

1 INTRODUCTION

- 1.1 The Institute of Actuaries of Australia ("The Institute") welcomes this opportunity to present a submission to the Financial System Inquiry. This submission comes with the authority of the Council of the Institute and has drawn on the views of members with experience in all relevant practice areas of the actuarial profession.
- 1.2 Although actuaries are employed in many areas of finance and commerce, the profession is specifically trained and experienced in the management of financial institutions and products which involve a transfer of risk. In Australia, those segments of the financial system which have adopted sound actuarial management - life insurance, friendly societies, superannuation and, more recently, general insurance - have an excellent record of stability, while remaining competitive and innovative.
- 1.3 In this submission, the Institute proposes
- **wider adoption of capital adequacy benchmarks based on the risk of ruin**, to add coherence to the financial system and to assist consumers in understanding the value of the financial guarantees offered
 - **the general use of a freedom with disclosure model of regulation**, to ameliorate the worst effects of contagion and undue social and economic costs while retaining the flexibility to accommodate a rapidly evolving financial market
 - **microeconomic reform of the health insurance industry**, to allow the adoption of reasonable actuarial principles
 - **structural improvements in the superannuation industry**, to better promote self reliance and increase savings.

The body of the submission briefly discusses these proposals.

- 1.4 Also, the submission includes in Appendices some background information on the actuarial profession, a list of the topics included in the Fellowship courses of the Institute, and details of the principal legislative responsibilities of the profession in Australia.

- 1.5 The Institute would welcome the opportunity to comment in detail upon its proposals or any others which arise in the course of the Inquiry. Many of our members have views on particular industry issues, which we would be happy to share with the Inquiry in the light of any proposals for substantial reform.

2 THE INSTITUTE

- 2.1 The Institute represents the actuarial profession in Australia.
- 2.2 Actuaries are unique in their use of a combination of analytical and modelling skills, practical experience and judgement to produce practical solutions to problems involving the impact of uncertain events, often in the distant future, on assets, liabilities or revenue flows.
- 2.3 In representing the profession, the Institute is committed to promoting the profession and creating, expanding and maintaining an environment where the skills of actuaries are widely used and valued. To this end, the Institute
- provides education, encourages continuing professional development, promotes research and fosters the advancement of actuarial science
 - sets and enforces professional standards and a code of conduct which embody integrity, expertise and relevance
 - provides professional accreditation for the protection of the public, and
 - provides advice on the development and implementation of public policy.

3 ISSUES

- 3.1 The Inquiry is concerned with a number of issues, some of which are of interest to the actuarial profession. We have a number of comments, which are general in nature, and which are set out below.

The Effects of the Campbell Reforms

- 3.2.1 The previous Committee of Inquiry into the Australian Financial System, under the chairmanship of Mr J K Campbell, was set up on 18 January 1979 and published its Final Report in September 1981. Membership of the Committee

included Mr R G McCrossin, an actuary who was, at the time of his appointment, the immediate past President of the Institute.

3.2.2 In general terms, the recommendations of the Campbell Inquiry included the following

- deregulation of interest and exchange rates
- greater competition in banking
- privatisation of some government assets
- a levelling of the tax "playing field"
- rationalisation of prudential requirements.

3.2.3 These recommendations received wide acceptance among practitioners in the financial services industries, including actuaries.

3.2.4 Many of the recommendations were subsequently implemented. Considerable progress has been made in respect of interest and exchange rate deregulation, banking competition, privatisation and taxation. Fifteen years after the Report, the principal concerns affecting the professional work of actuaries relate to the uneven nature of the regulatory systems which have emerged across the system as a whole, the flexibility of the regulatory system in response to change, and particular problems in the health insurance and superannuation industries. These are discussed briefly below.

The diversity of regulation

3.3.1 Since the Campbell Report, the general pattern of regulation across the financial services industries has remained uneven and complex. This issue is widely acknowledged as problematical and a number of ways of restructuring the regulatory authorities have been canvassed to co-ordinate, harmonise and rationalise financial sector regulation. These proposals include a *single mega-regulator* model, combining all regulatory authority in one organisation, and a *twin peaks* model, with separate organisations for prudential and consumer regulation.

