30 May 2019

Ann Dobinson
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Dear Ms Dobinson,

Private Health Insurance Capital Standards Review

I am pleased to attach the report by the Institute's PHI Capital Standards Working Group to contribute to APRA's thinking at this stage of the Review.

The Actuaries Institute appreciates the opportunity to have been engaged in this important work.

As indicated in the report, this submission should be considered in the broader context of the Actuaries Institute's forthcoming Green Paper, *How to make private health insurance healthier*.

Please do not hesitate to contact me either by phone (02) 9239 6100 or via e-mail elayne.grace@actuaries.asn.au if we can be of further assistance.

Yours sincerely,

Elayne Grace

Elayne Grace
Chief Executive Officer

PHI Capital Standards Working Group Submission to APRA PHI Capital Standards Review

1. Introduction

On 16 November 2018 APRA provided an updated roadmap for their review of the prudential capital framework for private health insurance (**PHI**).[1]

At APRA's request, the Actuaries Institute formed a Working Group (**Working Group**) to provide expert feedback into the early stages of the review. The scope of work and timetable was agreed with APRA and the work focused on considerations around insurance risk and insurance concentration risk.

Technical group

The membership of the Working Group was Matthew Crane (EY), Dimity Gartzionis (nib), Anthony Joyce (Medibank), Ignatius Li (Deloitte), Tony Ly (Bupa), Evelyn Njoo (Defence Health), Jamie Reid (Finity), and Nick Stolk (dbn actuaries). APRA representatives also attended the meetings. In addition, the Working Group consulted a number of other actuaries with experience in health insurance as well as in life and general insurance.

Contents

This report is structured as follows:

- Specific characteristics of PHI which are relevant to insurance risk;
- Measurement of insurance risk, with separate sections for:
  - Key concepts, such as which risks are assessed separately and how amounts are aggregated; and
  - Practical challenges, for example, how the parameters should be estimated, and allowance for insurer-specific characteristics.

We include a short summary of our findings at the start of each section.

Other context

The Institute will publish a Green Paper on PHI shortly. While that paper does not specifically consider capital requirements, it will provide additional discussion of the features of the industry, both historically and prospectively.

Disclaimer

The Working Group considered the matters listed in the terms of reference within the time available.

The content of this document represents the views of the Working Group. It does not necessarily reflect the views of any of the individuals on the Working Group nor their employer. The Institute notes APRA will be undertaking broad consultation during various stages of the review of the standards and this report is intended to assist APRA in the context of that subsequent consultation process.

[1] https://www.apra.gov.au/media-centre/media-releases/apra-launches-review-capital-requirements-private-health-insurers

The determination of capital standards for PHI is a matter for APRA. APRA should verify any information in this report before relying on it. The Institute, Working Group, authors and employers can accept no liability for any action taken based on this report.

2. The nature of PHI insurance risk

The LAGIC framework was specifically designed for Life and General Insurance. Any prudential capital framework for PHI will similarly need to be appropriately tailored. In this section we address:

1. What is PHI insurance risk?
2. What makes it different from Life and General Insurance? And
3. To what extent are private health insurers exposed to catastrophic events?

Key findings

For any type of insurance, the main insurance risk is that premiums are fixed while claim costs are not. While there are similarities between PHI and other insurances, there are important differences.

Significant differences in PHI insurance risk arise from the use of community rating and the role of government. Because private health insurers (**insurers**) are not able to risk rate premiums, an increase in the proportion of policyholders in poor health will increase expected claim costs, but will not automatically be offset by higher premium revenue. This risk of higher than expected costs can impact a single product (e.g. due to poor product design), an entire insurer (e.g. entering a new market) or the whole PHI industry (e.g. due to a change in government policy).

There are also specific features of PHI which reduce insurance risk including:

- At a product or insurer level, the operation of the industry risk equalisation scheme which spreads a proportion of the hospital costs of those aged over 55 or of high cost claimants over all policyholders.
- The relatively short time frame over which PHI claims are notified and paid means that any large variance between actual and expected costs can usually be identified quickly.
- PHI policies do not have a fixed term or end date. Having identified a variance, insurers are able to adjust policy terms and conditions with 60 days notice, even where policyholders have prepaid.

As a consequence, should a major shock occur, it is reasonable to expect a significant response from insurers in less than 12 months.

Some types of insurance have significant exposure to catastrophe/event losses and others do not. Our view is that PHI does not have significant exposure to catastrophe events. We note:

- Where capital standards in other countries require health insurers to assess catastrophe risk (often where health insurers are covered by a general or life insurance standard), we understand the catastrophe allowance/risk charge is not material.
- Changes to government policy have had a significant impact on PHI over the years, however, there are a number of conceptual and practical challenges to including this risk within regulatory minimum capital requirements.
- Even in the case of small insurers with regional or occupational concentrations of exposure, event risk is not considered significant due to the benefits provided (elective surgery) and because risks are shared (through risk equalisation, and with the public health system).

What is PHI insurance risk?

Insurance risk in PHI relates to the risk of mis-estimation of the expected cashflows associated with insured events. Such mis-estimation may arise for a range of reasons, including volatility in healthcare utilisation (the number of events) or their severity (average cost).

