Health Insurance
Membership and Claims Experience
Stability Margin

Considerations of the Capital Adequacy
Membership and Claims Experience Stability Margin
For Private Health Insurance
Capital Adequacy Requirements

Mr Brent Walker FIA, FIAA, ASA

Presented to:
The Institute of Actuaries of Australia
2003 Biennial Convention
Shaping the Future: In a World of Uncertainty
18 – 21 May 2003

Synopsis
Considerations of the Capital Adequacy Membership and Claims Experience Stability Margin For Private Health Insurance Capital Adequacy Requirements

According to the PHIAC Private Health Insurance Interpretation Standard, the claims/membership experience stability margin is intended to convey a measure of risk related to the stability, or otherwise of membership numbers over a number of years, the stability of utilization rates and unit costs (allowing for expected seasonal fluctuations) over a number of years and the stability of loss ratios over a number of years. The standard also suggests that in determining the claims/membership experience stability margin consideration must be given to any new product that has been introduced about which little credible experience is available, in respect of utilization rates and unit costs, and where the overall impact of the product on the fund has a high degree of uncertainty.

This paper seeks to measure the stability of utilization rates and unit costs of a number of health insurers and provide a framework by which insurers can measure the stability of their utilization rates (allowing for seasonal fluctuations) against those detailed in the paper. The paper comments on the other components of risk the standard and suggests what additional factors should be taken into account. This is provided within the overall framework of the determination of the Capital Adequacy Margin in accordance with the PHIAC Standard.

TABLE OF CONTENTS

1   *Introduction*

This very short paper was produced to assist actuaries provide advice to health insurance funds on the fund membership and claims experience stability margin. It endeavours to cover the issues relating to a practical calculation of this margin and provides a relative framework that actuaries can use to calculate the membership and claims experience stability of a fund. Although the period of claims that is measured, would generally not be as stable as many periods in the nineteen nineties, it may as it turns out, be not too untypical of what health insurance funds are going to experience for the next few years to come.

The calculations detailed in this paper are relatively easy to perform and produced results, which in most cases not only seemed appropriate for the health insurance organisations concerned but usually confirmed what had previously been suggested from what was not much more than an intuitive process.

2   *PHIAC Capital Adequacy Standards*

The PHIAC Solvency and Capital Adequacy standards require that Health Insurance Funds have sufficient capital to cover certain prescribed risks. A method of determining the Capital Adequacy requirement for the risks relating to outstanding claims, contributions paid in advance, reinsurance calculations and the risks relating to contributor's options to renew business, involves applying a margin to certain specified provisions, reserves or elements of certain calculations. It is not the purpose of this paper to delve into these calculations but simply to provide some methodology and guidance as to how the membership and claims stability component of the margin for capital adequacy calculations should be determined.

The margin for capital adequacy calculations is made up of three components. The first component is a constant equal to 12.5%. The second component relates to fund size and can be from 0% to 7.5%. For funds with total Single Equivalent Units of hospital membership of 200,000 or more this component is 0%. For funds with less than 200,000 SEUs but more than 19,999 SEUs the second component of the margin is $2.5\% \times (200{,}000\text{-}SEU)/180{,}000$. For Funds with less than 20,000 SEUs but more than 3,999 the second component of the margin is $2.5\% + 5.0\% \times (20{,}000\text{-}SEU)/16{,}000$ and for funds with less than 4,000 SEUs the second component of the margin is 7.5%.

The third component of the capital adequacy margin is the fund membership and claims experience stability component. The highest margin that can be attributed to this component is 5% and the lowest 0%.

Section 2.7.6 of the PHIAC Standards is reproduced below. This standard provides some guidance on how the fund membership and claims experience stability component for the margin to be used in the capital adequacy calculations should be determined.

Fund Membership and Claims Experience Stability

(1) The more the following conditions exist, the closer the margin should be to the minimum margin:

    a. Membership numbers have been stable over a number of years.

    b. Utilisation rates and unit costs (allowing for expected seasonal fluctuations) have been stable over a number of years.

    c. Loss ratios have been stable or falling over a number of years.

(2) The more the following conditions exist, the closer the margin should be to the high margin:

    a. Membership numbers have been significantly variable over recent years.

    b. Utilisation rates and unit costs (allowing for expected seasonal fluctuations) have been significantly variable over recent years.

    c. Loss ratios have been increasing over a number of years.

    d. A new product has been introduced which is expected to materially impact the finances of the fund but about which little credible experience is available in respect of utilisation rates and units costs, and where the overall impact of the product on the fund has a high degree of uncertainty.