3.3.2 There are a number of reasons why consolidation of regulation is difficult -

- the different forms of regulation - prudential, consumer, macroeconomic and competition - with different objectives, mechanisms and beneficiaries
- the variety of jurisdictions in which business can be conducted and regulated and the constitutional barriers which keep these jurisdictions separate
- the variety of features which may attach to a financial service or product giving rise to different regulatory concerns
- the variety of structural features in different financial market sectors - seller concentration varies considerably, some markets cater to retail customers others are wholesale, some deal in simple products others in complex ones, some use intermediaries while others rarely do so - and different methods of regulation are appropriate for different circumstances.

3.3.3 Some complexity is therefore inevitable in any regulatory structure. The actuarial profession is less concerned with the structure of the regulatory system than with its effectiveness and costs, both direct and indirect. Experience with the ASC and the ATO does not indicate that large organisations with cross-industry responsibilities are any more effective than specialist industry-focussed organisations such as the RBA, the ISC and PHIAC.

3.3.4 **The principal areas presently affecting the actuarial profession are the prudential regulation of financial institutions involved in risk transfers, and consumer protections associated with financial products which transfer risk. In general terms, a rational approach to this form of regulation should be built around *capital adequacy benchmarks based on the risk of ruin*. This would add coherence to the financial system as a whole, and would facilitate a levelling, or an appropriate grading, of the regulatory playing field.**

3.3.5 The actuarial profession, together with the Insurance and Superannuation Commission and the Life Insurance Actuarial Standards Board, has recently developed new prudential controls under the Life Insurance Act 1995 using the

risk of ruin method, and believes such an approach would be useful across much of the financial system.

Emerging needs

- 3.4.1 It is evident that rapid change is occurring in the production and distribution of financial services, and that this will pose a challenge to future regulatory systems. There are a number of general regulatory models which might be considered.

Model 1 - "*Laissez faire*" - leaves to market forces much of the workings of the financial system, and accepts that normal market disciplines will sanction the owners of inappropriately managed institutions and unwise consumers.

Model 2 - "*Prescriptive regulation*" - attempts to eradicate failures or achieve social and economic objectives by prescribing limits and controls on many aspects of structure and conduct.

Model 3 - "*Freedom with disclosure*" - attempts a middle road, allowing market forces to work against a relatively stable background of minimal regulation, including sufficient disclosure to allow informed analysis by investors and consumers.

- 3.4.2 A *laissez faire* approach that allows significant institutional failures has the problems of *contagion* and of undue *social and economic costs*. These problems vary in different parts of the financial services industry - contagion is more likely from the failure of a trading bank than of, say, a financial planning organisation, and the social and economic costs are likely to be greater from the failure of a major life insurance company or superannuation fund than of, say, a real estate agency.
- 3.4.3 On the other hand, prescriptive regulation is typically expensive and bureaucratic in nature, and is resistant to innovation or slow to embrace change. Less regulated competitors and substitutes often emerge and thrive at the expense of the heavily regulated parts of the system. A prescriptive model is not well suited to a rapidly changing marketplace.

- 3.4.4 **Many actuaries are attracted to the *freedom with disclosure* model, with features designed to ameliorate the worst effects of contagion and undue cost, but flexible enough to adapt promptly to changes in institutions, products and technologies.**
- 3.4.5 The Institute believes a regulatory regime which included routine reporting procedures which allow effective monitoring of performance, in combination with rational capital adequacy benchmarks for all institutions which assume financial risk on behalf of customers, would add considerably to the general stability and competitiveness of the financial system.

The private health insurance market

- 3.5.1 Private health insurance caters to the largest risk insurance market in Australia. It is regulated by both the Commonwealth Department of Family Services and Health and the Private Health Insurance Administration Council. The regulation includes prescriptive control of pricing and product design in ways that are inconsistent with basic actuarial principles. Competitive conduct in the industry is distorted with consequent effects on market performance in matters such as consumer satisfaction, cost containment, allocative efficiency, innovation and export performance. Despite numerous "reforms", the industry remains in chronic disequilibrium.
- 3.5.2 **The health insurance industry did not come under the direct scrutiny of the Campbell Inquiry and it remains today almost untouched by the microeconomic reforms implemented elsewhere in the financial system. *Much of the regulation of health insurance prevents the implementation of reasonable actuarial principles, a matter of considerable concern to actuaries with responsibilities within the industry.***
- 3.5.3 Amendments to the National Health Act in 1989 empowered the Private Health Insurance Administration Council to require a private health fund to obtain actuarial advice in the event the reserves of the fund fall below prescribed minimum levels. The profession believes it would be preferable to establish a sounder actuarial basis for the industry generally, than to mount repeated rescue missions. Prevention is better than cure.