The key insurance risks for an insurer include:

- The risk profile of policyholders is different to that assumed. The classic example of this risk is that of adverse selection – where the price or product design features of a PHI product result in the product becoming increasingly attractive to claimants, particularly where potential claimants hold an informational asymmetry advantage over the insurer (e.g. elective surgery).
- New products are introduced, or existing products are introduced into new markets (e.g. new state/region, new distribution channels) and claims are higher than assumed.
- Movements in overall claims costs are not identified correctly. There are a number of possible reasons for this, including that utilisation rates are higher than assumed, provider contracts are renewed at rates above the rates implicit in the rate review projections, or the mix of claims is not in line with assumptions (e.g. as regards acuity or location).
- The hospital claims experience of the rest of the industry is different to that assumed by the insurer. (This effect occurs via the risk equalisation special account.)
- Regulatory (sovereign) issues relating to PHI (e.g. the rebate, risk equalisation arrangements, premium capping etc.).

The relevance of the above risks will vary by insurer. For example, entry into a new segment of the market is unlikely to have a material impact on claim costs for a large insurer, but could be very significant for a small insurer.

Why is PHI insurance risk different?

While many of the insurance risks listed above are relevant to general and life insurers, there are a number of specific characteristics of PHI which require consideration when assessing PHI insurance risk.

- Premiums in PHI are community rated. Policyholders pay the same premium for the same product regardless of the policyholder's age[2], gender, health record or other risk indicators.
- Guaranteed acceptance and guaranteed renewal. An insurer cannot refuse cover to an individual, and once cover has been taken out, the policy is renewable indefinitely. Insurers have significant scope to change or even close products, but such changes will apply to everyone on a product.
- Despite health risk increasing with age, there is no prefunding of this increasing risk for any individual policyholder or group of policyholders, i.e. no reserves are established on an individual policy, or group basis to meet future risks on that policy, or group of policies beyond the date up to which premiums are currently paid (unlike life insurance).
- In a community rated environment there are inherent cross subsidies between policyholders. In a voluntary system, overall affordability is dependent on having strong

[2] Except for age attained lifetime health cover loading (and discount)

participation across society, in particular ensuring participation from low risk policyholders (typically those that are young and healthy). The Commonwealth Government incentivises PHI participation through a legislative program of 'carrots and sticks' (the additional Medicare Levy Surcharge, Lifetime Health Cover loadings and the PHI Rebate).

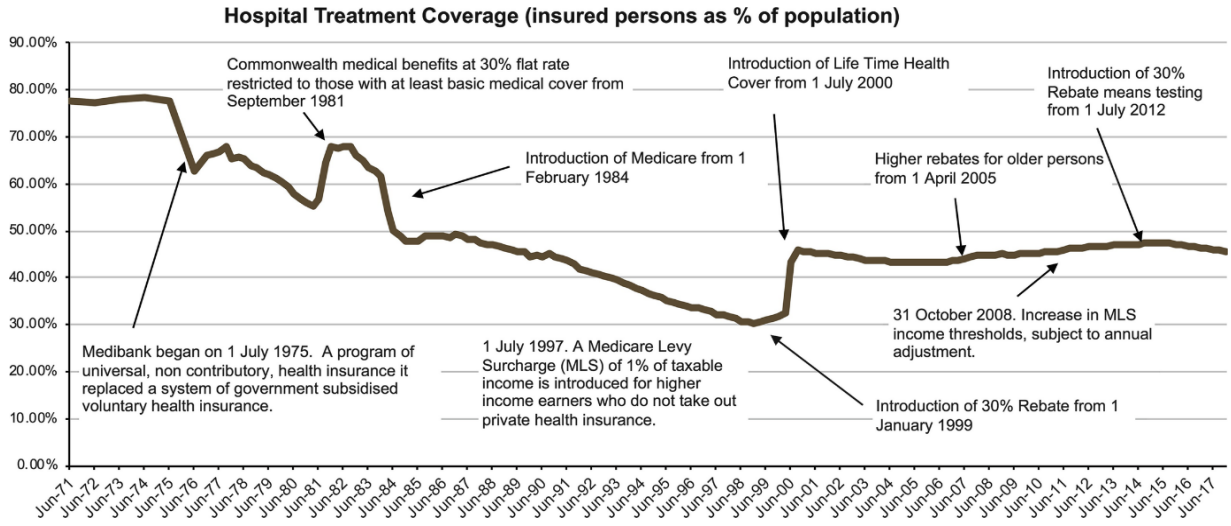
- Routinely PHI is affected by public policy, community and political considerations, rather than simply being an economic and financial issue. Formulation of health policy and delivery of services are significant government activities. Similarly, the ability of people to receive appropriate treatment when required is an ongoing community concern. Government policy in PHI includes: the community rated environment, Lifetime Health Cover, the regulation of which treatments can be covered under hospital cover, the tax rebate given to individuals in respect of the PHI contributions they pay, and the right of policyholders to switch their cover to another insurer without having to undergo "new policyholder" waiting periods.
- The period on risk for a PHI contract is difficult to define.
    - Ordinarily general insurance policies have a fixed term, during which the premium rates, benefits and other contract terms are fixed. Insurance will only continue after that period if the general insurer and policyholder agree to enter into a new contract. Regulatory capital requirements consider insurance risks only to the end of the agreed policy term.
    - PHI policies do not have a fixed term but continue indefinitely until either the policyholder cancels or the insurer changes policy terms.
    - The insurer is able to vary the cover provided at any time, by providing 60 days notice to the policyholder. Insurers are allowed to make changes even if the policyholder has paid in advance. Changes to premium rates require approval by the Minister for Health, and generally are effective 1 April each year. However, changes to benefits can be made at any time, and do not require ministerial approval. Further details are provided later in the paper.
- The industry is subject to a benefit equalisation scheme, the Risk Equalisation Special Account, which shares a proportion of the hospital claims costs of those aged over 55 years or of high cost claimants over all policyholders.
- PHI claims are very short-tailed. 90% of PHI claims are notified and paid within three months of being incurred. Fund rules often allow any claim received after 24 months to be declined.

