporting of other (non-pension) long term incentive plans
   • Cross-border pension schemes
   • Giving advice to individuals who have to make decisions and exercise choices on defined contribution plans/assets

d. Social insurance and other similar benefits
   • More direct involvement in public policy discussions and decisions
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- More direct line of communication with the asset manager(s) regarding the cash flow requirements of the plan (i.e., the liabilities)

- Study the effect of changes on individual (representative) beneficiaries to understand how the social security arrangement or amendments to it may affect particular groups, perhaps using micro-level modeling

- Gather wider input into economic modeling around fiscal sustainability given how often these plans have an extremely significant impact on overall government budgets

e. Enterprise Risk Management (ERM)
   - Creation of ORSA reports
   - Incorporate a more complex model of human behavior
   - Advise regulators on the identification and treatment of systemic risk

f. Other financial services
   - Valuation of assets/liabilities
   - Product design and pricing
   - Review/building of internal models

g. Education