



Actuarial Studies Seminar
Macquarie University
25 March 2009

Peter Carroll
Director, Ozecover

**Innovation in the Australian actuarial profession:
40(+?) years of controversy and progress**

Peter was an academic at Macquarie University during the early development of its actuarial studies program, from 1969 to 1985. Since then he has been a consulting actuary in Sydney, and has become a specialist in health insurance and a director of Ozecover, a website for health insurance consumers.

The basis for the seminar is Peter's most recent paper on private health insurance in Australia, first given to the Institute of Actuaries of Australia in 2007. Because of its fundamental structure, the industry is intrinsically unstable, and this challenges in new ways actuaries that have recently been given statutory responsibilities within the industry.

In his seminar, Peter will set this expansion of the roles of actuaries within the general diversification of actuarial activities since the Macquarie program commenced. He will give his views on the controversies and successes of the past 40 years, and on the evolving challenges and opportunities for teaching and research in the Australian profession.



Institute of Actuaries of Australia

Actuarial Management of Health Funds in Australia

Prepared by Peter Carroll

Presented to the Institute of Actuaries of Australia
Biennial Convention 23-26 September 2007
Christchurch, New Zealand

*This paper has been prepared for the Institute of Actuaries of Australia's (Institute) Biennial Convention 2007.
The Institute Council wishes it to be understood that opinions put forward herein are not necessarily those of the Institute and the Council is
not responsible for those opinions.*

© Peter Carroll 2007

The Institute will ensure that all reproductions of the paper acknowledge the Author/s as the author/s, and
include the above copyright statement:

The Institute of Actuaries of Australia
Level 7 Challis House 4 Martin Place
Sydney NSW Australia 2000
Telephone: +61 2 9233 3466 Facsimile: +61 2 9233 3446
Email: actuaries@actuaries.asn.au Website: www.actuaries.asn.au

Actuarial Management of Health Funds in Australia

Abstract

Private health funds in Australia have features which challenge actuaries in new ways.

This paper summarises how the author believes the industry came to be what it is and how actuaries got involved in it, and gives the author's personal observations on some general issues facing an actuary, in particular product positioning, profitability, actuarial monitoring and the management of capital.

Keywords: Health funds; capital; profitability; pricing; costs; benefits; demutualisation; marketing.

1. The issues

The trouble with the world is that fools and fanatics are always so certain of themselves and wiser people so full of doubts.

George Bernard Shaw

1.1. The essential task

- 1.1.1 The Australian private health insurance market and the funds that operate in it have features which challenge actuaries in new ways. After twenty years of observation, I have come to believe that the management of an Australian health fund is a nuanced and subtle art, in essence about maintaining equilibrium in a naturally unstable industry, different from anything else an actuary is likely to encounter.

1.2. Background

- 1.2.1 Numerous contributions have been published in Australian actuarial literature addressing many of the issues. There were seminal papers on the actuarial role in the private health insurance industry from Walker (1977, 1989), with comment by Liney (1989). The broad context in which private health insurance operates has been addressed also by Walker (1990, 1991), Carroll (1990) and the Institute of Actuaries of Australia (1995). Technical issues have been addressed: pricing by Melville (1959), Carroll (1997) and Gale (2005); reserving by Pollard (1978); provisioning by Brown (1993); modelling by Brown & Gale (1996); collection and analysis of experience by Brown & Gale (1999); and the actuarial control cycle by Ooi (2005). Policy issues have been addressed by Cumpston & Walsh (1989), Carroll (1996), Adams & Gale (2001) and Brown & Gale (2003); risk equalisation by Carroll (1997), Neuhaus (1997, 2005) and Brown (1998); and prudential requirements by Torrance (2001). The role of the actuary generally in private health insurance has been addressed by Ginnane (2003) and Lurie (2005); and in the wider health services market by Dyson, Hardy & Leung (2003).
- 1.2.2 This paper summarises how I believe the private health insurance industry in Australia came to be what it is today and how actuaries got involved, and gives personal observations on some general issues facing an actuary which I have found to be important and which as far as I know have yet to be addressed in the literature. These are product positioning, profitability, actuarial monitoring and the management of capital.

2. How it all came about

The most important single central fact about a free market is that no exchange takes place unless both parties benefit.