Exploring further: the impact of public policy, community and political considerations

The level of, and trends in, the PHI participation rate are correlated with the overall financial performance of the industry. PHI participation is heavily influenced by government policy.

Understanding the history of PHI participation, and the response of PHI participation to various government interventions, is a useful basis for analysing some of the key risks that have impacted insurers on an industry-wide level. The figure below shows the PHI participation rate for the industry since 1971.

Figure 1. Impact of Government Policies on the Australian Insurance Market



Source: APRA

In considering a stressed or adverse PHI environment one interesting period to consider is the sustained decline in the PHI participation rate evident from 1984 – 1997. This period covered the introduction of Medicare from February 1984, as well as, government reforms in 1985, 1986, 1987 and 1988[3].

- Falling participation in this period had an impact on premium rates. Typically those who dropped PHI were the better risks as they believed either they were unlikely to claim or would be sufficiently covered by Medicare. Those remaining were more likely to think they would use their private health insurance cover.
- As the better risks dropped their cover, the net margin deteriorated and insurers needed a higher rate increase in order to maintain margins.
- This increase in price changed the policyholder value proposition and led to another layer of "better" risks dropping their PHI cover.

The link between declining profitability and declining PHI participation was made by the Productivity Commission (formerly Industry Commission) in 1997. In its report, it stated:

> *'…premiums for private health insurance are rising rapidly, fewer people can afford to choose private health insurance and fund membership is falling;'*
>
> *"… fund profitability has deteriorated consistently since 1991–92, to the point where the health insurance organisations reported a combined operating loss of $81.3 million in 1995–96."*
>
> *'The price of private health insurance has been rising inexorably, at a rate averaging 3½ times CPI inflation since 1990.'….*

[3] Gale & Watson (2007), 'Adventures in Health Risk – a history of Australian Health Insurance'

Another interesting case study is the experience of the industry and some individual insurers throughout 1999-2002 in response to the introduction of Lifetime Health Cover (LHC). The introduction of LHC should be viewed in the broader context of the two preceding major changes – the introduction of the PHI Government rebate in 1999 and the Medicare Levy Surcharge in 1997 – as part of a broad effort to address industry issues.

The following is an excerpt from Gale & Watson (2007).

> In the May 1999 budget, the Federal Treasurer announced that the community rating arrangements would be modified to allow premiums to increase with entry age according to a fixed scale from July 2000. Existing members at commencement would avoid these penalties. The new system caused a massive influx of members in the month leading up to the commencement date, with coverage increasing from 30% to 45% of the population. Most funds experienced extraordinary membership growth, however this growth caused significant financial pressure for several funds. New members were generally subject to a 12 month pre-existing ailment waiting period for hospital benefits, which kept claims low in 2000/01, followed by an increase in 2001/02.
>
> The following six funds experienced above average membership growth followed by major underwriting losses in 2001/02:

Fund	Hospital membership change: June 1999 to June 2002	Underwriting Profit (Net Margin) as % of contribution income		
		1999/00	2000/01	2001/02
Goldfields	403%	(6.6%)	8.2%	(20.0%)
IOR	116%	4.2%	4.0%	(17.1%)
NRMA	105%	1.8%	3.9%	(11.5%)
HIF	88%	1.9%	4.9%	(9.7%)
Medibank Private	69%	0.9%	4.1%	(8.1%)
AHMG	57%	6.3%	11.3%	(9.4%)

To what extent are health insurers exposed to catastrophic events?

Catastrophic events have been defined by APRA for the Working Group as a 1 in 200 year event. By virtue of the definition there must an event or circumstances that give rise to adverse experience sufficient to warrant that description, the challenge is in identifying whether or not we have witnessed a catastrophic event to date.

The Working Group found it challenging to identify and conceptualise a 1 in 200 year event given the relatively limited data history available of private health insurance in Australia. In order to broaden its thinking, the working group considered the extent to which insurers are exposed to the following adverse or potentially catastrophic (1 in 200) events:

Pandemics

It is difficult to assess the impact of a pandemic on PHI given the lack of recent experience. While Australia has had few pandemics of the imagined scale, there are international studies that have examined the impact of pandemics on insurers[4].

[4] Van Broekhoven (2006) 'Actuarial reflections on pandemic risk and its consequences'

Some international studies argue that pandemics will not have a major impact on hospital claims as:

- The cost of pandemics is largely absorbed by the public health system (the emergency response system);
- The responsibility for treatment and funding are likely to lie with government and there is the potential for private specialists, nurses to be co-opted to the public system temporarily; and
- Private hospital admission rates are likely to decrease as potential patients postpone elective surgery due to the perceived risk of contracting the disease.