The three margin components are then added and used as the total margin to be applied in the calculations of the Capital Adequacy Liability and the Renewal Option Reserve.

A large fund with well over 200,000 hospital SEUs and very stable claims might use just the base 12.5% as its capital adequacy margin and a very small fund with under 4000 hospital SEUs with relatively unstable claims might use as high as 25% as its capital adequacy margin.

3 *Determining the Membership and Claims Experience Stability*

The Solvency and Capital adequacy standards became effective on January 1, 2001. This was six months after the commencement of the Lifetime Healthcover changes. These changes increased fund memberships in June/July 2000 very significantly, often by 40% - 50% and in some cases considerably more than this. Therefore almost every health insurance fund has had anything but a "stable membership" over recent years. Also the sudden increases in membership in mid 2000 created initially immediate reductions in utilisation and then followed by significant increases some of which were felt 12 or more months after the membership increase. This occurs because pre-existing ailments are generally not covered until after 12 month's membership and many funds have rules restricting initial benefits relating to highly selective treatments such as orthodontic services. Exits from funds tend to have the opposite effect as average membership utilisation rates immediately increase and then usually after some months reduce a little. No-one is likely to leave a health fund two weeks before a long standing dental appointment, or if he or she thinks they are likely to need some form of hospital treatment in the coming months. So, at the present time, if calculations outlined in the next section of this paper are performed to measure the stability, then it would seem unnecessary to separately take into account the membership stability, or lack of it, in the calculation of this membership and claims experience stability margin. Of course if the membership has been stable but is expected to be significantly less stable in the future then some allowance for this should be made in the margin so determined.

The second part of this fund membership and claims experience stability component of the capital adequacy margin is the utilisation and unit costs stability. This component is difficult for actuaries as its calculation is not prescribed and even if it was one really needs some reference point as the term stability is a relative one. This next section of this paper suggests a relatively simple procedure for producing a reasonably meaningful statistic and shows the outcome of these calculations for 12 health insurance funds. This should assist actuaries with a reference point.

The third part of the membership and claims stability margin is the consideration that has to be given to increasing loss ratios. If the loss ratio is increasing then the claims stability statistic as determined in section 3 of this paper will be greater than if there is no underlying increase in the loss ratio. Of course the stability statistic will also increase if the loss ratio is falling. Again the use of the calculations outlined in the next section of this paper would seem to cover this consideration.

The fourth part of the membership and claims stability margin is the consideration that has to be given to any new product, "which is expected to materially impact the finances of the fund but about which little credible experience is available in respect of utilisation rates and units costs, and where the overall impact of the product on the fund has a high degree of uncertainty". The calculations in the next section of the paper are, for obvious reasons retrospective and not prospective and it would seem that the criteria ought to be that where the actuary considers that past stability is not likely to continue because of a number of reasons, including the introduction of a financially significant new product then the membership and claims stability margin determined by reference to the past should be increased accordingly. This will require some judgement as there are many factors that could cause the actuary to consider that the past membership and claims stability will diminish in the future. For example many prospective changes to the national health scheme will tend to create uncertainty about future claim rates and provide good reason for increasing the margin above what might have been determined from past experience.

4 *Calculating Retrospective Membership and Claims Stability*

This section details calculations that were performed on the stability of seasonally adjusted claims utilisation per Single Equivalent Unit for 12 health insurance funds. The data for the funds consisted of the best estimates of hospital, medical and ancillary incurred claims for the eighteen months from January 2001 to June 2002 inclusive. The fund hospital and ancillary membership in Single Equivalent Units for each of these months is also required. Finally the utilisation data was seasonalised and this is done by determining the claims utilisation per single equivalent unit per working day for ancillary claims and per modified working day for hospital claims and medical claims. Table 1 provides the working days and modified working days (or H/M days) used for each month for the all the funds who submitted experience to be used in these calculations. The H/M days are determined as being the total number of working days plus 0.6 of each other day in the month except that for December and January the factor for other than working days is 0.5. the reduction in this factor is to approximate the effect of the traditional Christmas/January slowdown in the hospital system. For some funds these seasonal adjustment factors are much less appropriate than for others but the same working days and H/M days were used for each fund in order to obtain consistency in the calculations.