Milton Friedman

2.1. The private health insurance industry

- 2.1.1 Health insurance has its roots in the institutions of mass thrift and rise of democratic politics in the urbanised populations of Europe during the 1800s, although this was reflected in various ways in Australia. Since early European settlement, New South Wales has had a significant public health system based on its large government hospitals while Victoria developed a private health care market which, by the early 1900s, was complemented by strong friendly society movement and high levels of voluntary private health insurance coverage.
- 2.1.2 Following Federation in 1901, developments across Australia mirrored those in many other western societies. However, attempts to introduce welfare systems similar to those in Europe and America were frustrated by ideological and constitutional issues. Private health insurance spread in this vacuum. Friendly societies flourished and many medical and hospital interests established organisations modelled on the Blue Cross funds of the USA with coverages designed to complement their private health services.
- 2.1.3 The Liberal Party, like its political antecedents, was opposed to the kind of government schemes introduced by the Democrats in the US during the 1930s and by the Labour Party in the UK during the 1940s. Instead, it provided the legislative framework for the growth of private health insurance, with the National Health Act 1953, and the industry evolved its unique Australian form under this regime, with community rating and voluntary membership as central principles.
- 2.1.4 Participation was always a measure of the political success of the scheme and this peaked at more than 80 percent of the population during the 1960s and 1970s. However, in 1974, the Australian Labor Party used a joint sitting of the Parliament to overcome a hostile Senate and enact a government program known as Medibank which made health insurance coverage virtually universal. The Liberals gutted the original Medibank, but the Australian Labor Party re-enacted the scheme as Medicare in 1983 and this has survived now in its essential form for more than 20 years. Under Medicare, every Australian can in principle access without charge or means test the services of public hospitals and medical practitioners who agree to accept a scale of government payments.
- 2.1.5 Medibank and Medicare destabilised the underlying demographics of the private health insurance industry and set off a spiral of rising average claims and contributions in what remained a community rated system with voluntary membership. As prices increased across the industry, many consumers abandoned their habits of lifelong participation and indulged in "hit and run" behaviour, exercising options to take up and lapse private coverage at times of different need. Long established funds that were open to all comers could not compete with niche funds that cherry picked low risk members.
- 2.1.6 In 1989, measures were enacted to stabilise the industry while retaining community rating. A comprehensive risk equalisation arrangement was set up to ameliorate the effects of demographic imbalances among the funds, and the Private Health Insurance Administration Council ("PHIAC") was also established to help regulate the finances of the industry.

Actuarial Management of Health Funds in Australia

PHIAC was empowered to require an actuarial report from any fund that breached its prudential rules.

- 2.1.7 Shortly after the 1989 reforms, two major open funds - HBA in Victoria and Mutual Community in South Australia - were rescued from insolvency by an injection of capital from a large life company, National Mutual. Until then, shareholder funds had never played a significant role in the industry. The advent of a large shareholder driven player was followed by numerous innovations, in benefit design, pricing and State segmentation, which affected the conduct of all funds in the market.
- 2.1.8 Nevertheless, the industry was continuing to languish and membership had fallen to 30 percent of the population by mid 1998. In response, the Liberals enacted a series of stick and carrot measures, including income tax rebates and a form of entry age community rating known as lifetime health cover, which lifted membership to 45 percent of the population by 2000, where it has since remained.

2.2. The nature of the market

- 2.2.1 The markets in health services are large, complex and highly regulated. It is not uncommon for governments and their agencies, commonwealth, state and local, to be acting simultaneously as producers, suppliers and consumers, as well as regulators, often in competition with one another as well as with private operators. Many of the markets in health services are characterised by monopoly and mismatches of supply and demand, and have distorted prices. Arguably, private health insurers add competition and price signalling and bring at least some economic rationality to the system.
- 2.2.2 The private health insurance industry currently has revenues exceeding \$10 billion a year, more than any other form of private insurance. It is segmented into State markets, with competition far more intense within each segment than among the different segments. Community rating and risk equalisation operate on a State basis, and hospitals and many other health service providers are managed or regulated by the States.
- 2.2.3 Although there are almost 40 separately registered health funds, in reality there is a high degree of oligopoly. Of the seven State and Territory markets, five are dominated by a single fund and in each of the other two, New South Wales and Victoria, more than half the revenue is shared between just two funds. However, the major funds face competition from numerous small competitors that continually seek to cannibalise and quarantine better risks. It is a perverse effect of community rating that the longer a fund has been established and the more it grows, the higher its average claims rates tend to become. This frustrates consolidation within the industry and accounts for the persistence of the many niche players.
- 2.2.4 While suppliers in the industry are concentrated, consumers are not. In Australia, unlike the USA, UK and New Zealand, the private health insurance market has few sponsored arrangements, such as employer schemes or affinity groups, and little intermediation. It is very much a retail industry catering directly to families and individuals, with strong brand loyalties reinforced by mass advertising.
- 2.2.5 In sum, the industry has evolved into an unfunded community rated system, with tight regulation and intense competition. No other private insurance industry operates with such large cash flows, thin margins and little capital, while remaining bereft of the usual tools of actuarial management - underwriting and risk-based pricing, and the maintenance of actuarial reserves.

2.3. Actuarial involvement

- 2.3.1 Friendly societies, the principal vehicle for private health insurance during its early development, have long been subject to actuarial regulation under State laws. The National Health Act 1953 however imposed no formal actuarial requirements on health funds generally. Some of the major funds did use actuaries - for example, during the 1950s, Alf Pollard was a director of MBF, the largest fund in NSW, Queensland and Tasmania, and Tig Melville provided consulting advice to HCF, MBF's principal competitor in NSW. Melville (1958) produced an independent actuarial report on experience and pricing that I believe was the first for a private health fund operating in the unique environment of the Australian market.
- 2.3.2 In the controversies surrounding the establishment of Medibank in 1974, a public spotlight fell on aspects of the industry, including its use of community rating, mutual nature, costs and use of capital. There was a view, expressed most notably by the then Commonwealth Treasurer, Bill Hayden, that the holding of reserves imposed unnecessary costs on contributors. A report by Pollard (1978) led to the establishment of minimum reserve requirements across the industry. A number of other individual actuaries were involved informally at this time, including David Watson and Brent Walker in Sydney, and Allen Truslove and Carl Stevenson in Melbourne.
- 2.3.3 The reforms of 1989 gave PHIAC power to involve actuaries in troubleshooting roles, and this opened up what became a continuous dialogue between the profession and the regulator. During the late 1980s and 1990s there were profound changes in the financial services industries throughout Australia, including deregulation, new technologies, demutualisations and some notable corporate failures in both the public and private sectors. The actuarial profession was given a greater role in regulation generally. In private health insurance, actuaries have been given formal responsibilities in pricing and in the production of annual financial condition reports for every fund, roles now consolidated in the Private Health Insurance Act 2007.
- 2.3.4 Because of its structure, the private health insurance industry is intrinsically unstable. Actuaries, initially drawn into the industry as trouble shooters, now have statutory responsibilities for every fund. Measures such as risk equalisation, lifetime health cover and tax rebates ameliorate the instability in the industry generally, and strong branding by individual funds is helpful in stabilising the finances of each fund. Nevertheless, the inability of funds to set actuarial prices leaves them vulnerable to financial instability and it is an actuarial imperative for a fund to achieve a suitable mix of risks to maintain stability over the long term without dependence on subsidies.