However, in thinking through the Australian context some of the Working Group argued that there may be some overflow to PHI as private hospitals can very easily and quickly add extra capacity in an emergency, especially if it is for a specific clinical need and therefore brings economies of scale. A 1 in 200 year pandemic event will pose serious funding and capacity issues for the entire health system, and the use of private hospitals and the call on private funding in that situation is untested in the Australian context as far as we are able to tell.

It can be argued that pandemic risks are a subset of sovereign risk. In the event that a 1 in 200 year pandemic occurs, the impact to the private health insurance industry will be largely dependent on how the government responds to the pandemic. Given the prominent and material government financial support for PHI, it is possible that the government could levy insurers to share the burden in a time of crisis. Similarly, it is possible that the government could ask or pressure insurers to provide 'premium holidays' as some insurers voluntarily offer after natural disasters.

Government policies

As discussed previously, the PHI market landscape has been impacted adversely by various government policies from time to time. Even supportive policy settings have created sufficient disruption and/or circumstances that have exacerbated the poor decisions and/or assumptions of certain insurers (e.g. the introduction of LHC discussed previously). However, it is important to distinguish between the environmental changes and the root cause of adverse experience. The insurance risk in many cases involving changes in policy settings arose from the insurer's failure to appropriately identify or estimate the policyholder response[5].

Pressure on premium increases

The government's role in premium increases is a key feature of PHI in Australia. Political pressure to have very low or no premium increases has happened on a number of occasions previously, including post Lifetime Health Cover (LHC) in 2000-01, which contributed to the significant losses made by some insurers in 2001/02.

However, the Working Group believes that pressure on premium increases is one of the key insurance risks faced by insurers as opposed to a catastrophe or 1 in 200 event.

[5] Reid, Crane, Matthews, Bernau (2016) 'How to lose your shirt in private health insurance'

Changes in the scope and/or structure of PHI

Changes in the scope and/or structure of PHI can result in increases in utilisation and/or claims costs.

It is open for debate whether it constitutes a 1 in 200 year event in PHI, but the government policy with the most significant impact on PHI was the introduction of Medibank as a universal health payment scheme in 1975. Medibank took away much of PHI's raison d'etre and a number of health funds ceased in the lead up to and immediately following Medibank's creation.

Historical changes to the scope and/or structure of PHI include:

- The prescription of minimum benefits for rehabilitation and psychiatric services in 1987,
- Reforms to allow insurers to negotiate contracts with hospitals and no-gap contracts with medical specialists to provide medical benefits in excess of the Medicare fee in 1995,
- Changes to the risk equalisation scheme, and
- The introduction of Broader Health Cover in 2007.

It should be noted that many of the structural changes made in PHI were only introduced after a period of consultation. Such consultation provides insurers with an opportunity to prepare for major changes, including improving projection assumptions and developing monitoring and response plans in the event that experience emerges that is adverse to expectations.

The Working Group believes changes in the scope or structure of PHI will not be limited to the past. Recent discussions that may one day impact PHI include capping rate increases while a major independent inquiry is underway (as was ALP policy going into the 2019 election), Medicare 2.0, Denticare (and other Commonwealth funded dental programs), allowance for insurers to provide benefits for primary care and further changes to the risk equalisation scheme. Depending on the nature, scope and transition, any of these changes could lead to significant adverse financial impacts on individual insurers. However, many of these changes have been proposed, discussed and re-proposed over the years. Trying to anticipate allowance for the impact of unpublicised government policy in the regulatory minimum capital requirements is impractical in our view.

Severe mispricing

Historically severe mispricing, simultaneously across multiple insurers, has been correlated with major government policies and/or the absence of an appropriate dataset or history for pricing. This was the case, for example, following the introduction of LHC in 2000-01 when almost no stakeholders anticipated a 50% increase in participation.

While data analytics and actuarial capacity in the industry has increased, and lessons have been learnt, there remains the risk of mispricing from future changes in PHI scope (e.g. an expansion of PHI to primary care), changes in structure (e.g. the introduction of the product classification scheme under the most recent PHI reforms) or future changes in consumer behaviour or expectations.

Whether or not severe mispricing contributes to a catastrophic event ultimately depends on an insurer's speed of response in addressing mispricing. Severe mispricing that is quickly resolved has a limited period with which to be exploited.

The Working Group also noted that the likelihood and impact of severe mispricing is likely to be insurer and circumstance specific. Smaller funds with more limited pricing resources, limited data history and smaller policyholder bases to support/subsidise poor pricing decisions are

likely to be at greater risk, however, this risk is managed through the actuarial role in pricing and benchmarking with competitor pricing.

Sudden increase in utilisation, claims mix

Increases in hospital utilisation or an adverse shift in the claims mix could come from:

- An industry wide trend. For example, a small spike in elective procedures in 2007/08 was anecdotally attributed to general economic conditions with increased leave encouraging some patients to undertake deferred surgeries. However, in a longer historical context these industry wide increases show only minor deviations from trend[6];
- A new treatment. For example a new, more expensive, treatment method might be introduced and widely taken up by surgeons or a new prostheses might be added to the Prostheses List. While insurers' clinical governance may be able to recommend that an insurer not provide benefits for a more expensive treatment method if it fails to demonstrate superior clinical outcomes, there is the potential for expensive new technologies to improve clinical outcomes and to be demanded by patients. The addition of a new expensive prostheses device, once listed on the Prostheses List, must be paid for by an insurer.
- A localised spike through broadening of local treatment options, a significant change to the private hospital bed supply or both. Recent examples include the significant expansion of the private hospital bed supply in a regional area where there was unmet demand, the opening of a new mental health hospital where previously there was only public hospital services, or the introduction of robotic assisted surgery in a hospital where previously only less costly treatment options were offered.