Superannuation

- 3.6.1 The superannuation industry has undergone major changes since the early 1980s, but fundamental structural weaknesses continue - it remains poorly integrated with the tax and social security system, with a mix of inconsistent incentives and disincentives, and regulation has become bewildering in its complexity. The industry wastes substantial resources on compliance issues, is plagued by short-termism, and product development remains primitive, with a continuing focus on lump sum benefits and with insufficient attention to the risks of inflation. Recent proposals to allow retirement savings accounts address none of the key concerns.
- 3.6.2 ***The structural weaknesses in the superannuation system are undermining the objectives of promoting self reliance and increasing community savings, a matter of concern to actuaries with responsibilities to the superannuation industry.***
- 3.6.2 The Institute has developed and published a comprehensive Retirement Incomes Strategy that addresses the concerns of the profession, and it commends its proposals for reform to policymakers.

APPENDIX A: THE ACTUARIAL PROFESSION IN AUSTRALIA

A1 History

- A1.1 The actuarial profession has its roots in the 18th century, in the work of mathematicians and demographers and in the rise of the thrift institutions such as insurance companies and friendly societies.
- A1.2 In 1848, a royal charter was granted to the Institute of Actuaries in London and since 1870 actuaries in the UK have had statutory responsibilities in the regulation and management of insurance. With the spread of modern insurance throughout Europe, the Americas, Africa and in Asia, actuaries have assumed similar responsibilities in many other jurisdictions.
- A1.3 The development and spread of superannuation and social security systems in the late 19th and early 20th centuries was followed by regulatory measures to ensure their actuarial soundness, and actuaries have also assumed formal roles in the regulation of long term savings arrangements in many jurisdictions.
- A1.4 While insurance and superannuation have been the traditional areas of actuarial involvement, the world-wide development of investment markets and of increasingly sophisticated instruments has created expanding roles for many members of the profession in the prudential management of long term investment risks.
- A1.5 In Australia, from the early days of European settlement, actuaries were recruited predominantly from England and Scotland. Actuarial examinations, set by the English Institute, were held in Australia from 1891 and the forerunner of the local Institute, the Actuarial Society of New South Wales, was established almost 100 years ago, in 1897. A Victorian Branch was formed in 1920.
- A1.6 During the early decades of this century, many state governments in Australia employed actuaries particularly in the regulation of life assurance, friendly societies and superannuation. The profession was formally recognised in Commonwealth statutes with the Life Insurance Act of 1945.
- A1.7 In 1967, in a process which led to the development of a fully Australian profession, Macquarie University started teaching actuarial studies as part of its undergraduate degree offerings. Since 1980, the Institute has held its own examinations and has been awarding Fellowships of the Institute since 1982. Today, full-time undergraduate courses in actuarial studies are taught at

Macquarie University, the Australian National University and the University of Melbourne, and the Institute offers its own Fellowship examinations and controls the accreditation and professional standards of all actuaries practising in Australia.

A2 Membership

A2.1 Total membership of the Institute was 1,697 as at 30 September 1995, made up as follows.

Fellows	865
Accredited Members	40
Associates	363
Students	422
Lay members	7

A2.2 The principal classes of membership are as follows.

Fellows are fully qualified by examination and professional training to practice in Australia. Most formal statutory functions, under Australian law, are confined to Fellows or those accredited members approved for the purpose by the Institute.

Accredited Members are usually Fellows of recognised professional actuarial bodies elsewhere, such as the UK, USA, Canada and South Africa, who have met appropriate standards for practice in Australia.

Associates are not fully qualified but are well advanced in their studies and professional training.

Students are members of the Institute who are generally undertaking examination and professional training, but have yet to progress to the Associateship or Fellowship level.

A3 Education

A3.1 The Institute considers the education of the actuaries as fundamental to its role, and many members of the Institute commit considerable resources, both financial and personal, to this activity.