3. Benefits

What we obtain too cheap, we esteem too lightly; it is dearness only that gives everything its value.

Thomas Paine

3.1. Orientation to the market

- 3.1.1 Product design sets a fund's basic orientation to the market and plays a key role in determining what risk mix it obtains. There are two aspects to this, benefit design and pricing, both of which are under direct management control. The interaction of these features with those of a fund's competitors determines the characteristics of the risk pool attracted by the fund, and its ultimate actuarial outcomes.
- 3.1.2 Most funds are mutuals or at least started that way. In the absence of shareholders or any systematic requirement to account for the use of capital, profit motives are diluted and non-profit objectives emerge. Commonly, a sales maximisation culture evolves, where directors and managers measure success by the size and influence of their enterprise and, as part of this, efforts are made to court opinion makers in medical, hospital and political circles. A fund obtains kudos by offering attractive benefits. Many people join health funds with specific health services in mind, and many providers - such as obstetricians, orthodontists, opticians and hospital administrators - are adept at optimising their revenues from health funds. They tend to recommend funds that pay generous benefits to their patients. Some funds even seek to distribute products specifically through channels that attract high users of private health services, such as pharmacies and hospitals.
- 3.1.3 Although the relationship between them is a synergistic one, in that neither can readily thrive without the co-operation of the other, funds and health service providers have different constituencies. Funds ultimately rely on delivering financial value to their members. If, while offering generous benefits, a fund attempts to have low prices too, the outcome can be a weak balance sheet and continual actuarial crises.
- 3.1.4 All of this occurs in the context of Medicare, which purports to offer universal no gap coverage at no cost to users, and of politicians who promote no gap insurance. Whether or not such political promises are actually delivered, they create perceptions and expectations in the market where private funds operate.
- 3.1.5 The key to escaping this invidious situation is the avoidance of a benefit-oriented culture. The classic actuarial defence to moral hazard is to ensure customers experience at least some adverse consequences whenever claims occur. In the context of private health insurance in Australia, it is a generally good actuarial strategy to avoid having the best benefits in the market, and in particular to avoid floodgate or tipping point effects where benefit features are so attractive that claims escalate rapidly and the risk pool becomes unbalanced. When a particular feature of its benefits shuffle to the front of the market, a fund can experience a rush of claims not unlike a run on a bank and only a quick review of the benefits will staunch the losses.

3.2. Balancing the risk pool

- 3.2.1 There are specific measures that can be deployed to fine tune the benefit design and attract a balanced pool of risks. Many members view the benefits offered by a fund as a smorgasbord from which they can pick and choose and there is a fluidity across products,

Actuarial Management of Health Funds in Australia

even from one fund to another, due to the portability rules of community rating. Members expect to modify their coverages without hindrance, from single to couple to family status, from one table to another, adding and subtracting features as it suits them. Every time a membership or coverage is adjusted, an option is exercised. It is good actuarial practice therefore not to offer too many choices, to restrict the scope for cherry picking and to array around each price point a broad and robust pool of risks.

- 3.2.2 In the recent past it was widely believed in the industry that about 80 percent of joiners had an expectation of making a claim. However, there are some joiners who wish to purchase for reasons other than accessing attractive benefits, such as a financial responsibility and self reliance, access to quality and choice of services, and peace of mind, and recent tax measures and reforms to community rating encourage such motives.
- 3.2.3 Deductibles, copayments and exclusions deter claim-oriented members and confer price benefits that are attractive to non-claimers. Where products have such features, the actuarial experience usually reflects not merely the direct effects of diminished benefits but a powerful general selection effect on the pool of risks attracted to the products. Also, family memberships, composite products, and those with a broad mix of benefits usually show better experience than do single memberships, stand alone products and those focussed on a narrow group of modalities or health services. Whenever a customer seeks a product because it has a benefit of immediate interest to them, it is useful from an actuarial point of view if the coverage can be bundled with a range of benefits for a rainy day too, and with coverages for other members of the customer's family.
- 3.2.4 It is also helpful to have a culture prominently entrenched in the marketing department of every health fund that does not unduly disturb existing members and that avoids provoking the cannibalisation of settled risk pools. Communications with established members provide opportunities for the exercise of options against the fund, either to increase claims or reduce contributions. Continuing customers are usually well disposed to private health insurance and to their particular fund, and can often be persuaded to maintain or even upgrade their cover. Whenever rule changes are being communicated, consideration needs to be given to managing the options offered to existing members. It is here also that loyalty schemes have a role, inducing customers to maintain membership throughout periods when they are not expecting to access benefits.