We note that the impacts of localised spikes in utilisation are likely to be moderated by the industry risk equalisation scheme.

Changes in the membership of health insurance

The Working Group believes that changes in the membership of health insurance is primarily an output rather than a root cause of a catastrophe event. Changes in membership ultimately reflect the value proposition on offer.

As a result, catastrophe events in PHI do not result from changes in membership, but rather changes in membership exacerbate other causes including severe mispricing, changes in government policy or unanticipated increases in hospital utilisation.

The Working Group believes that any risks resulting from changes in membership should be considered together with mispricing, sovereign or environmental risks rather than considered separately as a risk in and of itself.

[6] See for example: https://aoanjrr.sahmri.com/procedures-reported

Conclusion

Some types of insurance have significant exposure to catastrophe/event losses and others do not. Our view is that PHI does not have significant exposure to catastrophe events, particularly, over the 12 month timeframe under consideration. In particular, we note:

- Where capital standards in other countries require health insurers to assess catastrophe risk (often where health insurers are covered by a general or life insurance standard), we understand (via private information) the catastrophe allowance/risk charge is not material.
- Changes to government policy have had a significant impact on PHI over the years, however, there are a number of conceptual and practical challenges to including this risk within regulatory minimum capital requirements. In addition, many government policy changes have lead times or consultation periods that exceed the 12 month timeframe under consideration. The effect of these can therefore be better considered through scenario analysis and stress testing, as discussed in the next section.

3. Aligning PHI insurance risk and APRA's intended framework

We would expect each insurer to consider all the risks discussed in our exploration of catastrophe events and more, when developing its strategy and risk management approach. Some of the risks may also be important when setting internal capital targets. However, the limited time horizon, together with the probability of adequacy, means that the regulatory minimum capital requirement will not allow for every possible risk or scenario.

This is consistent with the approach in general insurance. For example, new technologies or climate change may significantly change the demand for motor and home insurance, or the claims cost distribution. APRA has indicated that insurers should consider these risks and others, including through industry stress testing, but there is no suggestion that they be explicitly included in the regulatory minimum capital requirement for the next 12 months.

In the case of private health insurance, we suggest the minimum capital requirement need not explicitly allow for significant changes in the role of PHI in the Australian health system, unless they are expected over the following 12 months. We argue that if each insurer was to hold capital to meet structural or systemic risk it would be an inefficient use of capital and likely not in policyholders' best interests.

For example, where changes in government policy or economic settings could cause a mass lapse in PHI (or any other insurance), we suggest there is no need for an explicit allowance in the minimum capital requirement. These risks could still be considered in a number of ways, including:

- Implicitly in the minimum capital requirement, to the extent they are present in the data.
- Explicitly through some combination of stress testing, determination of capital targets and the risk management framework more generally as part of the proposed ICAAP process.

Understanding gone concern in a PHI context

APRA has advised us that the primary aim of the capital standards is to calculate the amount of capital required to ensure each insurer can meet its policyholder obligations in 12-months' time with a probability of adequacy of 99.5%.

APRA has also noted in its public statements and updated capital standards roadmap that LAGIC targets a 99.5% probability of sufficiency over a 12 month period on a **gone concern** basis and that the current PHI capital standards operate on a **going concern** basis.

Working Group members did not have a consistent understanding of what a gone concern capital standard meant at the outset of the project. Generally members agreed that a gone concern makes no allowance for sales (or new business) or the costs/management expenses associated with those sales. However, there was some discussion as to whether a gone concern precluded allowance for future profitability and what management actions are allowable under gone concern.

The Working Group notes that PHI has been working under a going concern regulatory capital model since 2001.

As part of its ongoing consultation with industry, the Working Group believes it would be valuable for APRA to detail its view on the implications of these two different approaches. We have not explored this threshold question further in this submission.

Allowance for management response/actions

The Working Group has interpreted one of the key objectives of APRA's capital requirement as ensuring that an insurer has sufficient funds to keep its promises to policyholders. It is therefore important to consider how the nature of the promises made varies between life and general insurance and PHI.

Most general insurance policies are annual contracts, and the insurer is not able to change terms and conditions within this period. Accordingly, the capital requirements consider stresses that could apply to the end of the policy term, however there is no requirement to assume these stresses will also apply to policies which are underwritten in future. In effect, the assumption is that any problems emerging during the period on risk can be allowed for before terms are proposed for the next cover period (any required remediation is assumed to be fully effective). Assuming annual contracts, on average six months of premium will be unearned at any time, so the regulatory stress is effectively applied to six months of premium.

We understand that where life insurance policies continue for many years, Australian prudential capital requirements consider a stress period consistent with the policy term. In this case some allowance for management actions (within APRA prescribed bounds) is able to be incorporated into the stresses.

Ability to change terms and conditions in PHI

As raised previously PHI contracts have no end date and can continue indefinitely. Changes can be initiated by:

- The policyholder, who is able to lapse or change insurers at any time and receive a pro-rata refund of premium; and
- The insurer, who can change policy terms and conditions at any time with 60 days' notice. Changes to premium rates require the approval of the appropriate Federal Government Minister, however insurers can add or remove benefits without approval. Insurers can also close a product and transfer all members to another product with different premium rates and benefits. The changes will apply to all policyholders, whether or not they have paid in advance.