- A3.2 For many years, Australian actuaries obtained their qualifications from foreign actuarial bodies, usually through the Institute of Actuaries in London or the Faculty of Actuaries in Edinburgh. While many entrants for the examinations were university graduates, it was common for students to embark on their actuarial studies on a part-time basis directly after leaving secondary school.
- A3.3 The advent of a full-time course in actuarial studies at Macquarie University in 1967, and of the Fellowship courses of the Institute itself since 1980, fundamentally changed the pattern of education of actuaries in Australia. The education process which results in a qualified Fellow, in Australia, now typically includes the following
- initial selection from secondary school of candidates with emphasis on very good overall academic performance, particularly in mathematics
 - completion of a university degree, involving 3 or 4 years full-time study or equivalent, with high level passes in mathematics, statistics, economics, accounting, finance, computing, demography and actuarial studies
 - several years postgraduate study and examination in investment management, life insurance, general assurance, superannuation and finance
 - completion of a professionalism course.
- A3.4 The process of qualification as an actuary is well known for its rigour and gruelling length. An indication of the scope of actuarial training is given in an Appendix B to this submission, which lists the topics studied for the Fellowship examinations of the Institute.
- A3.5 The model of actuarial education adopted in Australia, based on a combination of formal academic studies at university and comprehensive, practical, postgraduate studies with the Institute, has subsequently been adopted in the UK, South Africa, Canada, and New Zealand. Australian universities and the Institute are now playing a major role in developing actuarial education in Asia.
- A3.6 The pioneering nature of Australian education of actuaries is continuing, with the recent inclusion at the heart of actuarial studies, of a course which generalises the application of the central actuarial method, the *Control Cycle*.

This development reflects a desire to adapt the education of actuaries to the changing responsibilities members of the profession are expected to have in the management of the financial institutions in future, and has attracted international interest from actuarial education authorities.

- A3.7 The Institute also operates a program of continuing education for its members, managed by a full-time Education Officer. There are monthly sessional meetings of members at which the profession receives and discusses formal papers on research and development relevant to the profession. All such papers and discussions have been recorded since the 1920s in the Institute's journal of record, *The Transactions*, and are sent to all members. Workshops, seminars and forums are also held frequently, many directed at developing younger members of the profession. Every two years the Institute holds a Convention, attended by several hundred members and guests, many from other international actuarial bodies. The Institute will celebrate its Centenary at its next Convention in 1997.
- A3.8 Many members of the Institute participate in international actuarial forums - in 1984 the Institute hosted the Convention of the International Actuarial Association in the Sydney Opera House - and many also serve on standing committees, of which there are currently forty-seven, concerned with maintaining the effectiveness of the profession in Australia.

A4 Professional standards and guidance

- A4.1 All members of the profession in Australia are bound by the Institute's Code of Professional Conduct, which governs a member's professional behaviour in relation to employers, clients, other professionals and the general public.
- A4.2 Formal written Professional Standards and Guidance Notes have been established or are undergoing development in a number of specific practice areas, as follows.
- Investment
 - Investment Advice by Actuaries
 - Investment Performance Measurement
 - Investments - Derivative Instruments
 - Life insurance

- Actuarial Reports and Advice to a Life Insurance Company
 - Determination of Solvency Reserves
 - Determination of Capital Adequacy Reserves
 - Investment Guarantees for Investment Linked Business
 - Determination of Minimum Surrender and Paid-Up Values
- Friendly societies
 - Actuarial Advice to Friendly Societies
- Superannuation
 - Cost of Death and Disablement Benefits
 - Pre-July 1988 Funding Credits
 - Valuation of Superannuation Fund Assets
 - Liability in respect of Long Service Leave

A5 Practical involvement

A5.1 Most actuaries are employed in the traditional fields of insurance and superannuation, however very significant numbers now work in wider fields, in banking and investment markets and in industry and commerce generally. The trend towards wider field employment is expected to continue in the foreseeable future. Through their employment, actuaries typically have responsibilities for the prudential control and equitable management of financial institutions which carry long-term liabilities or which offer products designed to transfer risks.

A5.2 Set out in an Appendix C to this submission is a listing of the principal responsibilities of the actuarial profession under Australian law, in life insurance, general insurance, health insurance and superannuation. Actuarial responsibilities in these industries are described below.

A5.3 Life insurance

A5.3.1 The *Life Insurance Act 1945*, under which the Commonwealth used its constitutional powers to take over regulation of life insurance from the States, placed formal responsibility on the actuarial profession for premium setting, reserving and surplus distribution in the industry.

Responsibility for the administration of the Act rests with a Life Insurance Commissioner and an actuary has invariably been appointed to this office. In the fifty-one years since, the life insurance industry has experienced only two insolvencies - the Occidental and Regal cases in 1992 due to fraud - and only trivial losses were ultimately experienced by the policyholders affected. This contrasts with experience in other sectors of the financial system.