Table 1

Month	Working Days	H/M Days
Jan-01	21	26.0
Feb-01	20	24.8
Mar-01	22	27.4
Apr-01	18	25.2
May-01	23	27.8
Jun-01	20	26.0
Jul-01	22	27.4
Aug-01	23	27.8
Sep-01	20	26.0
Oct-01	22	27.4
Nov-01	22	26.8
Dec-01	19	25.0
Jan-02	22	26.5
Feb-02	20	24.8
Mar-02	20	26.6
Apr-02	20	26.0
May-02	23	27.8
Jun-02	19	25.6

The resultant SEU benefit utilisation rates per "day" were obtained for each of the 3 classes of business and summed to provide a single total utilisation rate per day statistic. This statistic will tend to show the total benefit cost for a month per unit of price but obviously could much better reflect this if calculations were done at a product level and aggregated. However it would have been very difficult to have got the data to do this and the cost would have been prohibitive. Probably instead of showing results for 12 funds at best there may have only been 3 or 4 fund's results that would have been available.

The standard deviation of the sum of the SEU benefit utilisation rates for the 18 months for each fund was divided by 10 to produce the statistic graphed in the results section of this paper.
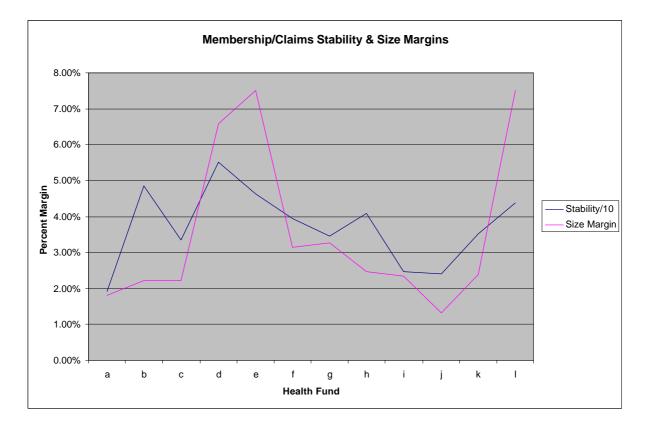
Not all health funds have provided the most up to date data otherwise it would have been possible to have used data to December 31, 2002. For many funds the membership data was taken from

PHIAC 1 returns so the ancillary and hospital membership for the intervening months was obtained by interpolation. For some funds calculations were done for other periods of time such as from January 2000 to June 2001. Although there were some changes in the standard deviation statistic that was produced the changes were not as significant as expected and for some funds the statistic moved in the opposite direction to that initially expected.

Because it was important to conceal the identity of the participants, fund names have not been included. Many of the funds who have provided data for this exercise have been given advice as to the recommended level of their membership and claims stability margin based on the results of these calculations. For those funds that show a stability greater than 5% on the graph the margin of 5% was recommended and for those between 4.5% and 5.0% the margin of 4.5% was usually suggested, etc,. If there was any reason to suspect the statistic was likely to become more volatile then the advice tended to more conservative. None had new products that could have materially affected the fund finances and all of them had increasing utilisation rates over this period that would have already affected the stability measure calculated so no further adjustment was required.

5   *Results*

The graph above shows the percentage of the size margin and the percentage of the claims stability margin suggested for each of the 12 health insurance funds as calculated in accordance with the previous section of the paper.

The first thing that is evident is that the claims stability does tend to be correlated to the size margin. This wasn't obvious to start with because initially a derivative of the fund's actual size was graphed but when the fund's actual size margin for capital adequacy purposes was calculated and graphed this correlation became quite clear.   However it is by no means a perfect correlation so one shouldn't necessarily conclude that there is no real need to have a membership and claims experience stability margin because the other judgement factors, which should be taken into account when recommending this margin, are still very important.

A copy of this paper was circulated to a number of health actuaries in early May for comment and to enable others to do similar calculations in respect of health insurance funds which they may advise. If further data is submitted to the author before the actual conference commences then additional results will be provided at the meeting at which this paper is being discussed (but without fund names). To assist other actuaries determine the statistics to be graphed a small excel workbook containing the essential calculations was also provided to the actuaries to whom the paper was circulated.

It is also hoped that this paper will stimulate discussion on whether this is an appropriate method of determining this component of the Capital Adequacy margin.

References

PHIAC Interpretation Standard 1.01
PHIAC Solvency Standard NHA 2.0.
PHIAC Capital Adequacy Standard NHA 2.0.