There is therefore significant scope, theoretically, for management response to periods of adverse experience within a 12 month period in PHI. However, competitive considerations and the risk of increased lapses must also be considered by an insurer faced with addressing adverse experience.

The ability to make timely management responses depends on:

- Reporting period: The need for response is identified quickly, because claims are reported and paid shortly after they are incurred; and
- Contract period: The change can be implemented quickly, because insurers can change policy terms or even close a product with 60 days' notice.

Changes to these features of PHI would impact the ability to make timely management responses. PHI reforms have not changed these features, so have not changed the scope of management responses.

April 2019 product changes

Legislation relating to PHI appears to change more regularly than for other insurances. A number of mandatory and optional changes were effective from 1 April 2019, including:

- Product classification: While there are no significant changes to what can and cannot be covered by a hospital policy, insurers must tell members the product category (Gold, Silver, Bronze plus etc.) based on official definitions. Depending on the product design, adding or removing a benefit could cause a change in product category.
- Youth discounts: Option to discount hospital premiums by up to 10% for younger policyholders.
- $750 excess: Products with higher excess entitle members to a Medicare Levy Surcharge Exemption.

Previous legislation changed government incentives to purchase PHI, through changes to the Medicare Levy Surcharge and premium rebate. None of these PHI reforms have changed the scope of management responses.

In particular, product classification does not change the ability of insurers to add or remove benefits to a product. Insurers have always been obliged to communicate such changes clearly to members, and this will now include whether the benefit changes alter the product classification.

Examples of PHI management responses to adverse events

While the Working Group discussed a number of examples of management responses to adverse scenarios, it was unable to publicly document these discussions noting:

- Commercial-in-confidence: Management responses are required when something goes wrong, and have a negative impact on policyholders (for example, where an insurer has to close a product due to under-pricing and transfer members to a less generous product). While these changes need to be notified to the policyholders of the product, insurers (like other businesses) do not advertise their mistakes widely.
- There was a lack of management responses that the Working Group would consider followed 1 in 200 or catastrophe events. Given management responses create a poor member experience, they will be deferred where possible. For example, suppose a product is under-priced, however the fund remains adequately profitable overall. An appropriate response could be to close the product to new sales, with the profitability restored over a number of years as part of the annual price change process. These more common experiences are not likely to be representative of how insurers would react to a catastrophe event which threatened overall viability.

Working Group members volunteered a small number of examples where insurers have made significant changes to a product out of cycle. We suggest APRA seek input from industry regarding the speed with which insurers would or could respond to a significant event – we have provided a range of considerations in the following section.

How long might it take to successfully implement corrective action following a catastrophe event?

The effective period on risk is the time required to identify a problem and implement a response (including the time for that response to become effective). The table below identifies the key steps in this process. The Working Group expressed a range of views as to the time that might elapse under each stage.

We believe the key determinant of the time that it might take to implement corrective action is the insurer's risk tolerance, particularly in relation to mispricing, and the quality and timeliness of the monitoring in place. The first step is the identification process: at what point does adverse experience trigger a tolerance level and be raised with the executive and in turn the Board. The next consideration is then what action and timeframe is given for resolution in the insurer's response plan. This will reflect the insurer's risk appetite to operate outside of target ranges.

Step	Time required – small variance	Time required – large variance (including a 1 in 200 event)
Identify difference between actual and expected experience	Over 90% of PHI claims are finalised within 3 months of being incurred. Differences between actual and expected experience can, theoretically, be identified relatively quickly. However, variances might initially be attributed to random variance or seasonality, especially when considering a small product or insurer.	With the possible exception of the smallest insurers, a very large variance would be apparent more quickly, and is more likely to trigger an immediate response (rather than "wait and see")
Identify reasons for difference	Reasons for small differences may be difficult to separate from "business as usual" variances.	Reasons for large shocks are likely to be easier to identify, or require a response even if the drivers are unclear.
Propose solutions	Insurers will take time to develop a solution which addresses differences between actual and target profit while minimising impact on members (especially lapse impact). Unless material, the solution may be held off and developed more holistically as part of the annual pricing round.	If the financial viability of the fund was threatened, funds would consider taking more immediate and significant action, even if this increases lapse risk.
Management agree response	There would likely be several rounds of challenge and review, perhaps over a period of weeks.	Greater urgency but balanced against more rounds or review and challenge.
Board approval	Wait for the next Board meeting	Out of cycle Board meeting held
Notify policyholders	If imposing a detrimental change, a minimum 60 days' notice is required. It is not uncommon for such changes to be timed with other existing policyholder communications (e.g. annual premium round).	If imposing a detrimental change, a minimum 60 days' notice is required.
Any technical changes required	System changes may be required	The need for action is likely to lead to responses that can be accommodated with existing systems.
Total	6 – 24 months	4 – 12 months

Insurers may be able to respond to a catastrophe event within 3-4 months, however, it is challenging to anticipate:

- How long it might take from implementation of a solution to full restoration;
- What commercial or political constraints may be operating at the time and limiting response options; and
- How different insurance's stated risk appetite and risk thresholds might be tested and changed if confronted with a catastrophe scenario.