A5.3.2 The *Life Insurance Act 1995* now supersedes the original Commonwealth legislation. The responsibilities of the actuarial profession have been extended to the certification of company earnings, reflecting the move from mutual to shareholder status of much of the industry since the commencement of Commonwealth regulation. Under this legislation, each life insurance company must appoint an actuary, who has the responsibility to either bringing to the attention of the company or the audit committee, or reporting to the Life Insurance Commissioner matters which require action to avoid a contravention of the Life Insurance Act or prejudice to the interests of policyholders, or which relate to the solvency and adequacy of capital of the life office. Actuaries are also involved in managing the compliance function of life offices. Compliance may relate to all laws impacting the staff, customers and products and may include non-life insurance business, and in the operational risk management of life offices including development of disaster recovery plans and business continuity plans.

A5.4 **Health insurance**

A5.4.1 The *National Health Act 1953* is the principal Commonwealth statute governing the regulation of the private health insurance industry, and was originally administered wholly by the Commonwealth Department of Health. Following considerable instability in the industry after the advent of Medicare, major amendments were enacted in 1989, inter alia, to establish the Private Health Insurance Administration Council charged with regulating and monitoring the financial performance of private health insurers. An actuary has invariably been appointed as the independent member of the Council and the actuarial profession has been given responsibilities in maintaining compliance with the minimum reserve requirements within the industry and in the registration of new entrants.

A5.4.2 Actuaries are also used by health insurers for analysis of claims experience, determination of provisions for unrepresented and outstanding claims and determination of contribution rates.

A5.5 General insurance

A5.5.1 The *Insurance Act 1974* is the principal Commonwealth statute governing the regulation of the general insurance industry, and empowers the Insurance and Superannuation Commissioner to require an authorised insurer to appoint an independent actuary to investigate and report on the adequacy of outstanding claims provisions and related issues.

A5.5.2 Actuaries also have formal responsibilities under State legislation regulating particular parts of the general insurance industry. For example, the *NSW Motor Accidents Act 1988* requires insurers to furnish annual actuarial reports in support of their pricing of compulsory third party motor liability insurance. Workers' compensation self-insurers in NSW, Victoria and South Australia must also furnish annual actuarial reports on the adequacy of their provisions.

A5.5.3 Most Australian private sector insurers of significant quantities of long-tail business now have their outstanding claims provisions for those classes either calculated or reviewed by actuaries. Although it is not mandatory for insurers to obtain actuarial reports on outstanding claims liabilities, where they do the ISC requests at the actuary prepare a separate written statement to the ISC summarising the report(s).

A5.5.4 Most of Australia's regulators/monopoly insurance providers for workers' compensation and CTP insurance retain actuaries to advise on premium rates - both in aggregate and for specific industries/types of vehicle, outstanding claims liabilities and miscellaneous other issues, such as the financial implications of proposed legislative changes.

A5.5.5 The following table summaries the regulators/monopoly insurance providers which currently retain actuaries.

Jurisdiction	Whether actuaries retained for:	
	Workers Compensation	CTP
Commonwealth	Yes	N/A

New South Wales	Yes	Yes
Victoria	Yes	Yes
Queensland	Yes	Yes
South Australia	Yes	Yes
Western Australia	Yes	Yes
Tasmania	No	Yes
Aust. Capital Territory	No	No
Northern Territory	No	Yes

A5.5.6 Actuaries are involved in other activities of private sector insurers, such as premium-rating for short-tail classes, profitability analyses, expense analyses, investment policy, quantification of capital requirements and capital allocation. Employment of actuaries by general insurers has increased rapidly in recent years.

A5.6 Superannuation

A5.6.1 For many years, superannuation was regulated only indirectly, through compliance with the conditions necessary to receive tax concessions, and approval of a scheme for tax exempt status depended upon appropriate actuarial management of its finances. Today, formal actuarial certificates are required under the *Income Tax Assessment Act 1936* in support of claims for exemptions in relation to pension liabilities, the cost of death and disability benefits and pre 1 July 1988 funding credits.

A5.6.2 Direct regulation of the industry commenced with the reforms of the 1980s, and the *Superannuation Industry (Supervision) Act 1993* is now the principal statute governing superannuation. Under this legislation and its associated regulations, actuaries have formal responsibilities in certifying the appropriate funding of defined benefit schemes and in managing solvency, distributions to employers and winding up of funds. The Act requires an actuary to report an unsatisfactory financial condition or breach of the Regulations to trustees and/or to the Insurance and Superannuation Commission.

A5.6.3 Actuaries also have formal responsibilities under the *Sex Discrimination Act 1984* and the *Superannuation Guarantee (Administration) Act 1993*.