4. Prices

Annual income twenty pounds, annual expenditure nineteen nineteen and six, result happiness. Annual income twenty pounds, annual expenditure twenty pounds ought and six, result misery.

Charles Dickens

4.1. Adequacy

- 4.1.1 No aspect of a fund's financial management is more important than the adequacy of its prices. Historically, in the mutual and benefit-focussed cultures of the private health insurance industry, discussion of profitability and the use of explicit profit goals in particular has been considered inappropriate. However, nothing short of external subsidies can ensure the fund's survival if prices as a whole are not set at a profitable level and do not cover costs. In my observation, an explicit goal of achieving and maintaining profitability is the most effective single unifying principle in the actuarial stabilisation of a fund.
- 4.1.2 Quite apart from the sufficiency of prices in general, it is a sound principle also that relative prices reflect relative costs across products. Failure to tune prices to the underlying cost patterns leaves an organisation vulnerable to cherry picking among its unprofitable products. Strategies in particular segments, such as meeting the market irrespective of costs or loss leading to establish market presence, have been common causes of commercial weakness and failure.
- 4.1.3 Ideally, each product should cover its marginal costs and make a contribution to the general overheads of the organisation. Because of community rating, this principle cannot be applied in full in the private health insurance industry. Cross subsidies are entrenched in the rules of the business and this is a source of continual risk and instability in a fund. The risks can be reduced considerably by restricting cross subsidies as much as possible and this can be achieved by getting the relativities at each community rating price point to reflect the costs of servicing the collective membership included at that price point. Subsidies **across** price points can be eliminated even while those **within** each price point cannot.

4.2. Understanding costs

- 4.2.1 Maintaining adequate pricing is ultimately about understanding costs and, in dealing with large cash flows and narrow margins, errors can have serious consequences. Health funds are subject to a political approval process for their prices, which may be adjusted just once a year usually in April or May, and because of the bureaucratic processes involved, it is necessary for funds to anticipate costs up to sixteen months into the future. Projecting costs is therefore also an important part of pricing.
- 4.2.2 To narrow the scope of uncertainty, it is useful to disaggregate the main components of costs and track over time the separate forces affecting them, as described below.
- *Hospital benefits borne by the fund* - these comprise insurance benefits paid by the fund to cover hospital services, other than those reimbursed by the risk equalisation system. The fund itself bears only some of the costs of the hospital benefits for its aged members who are subject to risk equalisation. Its hospital costs are driven by the demographics of members and by the prices of private hospital services, such as accommodation, theatre use, surgery and prostheses. Amounts payable are determined

Actuarial Management of Health Funds in Australia

by clinical decisions outside the control of the fund and coverages are generally open ended.

- *Ancillary benefits paid by the fund* - these comprise benefits paid to cover non-hospital services, principally dental, optical, chiropractic and physiotherapy treatments. These costs are largely within management control, since they are subject to benefit limits set by individual funds.
- *Risk equalisation costs* - these comprise levies paid by the fund for its share of the benefits paid by risk equalisation pools in each State. These pools bear proportions of hospital benefits on a sliding scale for aged people covered by private health funds. Each fund's share of the pools is relatively stable in the short term, being based on its market share of SEUs in each State, so the principal driver of a fund's risk equalisation costs are the movements in the overall size of the State pools, over which the fund itself has no effective control.
- *Administration costs* - these comprise all the wages, rents, equipment and similar expenses paid by the fund in marketing its business, collecting contributions and managing benefit payments, and in general overheads. These are not normally the largest component of a fund's costs but often receive considerable attention because they are most obviously within the discretionary control of the fund's management.

4.2.3 The principal cost components typically split in weight ratios of about 30:30:30:10 respectively across the fund as a whole, but the mix varies considerably from product to product. To ensure price relativities remain appropriate and to minimise cross subsidies, it is necessary to allocate these cost components accurately at each price point.

- *Hospital and ancillary benefit costs* borne by the fund are best allocated from analyses of the drawing rates of various products. It is best to track the drawing rates of ancillary and hospital products separately for this purpose. For hospital products, the relevant drawing rates are calculated net of benefits paid by risk equalisation. They vary widely and are strongly affected by the presence of deductibles and copayments and by the demographic mix of those covered. For ancillary products, no risk equalisation adjustments are necessary and drawing rates generally display less variability and are driven almost entirely by the benefit mix and limits associated with the particular products.
- *Risk equalisation costs* fall entirely on hospital coverages, and are a flat charge on each SEU. They are largely exogenous and virtually unrelated to the levels of cover provided under the fund's own products, or to the size and frequency of hospital claims experienced by the fund's own members.
- *Administration costs*, particularly claims processing, fall heavily on ancillary products because of the frequent small claims they experience. Typically, ancillary products experience 15 or 20 times the claims frequency of hospital products, and there are costs associated with processing each claim, irrespective of the amount of the benefits.