We note that if APRA proceeds with a prescribed factor x exposure model, the period of exposure chosen is not critical as the prescribed factor can be adjusted to get the appropriate overall outcome.

The Working Group discussed the need for the selection of the exposure period to be suitable across all insurers in a variety of scenarios. This would include, for example, start-up insurers who may be very small but growing rapidly. In this case, we believe it would be appropriate to pick a longer time frame and apply a smaller prescribed factor (all else equal) in order to more appropriately allow for growth.

4. Measuring Insurance Risk in PHI

This section documents our findings on some of the key technical concepts APRA has asked us to consider, including the definition of insurance risk and insurance concentration risk charge, the principles for their calculation, how the calculations should be aggregated, how risk equalisation and tax should be incorporated and whether or not there should be a separate charge for catastrophic events.

Definition & principles for an Insurance Risk Charge

Recommendation

The Working Group recommends a slightly different definition for insurance risk compared with LAGIC.

We recommend APRA consider two insurance risk charges. One that covers the net outstanding claim liabilities, and one that covers premiums over a defined period, up to a one year horizon. In the context of the GI LAGIC standard we recommend combining the premium liabilities risk charge with the insurance concentration charge.

The Working Group recommends a factor based approach be applied to both the balance sheet insurance risk and the future premiums insurance risk.

Insurance risk (Balance sheet)

- We suggest the approach to developing a charge on the balance sheet liabilities should be similar to the approach used in the current capital standards. Prescribed charges should be applied to the outstanding claims liability amount, risk equalisation liability amount and any other liabilities amount.
- In respect of the outstanding claims, a margin on the provisions at a 75% POA which varies by Fund size should be retained. As part of the calibration of the Fund size margin, APRA should undertake a more granular data collection of provision balances currently reported as 'outstanding claims'. The Working Group identified a range of certain provisions (see next page) which currently receive a capital charge disproportionate to their risk.
- We suggest the unearned premium or future claims liability amount be considered separately as part of a broader insurance/insurance concentration (combined) charge.

Insurance risk (Premium)

- Premium exposure over a specified period (12 months) should be multiplied by a prescribed risk factor. The size of the prescribed factor should depend on Fund size, ideally the rate of policy growth and APRA's calibration of baseline industry risk. The variation by size should be that appropriate to target a 99.5% probability for each fund.
- Some members of the Working Group believed there would be merit in leaving provision for insurers to request a lower risk charge by application to APRA. This would allow a principles based approach if an insurer could satisfactorily demonstrate to APRA that their risk profile justified a charge lower than the industry prescribed charge. This would be similar to the USP ('Undertaking Specific Parameter') process for the Solvency II underwriting premium risk charge. The Working Group was not able to comment on the likelihood of this option being taken up, noting that it would ultimately depend on the approach that APRA adopts.
- The Working Group did not reach a recommendation as to the definition of insurance concentration risk. However, event risk is not considered to be significant for PHI.

Support - Definition & principles for an Insurance Risk Charge

Insurance risk (Balance sheet)

- The insurance risk charge on the unearned premium for PHI covers a different risk exposure to that typical for general insurance. PHI premium revenue was $23.9bn in FY18 but the unearned premium liabilities at 30 June 2018 were only $3.1bn or less than 7 weeks of premium revenue.[7][8] Many policyholders pay monthly or fortnightly which leads to a relatively small unearned premium liability.
- The Working Group believes that a charge on the balance sheet unearned premiums alone is not sufficient to cover insurance risk, given the limited exposure period it would cover, as well as, the inconsistency of treatment between insurers.
- The current methodology of insurers measuring their outstanding claims liabilities to the 75th percentile and then applying a prescribed risk factor remains a practical and appropriate basis for the capital charge. We note that this is also consistent with LAGIC practice.
- No member of the Working Group expressed a concern with the calibration of the current Fund size margin (present in the current capital standards), however, it was acknowledged that this would need to be recalibrated to achieve the required 99.5% probability of adequacy.
- The Working Group discussed and agreed with APRA's view that PHI claims are not materially skewed at the 75th percentile and therefore no floor of half a standard deviation as applied to general insurers is required in the PHI capital framework.
- The Working Group discussed how current reporting of the outstanding claims in the APRA HRF 602 forms blends a number of different provisions, not all of which are subject to uncertainty. For example, it is now very common for insurers to hold a 'paid but not released' balance for approved claims which have not left the Fund's bank account on the valuation date (they are to be paid the next day). This provision is certain and insurers do not attach a risk margin to achieve a 75% PoA. However, the current guidance for APRA HRF 602 is for these provisions to be reported as outstanding claims. The Working Group recommends that APRA investigate what provisions insurers bundle into the HRF 602 reporting of outstanding claims, and collect appropriate data from insurers before calibrating an appropriate risk charge.
- The insurance risk balance sheet should be on a prescribed basis. However, the private health insurance sector reflects insurers of vastly different sizes and we note the variability of outstanding claims liabilities is correlated with insurer size.
- The Working Group suggested that the prescribed factors could be calibrated by APRA based on an analysis of the variability of these provisions in hindsight.

[7] Note that the proportion of unearned premium varies seasonally, with an industry peak at 31 March when a large influx of annual premiums are paid to lock in so called 'rate protection' by paying on the old premium rates before new rates become effective 1 April.

[8] The proportion of unearned premium varies significantly by insurer. At 30 June 2018, one Fund had unearned premium equal to 1.2 weeks of premium revenue while another had nearly 18 weeks.