A5.6.4 Quite apart from their formal regulatory roles, actuaries are routinely involved in superannuation scheme management, advising on benefit design, investment policy, asset/liability modelling, insurance of death and disability benefits and crediting rate policy and many other aspects of superannuation.

APPENDIX B: TOPICS COVERED BY INSTITUTE FELLOWSHIP COURSES

B1 Investment Management:

1. Economics for investment
 - economic policy, economic models
 - measures of economic activity
2. Accounting for investment
 - profit & loss, balance sheets
 - statement of cash flow, source and application of funds
 - financial statement analysis
3. Statistics for investment
 - moments of distributions, price distributions vs return distributions
 - simple regression, time series models
 - indices and methods of construction
4. Regulation of investment markets
 - corporations law, other regulatory bodies
 - taxation
5. Investment characteristics
 - asset returns, debt securities, equity securities, property, derivative securities
 - other investments
6. Investment valuation
 - debt securities
 - equity securities (fundamental analysis, company analysis)
 - technical analysis
 - valuation methods
 - Capital Market theory
 - property
 - derivative securities (options, futures, swaps)
 - valuation of other investments

7. Investment management
- investment principles and objectives
 - asset & liability modelling
 - fixed income portfolio management
 - equity portfolio management
 - property management
 - international portfolio management
 - derivative portfolio management
 - strategy implementation
 - investment manager selection
 - performance measurement and limitations

B2 Life Insurance:

1. The Australian life insurance market
 - types of policy
 - market trends
2. Role of the Actuary
3. Operational structure
 - the work of a life office
4. Sales and Marketing
 - marketing
 - methods of acquiring new business
 - sales organisations
 - remuneration of sales forces
 - new business presentations
 - disclosure requirements
 - Code of Practice
 - control of voluntary terminations
5. Legislation governing life insurance in Australia
 - Life Insurance Act 1995
 - other relevant legislation
 - the role of the ISC
 - the role of the actuary
6. Accounting aspects
 - statutory funds
 - preparation and analysis of accounting returns
 - treatment of assets, interest, expenses
7. Taxation
 - taxation of individuals
 - taxation of life insurance companies
 - alternative tax bases
8. Investments
 - strategies and monitoring
 - rates of return
 - suitability of assets

9. Expenses
 - purpose of expense analyses
 - sources of data
 - uses of expense analyses
 - marginal vs allocated expenses
10. Discontinuances
 - surrenders
 - lapses
 - control of discontinuances
 - industry experience
11. Mortality and morbidity
 - population mortality
 - mortality of insured lives
 - mortality of annuitants
 - options
 - mortality under group life schemes
 - morbidity
 - impact of AIDS
 - setting assumptions
12. Risk selection
 - information required
 - medical underwriting
 - financial underwriting
 - rating of risks
13. Theory of reinsurance
 - methods of reinsurance
 - retention limits
 - legal aspects
14. Product development
 - market research
 - product design
 - actuarial advice
15. Premium rating
 - factors entering premium calculations
 - methods of premium calculation - traditional and projection techniques
 - the concept of yield on transfers

- profit measures
16. Premium rating for specific classes of business
 17. Surrenders and alterations
 - theory of surrender value bases
 - calculation of surrender value bases
 - theory of paid up policies
 - alteration of policies
 18. Financial control of life insurance
 - reasons for actuarial investigations
 - legislative control
 - experience investigations
 - preparation of Financial Condition Reports
 - Institute guidelines and standards
 19. Valuation of assets
 - valuation methods
 20. Valuation of liabilities
 - purpose of valuation
 - mechanics of calculation
 - methods of valuation
 - margin on services
 21. Relationship of assets and liabilities
 - theory
 - consistency of asset and liability valuation
 22. Best estimates liabilities
 - concept
 - determining a best estimate liability
 23. Solvency and capital adequacy
 - need for capital over "best estimate"
 - traditional view of solvency and estate
 - modern view of solvency and estate
 - modern view of solvency and capital adequacy
 - prudential standards
 - asset/liability issues
 - management of capital adequacy reserves

- transfers
24. Analysis of surplus
- uses
 - methods of carrying out an analysis of surplus
 - the analysis in practice
25. Distribution of surplus
- definition
 - emergence of surplus
 - methods of distribution including distribution of unrealised capital appreciation
 - considerations of equity in surplus distribution
 - choice of valuation bases
26. Development of models
- use
 - selection of model points
 - validation
 - asset/liability modelling
27. Financial Reporting
- users of financial statements
 - accounting concepts
 - relationship with accounting profession
 - methods of reporting
28. Appraisal Values