4.3. Marketing requirements

4.3.1 Prices are also a significant feature of overall product design, and simplicity, rationality and consistency from product to product and over time help add to the general marketing appeal

Actuarial Management of Health Funds in Australia

of products. This is not always easy to achieve. Stand alone products and those with single person memberships often have different underlying risk pools and different experience from the corresponding components of composite products or multiple person memberships, although the benefit structures may be identical. A straight forward additive approach, even with modifications such as discounts for composite and family products or the use of policy fees, can be awkward to fit into a profit-based pricing regime, and compromises between the actuarial and marketing requirements are generally necessary.

5. Actuarial monitoring

The only sustainable competitive advantage is the ability to learn faster than the competition.

Arie de Geus

5.1. The process

- 5.1.1 The actuarial management of any financial institution engaged in a stochastic business is like travelling backwards into the expanding funnel of doubt. The process involves deducing from the past and present useful information about how the experience is unfolding, and putting in place settings and mechanisms that use that information to best advantage for the future. The information is always incomplete and imperfect, and the future usually differs from the past in unforeseen ways. The skills involved in sifting data, deducing trends, distinguishing what matters from what does not, building workable models and testing scenarios, have been and continue to be developed and imparted through the education and professional development of actuaries. The unique nature of the Australian private health insurance system, and the very recent involvement of actuaries in that system, suggest there remains much yet to be learned.
- 5.1.2 In their trouble shooting roles in the past, actuaries have been able to add considerable value with simple analyses and blunt remedies and, because of the circumstances in which they were working, their advice usually received a favourable reception. The actuarial monitoring of well-managed health funds is a recent development and is subject to different, sometimes more questioning, scrutiny.
- 5.1.3 Much of the actuarial technology being used has been lifted from other insurance applications, albeit with adaptations. Some form of actuarial control cycle is now widely used within the private health insurance industry. In recent years PHIAC has mandated methods of capital management and pricing which require financial modelling techniques, particularly the use of projections, and this has induced many funds to adopt an actuarial control cycle as the centrepiece of their internal financial management.
- 5.1.4 Adapting existing systems and procedures to new actuarial methods is not a straight forward task. Financial modelling, especially of products affected by member demographics, requires appropriate computing facilities and actuarial skills and it requires a commitment of adequate resources to be effective. There are proprietary projection systems developed for life insurance applications which can be adapted to health fund use, but many funds have chosen to develop their own computer systems or develop new elements in house. Most of the larger funds now employ in-house actuaries. Outsourcing is often a cost effective solution for smaller funds, and a mixture of in-house resourcing and outsourcing is an attractive means of knowledge transfer between the funds and the profession. The pool of health insurance experience is now growing rapidly within the actuarial profession.

5.2. Inputs

- 5.2.1 The choice of the variables to model, and of the assumptions upon which to project them, is a skilled task best undertaken with a long term perspective so that, over time, changes in experience can be observed against a reasonably stable framework.

Actuarial Management of Health Funds in Australia

- 5.2.2 Basic analysis readily identifies that benefit drawing rates are by far the most significant cost driver. Movements in drawing rates are influenced by numerous political and social forces outside the control of an individual fund, by product design features within the discretion of individual funds, and by member demographics that are affected by both external forces and internal policies. Factors other than drawing rates matter too, such as administration and distribution costs and investment conditions, but these are not of such significance in private health insurance as in other forms of insurance which are differently structured. Understanding how these different factors affect components of the business and displaying those effects is the purpose of actuarial experience analysis.
- 5.2.3 There are numerous ways to cut and dice actuarial analyses. So far there appears to be little standardisation across the private health insurance industry. I have some preferences which I mention below.
- *As the unit of analysis*, both for drawing rates and other costs, I prefer SEUs to persons or memberships. SEUs are the drivers of revenues and the units of pricing under the rules of community rating, and also of data collection by PHIAC. It is useful to track all elements of cost on a per SEU basis because, by applying the relative weights of the various cost components, this gives a useful basis for pricing estimates which can be readily understood by non-actuaries. Knowledge of the cost weights, and monitoring the evolving trends in the major cost elements on a per SEU basis, focuses resources and attention on those measures that most affect prices. It is not uncommon to see heroic efforts made to manage administration costs, which might carry a weighting of 10 percent in the overall cost picture, while product design and claims management issues are largely overlooked.
 - *In the numerator of drawing rates*, I like to separate hospital, risk equalisation and ancillary components of benefits, because they are driven by different forces. There are often internal data management routines that are inconsistent with the way an actuary seeks to decompose benefits for analysis purposes, and this may mean changes to embedded systems and supplementary data reports for actuarial purposes.
 - *For time series*, I prefer to track data quarter by quarter rather than by months and, if decomposing by age, by quinquennial groups, consistent with PHIAC reporting. I also do not usually bother tracking utilisation and cost per service separately. In all of these, I have often found that additional detail adds to the noise without clarifying the message. Quarter on quarter analysis, from one year to the next, is helpful in cutting through data with seasonal influences. There can be confounding factors - holiday seasons in particular affect private health service patterns and the quarters in which holidays fall are not consistent from year to year - but adjustments are readily made.
- 5.2.4 Although the closing date for the Financial Condition Report is the end of the June quarter, it is helpful that the September quarter data usually becomes available in time for the pricing decisions, because the hospital experience in winter is often significant.