B3 General Insurance:

1. The nature of general insurance contracts
 - the Australian general insurance market
2. Legislation governing general insurance companies in Australia
 - principles affecting the investment and taxation of general insurance companies in Australia statutory monitoring of the insurance industry and its individual members
3. Documentation and data collection
 - management information and system requirements
 - interpretation of data
4. Principles of premium rate calculation
 - premium rating structures, models and parameters
 - modelling and forecasting of premium rate parameters
 - pricing philosophy in premium rate setting
 - effect of contract design on premium rating and management of risk
5. Principles of incurred claims estimation
 - claims estimation models
 - selection of valuation methods and bases including the philosophy underlying the setting of provisions
6. Techniques for data analysis and parameter estimation for premium rating and outstanding claims estimation
7. Techniques for expense analysis
8. Circumstances requiring valuation of assets and liabilities
9. Interpretation and preparation of general insurance accounts.
10. The underlying theory of and different types of reinsurance, including reinsurance program design for both inwards and outwards reinsurance
11. Aspects of financial control
 - funding
 - solvency
 - techniques of profit analysis

12. Application of risk theory to the insurance process
13. The principles of compensation scheme benefit design and funding
14. Approaches to risk management including design of self-insurance schemes.

B4 Superannuation:

1. The Australian superannuation market
 - employer sponsored plans (defined contributions and defined benefits)
 - Superannuation Guarantee System
 - personal superannuation
 - rollover funds
2. Benefit design
 - lump sums or pensions
 - benefits on retirement, death, invalidity, retrenchment, resignation
 - vesting, preservation and portability
3. The parties associated with superannuation plans
 - interrelated roles of employees, employers, trustees, actuaries, fund managers
4. Legislation governing superannuation in Australia
 - taxation of superannuation funds
 - Superannuation Industry (Supervision) Act and associated regulations and guidelines
 - Superannuation Guarantee legislation
 - anti discrimination legislation
5. Interaction of occupational superannuation with industry superannuation and social services
 - public sector superannuation
 - superannuation as an industrial matter
6. Methods and pace of funding
 - individual, accrued benefit and projected benefit methods
 - projection techniques, calculation of individual transfer values
 - unfunded superannuation plans
 - non complying funds
 - subsidiaries of multinationals
7. Investment of superannuation funds with particular regard to the nature of liabilities
 - valuation of fund assets
 - setting investment objectives
8. Actuarial reviews

- reports and associated Institute guidelines
 - analysis and treatment of surplus (or deficiency)
9. Use of insurance
- group life
 - stop-loss
 - self insurance
 - salary continuance insurance
10. Special problems arising from company takeovers and mergers
- dissolution of funds
11. Documentation and communication of fund benefits
- fund accounting
 - reporting to members on fund progress
12. Actuarial Certificates.

B5 Finance:

1. Capital budgeting & risk
 - expected return and risk, business risk and financial risk
 - capital structure and expected return
 - weighted average cost of capital
 - certainty equivalents
 - sensitivity and break-even analyses
 - simulation and decision trees
2. Dividend policy
 - forms of dividend
 - taxes and dividend policy
- 3.,. Capital structure & cost of capital
 - effect of leverage, taxes and capital structure
 - bankruptcy costs
 - pecking order hypothesis
 - interactions of investment
4. Option valuation & corporate liabilities
 - option payoffs and simple valuation
 - default on debt as an option
 - real options
 - option to abandon
 - valuation of warrants and convertibles
5. Debt financing
 - valuing risky debt
 - term structure
 - repayment provisions
 - leasing
6. Mergers and acquisitions
 - motives for mergers
 - estimating costs
 - mechanics
 - tactics
 - legal requirements
7. Futures, swaps, and interest rate options
 - contract specifications

- payoffs
 - uses
 - market mechanisms
 - trading strategies
8. Option valuation
- Black-scholes model and adjustments
 - Wiener process and binomial model
 - empirical distributions
 - modelling volatility
9. Valuation of interest rate derivative securities
- forward and futures prices
 - valuation of swaps
 - term structure theories
 - Wiener processes and binomial model for interest rates
 - valuation based on market price of interest rate risk
 - equilibrium arbitrage free models
 - no arbitrage term structure fitted models
11. Exotic options
- basket options
12. Hedging
- delta, theta, gamma, rho, vega hedging
 - synthetic option replication
 - portfolio insurance
13. Credit risk
- default risk on derivatives
 - bank capital adequacy requirements

APPENDIX C: PRINCIPAL LEGISLATIVE RESPONSIBILITIES OF ACTUARIES

C1 The Life Insurance Act 1995

The appointed actuary is required to give a written report or written advice to the directors in the life company (or to the life company) on

Section 62(1) - the likely consequences of a proposed distribution of shareholder's capital in relation to a Statutory Fund

Section 62(2) - the consequences of a proposed distribution of retained profits of a Statutory Fund

Section 80(2) - whether the basis of a proposed apportionment of income and outgo is appropriate

Section 113 - the results of the investigation by the appointed actuary, as at the end of the of the financial year, into the financial condition of the company

Section 116(1) - the proposed terms and conditions on which policies of a particular kind are to be issued, including the proposed basis on which surrender values are to be determined and the proposed means by which unit values are to be determined

Section 116(2) - the likely consequences of a proposed reinsurance arrangement

C2 The National Health Act 1953

The Act provides in respect of registered health benefits organisation that

Section 70 (1)(a) - the Commonwealth Actuary or appointee is an official member of the Registration Committee responsible for the granting of registration to an organisation for the purpose of carrying on health insurance business

Section 73 BAC(1B) - provision of actuarial certification in relation to applications for exemption from the minimum reserve requirements

Section 82 D(c) - provision for the appointment of an independent actuarial member to the Private Health Insurance Administration Council

Section 82 G(e) - independent actuarial assessment of assets

and, under the National Health Regulations, actuarial projections are required in support of applications

Regulation 35 (2)(i) - for registration as registered organisation ()

Regulation 36 (1)(c)(iii) - to carry on business as a registered health benefits organisation in a State

C3 The Superannuation Industry (Supervision) Act 1993

Actuaries have responsibilities in relation to superannuation funds

Section 117 - actuarial certificate in relation to a payment to an employer

Section 129 - reporting a breach of the Regulations to the trustees and/or the Insurance and Superannuation Commission

Section 130 - reporting an unsatisfactory financial position to the trustees and/or the Insurance and Superannuation Commission

Regulation 9.09 - preparation of a funding and solvency certificate for a defined benefit fund

Regulation 9.17 - declaration of technical insolvency of a defined benefit fund

Regulation 9.24 - preparation of a special funding and solvency certificate and recommended course of action in place of winding-up of fund

Regulations 9.29 to 9.33 - actuarial investigation and report of financial condition of a defined benefit fund

Regulation 9.39 - actuarial management during period of technical insolvency of an accumulation fund

Regulation 9.44 - recommended course of action in place of winding-up of an accumulation fund

Part 12 of the Regulations - actuarial certification in relation to pre 1 July 1988 funding credits, in respect of benefits from a defined benefit fund

C4 The Superannuation Guarantee (Administration) Act 1992

Section 10 - preparation of Benefit Certificates for defined benefit funds

C5 Income Tax Assessment Act 1936

Sections 273 and 283 - actuarial certificates re exemption from tax in relation to pension liabilities of superannuation funds

Section 279 - actuarial certificates regarding the notional cost of insuring death and disability benefits

Section 275 - actuarial certificates in relation to pre 1 July 1988 Funding Credits

C6 Sex Discrimination Act 1984

Actuarial Certification of the relative value of benefit entitlements under the Sex Discrimination Guidelines.

C7 The Insurance Act 1974

Section 48(a) - empowers the Insurance and Superannuation Commissioner to require an authorised insurer to appoint and actuary - who is not an officer of the Company - to investigate and report on the adequacy of outstanding claims provisions and related issues.

C8 The NSW Motor Accidents Act 1988

Section 15 - requires each of the (currently 14) insurers licensed under the legislation to file at least annually with the NSW Motor Accidents Authority (MAA) a complete set of proposed CTP premium rates and an actuarial report explaining the derivation of the proposed rates in certifying that they are expected to be sufficient to cover expenses and claims costs and to provide an appropriate profit margin

In practice the MAA provides guidelines on what issues it expects such actuarial reports to cover and such reports are subject to the IAA's Mandatory Guidance Note 351.

Requirements in NSW, Victoria and SA for workers' compensation self-insurers to provide to the state regulators annual actuarial reports on the adequacy of their provisions for outstanding claims liabilities. governing legislation.