5.3. Outputs

- 5.3.1 The output from modelling is a set of time series which can be tracked and compared over extended periods, a process which allows unusual variations to be examined in a historical context. Such time series invariably include some noise that confuses and masks useful information, and sound principles of statistical design in the construction of the models assist in maximising the message and minimising the noise in the reporting processes. It is also useful to maintain a model in a reasonably consistent format and to change it only gradually and deliberately, so that disturbances in the model itself do not mask the

Actuarial Management of Health Funds in Australia

messages being observed. An initial investment in an enduring model, with good basic design features, usually pays off.

- 5.3.2 A final imperative for the actuary is to lower expectations within management and particularly among directors regarding the usefulness of financial modelling. I prefer to use the word "forecast" rather than "prediction", and I use a disclaimer to modelling reports emphasising the presence of uncertainty in all health fund projections. Modelling merely gives shape to the funnel of doubt: it cannot remove it no matter how refined or detailed. The only defences against uncertainty are cautious design, good monitoring, flexibility of action and large reserves, and this bears continual repetition.

6. Capital

Sometimes one pays most for the things one gets for nothing.

Albert Einstein

6.1. Attitudes

- 6.1.1 For many years the private health insurance industry was regulated without capital requirements and there was a commonly held view that the accumulation of reserves imposed unnecessary costs on health fund members. These attitudes are gradually being superseded by more sophisticated views.
- 6.1.2 Recent developments in the structure and conduct of financial markets generally have substantially increased the role of capital. Reasons include more rigorous prudential regulation, greater demand for products and services which require capital inputs, and more intense competition in which capital intensive technologies confer advantages. This has led to changes in capital structures in many financial markets and, where only a few years ago large mutuals dominated the banking and insurance industries, this is no longer the case.
- 6.1.3 Private health insurance in Australia, because of its special features, has never been particularly capital hungry, and this has allowed mutuals to flourish. The industry operates on a pay-as-you-go basis, without advance funding and with few long term financial guarantees. The capital employed has largely reflected lags in timing between receipts and payments. However the cash flows are large and the margins are thin. As the variety and complexity of products has increased and as consumer choices have become greater, contribution revenues have become less certain, and benefit payments continue to be subject to a variety of economic, political and environmental influences many of which are difficult to forecast. Political controls have reduced flexibility in matters such as pricing and have imposed more onerous disciplines on provisioning and reserving. It is now increasingly being acknowledged that private health funds require capital, and that being adequately resourced with capital is no different in principle from being adequately resourced with staff and systems.
- 6.1.4 The principal argument against accumulating and retaining capital reserves within a health fund is that it causes inequities across generations of members. This argument however loses some of its force when members participate continuously over long periods during which they both contribute to and benefit from changes in capital. The advent of lifetime health cover encourages long term membership, and the equity concerns arising from accumulations of capital are somewhat mitigated in these circumstances. Furthermore, in a mutual health fund under current Australian law, capital accumulates free of tax.
- 6.1.5 It is now increasingly being recognised that the costs of accumulating capital are temporary, the benefits are enduring, and the equity implications are not serious among members who participate in private health insurance on a long term basis.

6.2. Reasons for holding capital

Actuarial Management of Health Funds in Australia

6.2.1 There are essentially four reasons for a private health fund in Australia to hold capital, as described below.

- *Prudential* - the core reason for a private health fund in Australia to hold capital is a prudential one. The industry has a long history of prudential failure of both large and small funds, and occasional failures still occur. The orderly management of this process is facilitated by PHIAC, which has gradually brought some discipline to the prudential regulation of the market, including the imposition and monitoring of solvency and capital adequacy requirements.

Because of the stochastic nature of the underlying business, no level of capital can immunise a fund absolutely against ruin. It is technically possible to reduce the risk of ruin to any given level of probability by holding appropriate levels of capital reserves, but there always remain uncertainties that are difficult to quantify.

A significant source of uncertainty arises from lags of various kinds. No matter how effective the monitoring and reporting processes are, whenever change occurs there are lags in recognition, decision-making, implementation and impact. For example, a change in drawing rates can take months to recognise, weeks for a response to be formulated, more months for action to occur, and it can be as long as a year after implementation before a rule change has a full effect on financial outcomes. Slippage in any part of the process obviously causes additional delay.

- *Political* - there are substantial political risks associated with operating private health insurance in Australia, sufficient in the recent past to deter from entry many global health insurers and domestic financial conglomerates. Among the risks recently apparent in Australia have been changes to risk equalisation, lifetime health cover rules, pricing controls, the income tax rebate and medicare levy, and rules relating to gap cover, prostheses and default benefits.
- *Competitive* - the holding of substantial assets confers a number of competitive advantages on a fund.

Firstly, a strong balance sheet assists price stability. There have been a number of cases in recent years where, following temporary misjudgments, funds with insufficient capital have gone through violent swings in pricing, with substantial losses of membership during their recovery periods. With an adequate capital buffer, such situations can be handled more smoothly and the disruption and loss of goodwill reduced.

Secondly, access to capital allows advantage to be taken of opportunistic growth situations. Funds regularly fail and their members become available to other funds. In these situations, the customers typically come from an arrangement that is capital deficient but, notwithstanding new business strain, the acquiring fund can often achieve an increase in membership more economically than it could through organic growth.

Thirdly, at least in the case of a mutual, it allows the fund to charge generally lower effective prices than would be possible in the absence of the capital. A discount is possible due to investment earnings and is analogous to a dividend to the members.

- *Management* - it is far easier to manage a company that has a strong balance sheet than one going through continual crises. The industry is more complex and competitive than ever. It operates in a business environment that has many uncertainties, and its freedom to make adjustments quickly is constrained. Whatever rules PHIAC imposes, sound

Actuarial Management of Health Funds in Australia

prudential management requires that funds hold capital reserves consistent with the uncertainties in the industry and which provide an opportunity for considered responses to fluctuations in experience.

A fund with access to capital is more likely to retain control over its affairs, to have high morale among its staff, suppliers and customers, and to avoid the effects of disastrous downside events.

6.3. Structures

- 6.3.1 There are two principal forms of capital structure common among financial institutions - the shareholder (sometimes called proprietary) company and the mutual company.
- 6.3.2 Shareholder companies get capital from financiers and investors, who form a set of stakeholders separate from customers. Arguably, a proprietary company needs less capital than does a mutual, other things being equal, because it can access additional amounts more readily if it needs to do so. Shareholder companies, particularly those involved in insurance where customers can have claims against the capital, need to have clear mechanisms to balance and resolve conflicts among stakeholders whose interests are competing.
- 6.3.3 Mutual companies accumulate capital from their customers thereby reducing internal conflict and simplifying governance, in theory at least. Arguably, a mutual company has a competitive advantage over a shareholder company in its use of capital because it does not have the political and financial constraints involved in managing interest and dividend payments. On the other hand, in a mutual, the presence of substantial capital reserves can act as a continual temptation to adventurous investments in the absence of explicit accountability to the stakeholders. This is a difficult trade-off to manage. Further, because in a mutual there are no stakeholders seeking capital returns, the costs and benefits of capital are not always understood and may become a source of confusion and controversy within the organisation.
- 6.3.4 Many mutuals that grow in size and complexity ultimately find it simpler to resolve their need for capital, and to provide mechanisms for managing it well, by demutualising and explicitly separating the interests of financiers and customers. Even in the private health insurance industry where, until about fifteen years ago, there were no shareholder companies, a number of the major players have now either demutualised or are actively considering doing so.

6.4. How much?

- 6.4.1 However capital is accessed, the need for it remains. The principal issue in any fund is the level of capital which should in normal circumstances be held within the organisation. The better a fund is capitalised, the easier it is to manage and the greater are its opportunities to make competitive and strategic adjustments to industry developments. Access to capital is particularly beneficial in an industry undergoing change and rationalisation.
- 6.4.2 For the purpose of discussing the various options, I describe below three different general strategies that a mutual, or one that cannot readily access additional finance, might adopt. I use the (somewhat colourful) analogy of flying a plane across uneven terrain.
 - *Low capital* - where the fund operates with as little capital as it can get away with, and deliberately chooses to operate without margins. We could call this the **ground hugging** strategy. If you fly low, you must carefully track the terrain, moving up and

Actuarial Management of Health Funds in Australia

down with the hills and valleys. There is little room for error, and there are risks of misreading situations, reacting too slowly and being unable to manoeuvre quickly enough. There are initial savings in avoiding the cost of climbing to a higher altitude, but the bumpy nature of the journey imposes other costs and, of course, accidents can be disastrous.

- *Medium capital* - where the fund holds enough capital to avoid making sudden changes in policy when the unexpected occurs, but it remains a passive player in any situation that requires a major capital outlay. In the flying analogy, we might call this the **safe and sound** strategy. There is enough altitude to keep above the ups and downs of the terrain without the need for sudden changes of height or direction, but bad weather or other traffic will from time to time require a change of course. Flying above the terrain allows you to operate in a safer and more relaxed mode, and gives you the opportunity to read the landscape and focus on obstacles further ahead. It allows time for smooth adjustments and repays the effort of the initial climb with a easier pattern of flight. The journey is steadier and the risk of accidents is reduced.
- *High capital* - where the fund has more than adequate capital so it can be an active player in the strategic changes in the industry. In the flying analogy, we might call this **high flying**. It involves travelling not only above the ups and downs of the terrain, but above most of the weather and congestion from other traffic as well. The cost of the climb is repaid by an ability to set the cruise control, to search for opportunistic situations, such as tail winds, and to outmanoeuvre competitors who are experiencing setbacks in the turbulence at lower altitudes.

7. Postscript

Capital is money, capital is commodities. By virtue of it being value, it has acquired the occult ability to add value to itself. It brings forth living offspring or, at the least, lays golden eggs.

Karl Marx

7.1. Capital again

- 7.1.1 I suspect that the next phase of development in the Australian private health insurance industry will be driven by changes in capital structures, and actuaries will make a contribution to that. Many funds may choose to operate with more capital than has been customary in the past.
- 7.1.2 It will be useful for funds to have **explicit capital goals**, reflecting their desire for stability and appetite for risk, management style, and the competitive and strategic objectives of their directors. In practice, the volatility and uncertainty intrinsic to the industry means that capital targets will not always be hit, but the process of setting goals is helpful in focussing on capital issues in a purposeful manner.
- 7.1.3 When funds choose to strengthen their balance sheets, it will add to the actuarial stability of the industry generally, and investment earnings will become available in more significant amounts, and perhaps will be distributed in part as loyalty rewards to long term members.

7.2. Reporting

- 7.2.1 While strengthening their balance sheets and becoming more accountable for their use of capital, funds will seek to manage their financial cash flows better, and actuaries will make a contribution to that too. There are a number of routine reports that I believe are useful, including the following.
- **A comparative survey of the benefit levels and features of each product**, with those of its principal competitors - this is the key to positioning the fund in the market, and determining the risk pool it attracts. It defines the actuarial fundamentals. If a fund chooses to have generous benefits, the disproportionate nature of the effects and actuarial consequences should be understood by the directors and senior management.
 - **Profitability by price point**, as the central item of regular financial reporting to directors and senior management. This reporting can be updated at least every quarter and supported by periodic reviews of the underlying cost allocations across price points. I suggest these reports have a single page summary showing profits as a proportion of contributions, in the form of a rectangular matrix with States on one axis and products on the other.
 - **Analyses of all costs on a per SEU basis**, separating hospital, ancillary, risk equalisation and administration costs and decomposing each by the key driving elements - this focuses on the price consequences of events as they unfold. Financial projection model cells are best made consistent with these analyses to harmonise all elements of the control cycle.

8. Acknowledgments

Actuarial Management of Health Funds in Australia

- 8.1.** I acknowledge the influence that members of the Health Practice Committee of the Institute of Actuaries of Australia have had on my thinking and learning over many years. David Torrance and Andrew Gale in particular have been most generous in discussing issues and sharing their experiences and observations with me on numerous occasions when I have needed help. I thank Andrew also for consenting to peer review this paper.
- 8.2.** Nevertheless, all the views in the paper are entirely my responsibility.

9. References

- Adams G & Gale A (2001), Insuring the health of Aussies and Kiwis: a comparison of health insurance developments in Australia and New Zealand, *The Institute of Actuaries of Australia Biennial Convention 2001*
- Brown A (1993), Outstanding claims provisions for health insurance, *Transactions of the Institute of Actuaries of Australia* 1993: 814
- Brown A (1998), Should there be national reinsurance of private health insurance claims? *Australian Actuarial Journal* 1998: 136
- Brown A & Gale A (1996), Model of a private health insurance fund, *Quarterly Journal* December 1996: 47
- Brown A & Gale A (1999), Collection and analysis of health insurance experience, *The Institute of Actuaries of Australia Biennial Convention 1999*
- Brown A & Gale A (2003), Health after lifetime health cover, *The Institute of Actuaries of Australia Biennial Convention 2003*
- Carroll P M (1990), Health care in Australia, *Transactions of the Institute of Actuaries of Australia* 1990: 277
- Carroll P M (1996), *Microeconomic reform of the Australian private health insurance industry*, Submissions 9 and D213 to the Productivity Commission Inquiry, October 1996 and February 1997
- Carroll P M (1997), Pricing Reform of Private Health Insurance, *Institute of Actuaries of Australia Biennial Convention 1997*
- Cumpston J R & Walsh J E (1989), Will the new rules for Australia's health funds work? *Quarterly Journal* September 1989: 2
- Dyson S, Hardy B and Leung B (2003), The role of the actuary in healthcare: where are we and where are we going? *The Institute of Actuaries of Australia Biennial Convention 2003*
- Gale A (2005), What price health - private health insurance product pricing and cost pressures *The Institute of Actuaries of Australia Biennial Convention 2005*
- Ginnane G (2003), Private health insurance: an Appointed Actuary, *The Institute of Actuaries of Australia Biennial Convention 2003*
- Institute of Actuaries of Australia (1995), Health objectives, provision and funding: draft submission to the Commonwealth Minister of Health, *Transactions of the Institute of Actuaries of Australia* 1995: 96
- Liney D G H (1989), Wellth insurance and the health actuary - some random thoughts *Quarterly Journal* September 1989: 14
- Lurie P (2005), The evolving role of the actuary in health insurance, *The Institute of Actuaries of Australia Biennial Convention 2005*

Actuarial Management of Health Funds in Australia

- Melville G L (1958), *First actuarial report to the Executive Committee of the Hospital Contributions Fund of NSW*, November 1958
- Neuhaus W (1997), An equalisation scheme for unfunded lifetime community rating *Quarterly Journal* December 1997: 2
- Neuhaus W (2005), Risk based capitation reinsurance, *Australian Actuarial Journal* 2005: 549
- Ooi B (2005), Applying the actuarial control cycle in private health insurance, *The Institute of Actuaries of Australia Biennial Convention 2005*
- Pollard A H (1978), Report on the level of reserves for health insurance funds in Australia, *The Institute of Actuaries of Australia and New Zealand* 1978: 299
- Torrance D (2001), The development of prudential requirements for private health insurers, *The Institute of Actuaries of Australia Biennial Convention 2001*
- Walker B W (1977), Illth insurance, *Transactions of the Institute of Actuaries of Australia and New Zealand* 1977: 84
- Walker B W (1989), Wellth insurance and the health actuary, *Transactions of the Institute of Actuaries of Australia* 1989: 382
- Walker B W (1990), Geronth insurance, *Transactions of the Institute of Actuaries of Australia* 1990: 326
- Walker B W (1991), The funding of health care in the year 2000, *Transactions of the Institute of Actuaries of Australia* 1991: 1292