Insurance risk (Premium)

- The suggested approach is a risk factor calibrated at the 99.5% level of adequacy multiplied by a year of premium (or some other period specified by APRA). The group believes that a prescribed risk factor for the industry would allow for greater consistency across insurers, which we understand to be one of APRA's objectives for this process.
- The Working Group recognises that underwriting risk can vary due to insurer-specific factors, such as size, growth, business mix, management approach, etc. Despite this, the group believes that the ultimate variation from year to year and between insurers is relatively low, with most variation able to be accommodated by a consideration of Fund size with the possible addition of policy growth.
- As a result we suggest APRA could consider: (1) a process where insurers could apply to vary an industry standard factor subject to conditions to be specified by APRA, or (2) calibrating the factor to adjust for Fund size and rates of growth. The first approach would have some similarities with Solvency II, where insurers are permitted to apply a lower stress.
- The Working Group noted that the framework for flexibility has precedents in other health insurance systems around the world. These typically allow for principles based adjustments to the prescribed capital charge.
- For example, the underwriting risk for Solvency II is a prescribed factor for the industry but allows for an optional submission to lower the risk charge if the insurer believes their risk profile is lower than that of the prescribed amount. This is known as the USP ('Undertaking Specific Parameter') process. If an insurer thinks their risk is lower than the prescribed risk factor, they would submit an application to receive a lower risk charge.
- The equivalent in LAGIC for life insurers is that these parameters are set by the company with advice from the Appointed Actuary. There was no guidance as to the range, however the Actuaries Institute has published annual benchmarking now so the parameters adopted have converged over time.
- While the calibration of the prescribed factors is outside our scope of work, we have been asked to comment on the approach. We note there is extensive historical data available, and an example of how this could be analysed is detailed in Appendix 2.

Should there be a separate insurance concentration risk charge?

There was much debate within the Working Group as to whether a separate explicit allowance for insurance concentration risk (i.e. catastrophe events) should be made in the allowance for future premium risks or whether all insurance risks should be grouped and considered holistically.

Ultimately the Working Group did not reach agreement on this matter. In determining whether or not to have a separate concentration charge, we believe the following principles should be considered:

1. Simplicity
2. Materiality
3. Availability of data
4. Accuracy
5. Comparability between insurers

A summary of the advantages and disadvantages of a single calculation are set out below.

Advantages of a single insurance (premium) charge

1. Simplicity: A single charge approaches the assessment of underwriting risk holistically. A single charge avoids the need to separate historical variability analysis into those events that may be considered 'catastrophic' versus 'ordinary', and the need to allow for diversification between the 'non-catastrophe events' allowance and the 'catastrophe event' allowance.
2. Materiality: Our review of International benchmarking suggested, when capital standards included a catastrophe risk component, its contribution to the total capital requirement was immaterial for health insurers. It is possible that the component is only included to ensure a consistent set of calculations across all types of insurance. It is not necessary to have a complex concentration risk calculation if the amounts involved are immaterial.
3. Availability of data: The Working Group could not agree on an appropriate basis for selecting data to measure PHI catastrophe risk. In addition, as raised under point 1 Simplicity, it would be very difficult to split the historical data available into the uncertainty due to catastrophe risk distinct from ordinary insurance risk.
4. Accuracy: No one single risk type has been identified as a 1 in 200 event, rather a number of different events could arise from a number of reasons (e.g. mis-pricing, utilisation, participation rates/affordability/economic downturn, Government policy changes etc). This is different from other types of insurance where the material concentration risks are known because they have occurred in the past (e.g. natural perils, series of large claims, economic downturn, and mortality/morbidity in life insurance). For other types of insurance, the catastrophe risk calculations consider the extent to which these known risks may occur in the future and be more severe than in the past. A single charge would allow for underwriting risk on premiums that have not yet been received which differs to general insurance due to the nature of the pricing process and guaranteed acceptance in PHI.
5. Comparability between insurers: Given the wide range of risks that could be considered for the insurance concentration test, it seems likely significant judgement would be required in performing the calculations. A single calculation for insurance risk could be more prescriptive, which we understand is APRA's preference. Given the wide range of views on the level of catastrophe risk in PHI, there could be significant variation in the estimates of minimum capital requirements between funds (unless the catastrophe requirement is very prescriptive). This may make it difficult for APRA and others to assess the relative capital strength of each fund.

Advantages of two separate charges

1. Fostering engagement & developing deeper understanding: Going through the process of thinking through the extent of catastrophic scenarios can be very useful to insurers in understanding their risk exposure. It also could be used as a lever to create a more bespoke element of the requirements which varies from insurer to insurer. However, proponents of this view acknowledge that this step could be achieved as part of the ICAAP process, distinct from the minimum capital calculation.
2. Consistency with LAGIC: Under LAGIC there is a separate charge for concentration of insurance risk for both life and general insurers. A single calculation for health insurance as described would differ to these standards in that it allows for underwriting risk on premiums that have not yet been received and in this allowance it allows for all risks facing the insurer over the next 12 months including insurance concentration risk.

3. International benchmarking: There is a separate charge under a number of the international capital standards, for example under Solvency II.

Aggregation

We recommend that the balance sheet insurance liability risk be added to the future premium insurance liability risk with no diversification benefit, as the correlation benefit is unlikely to be significant.

If APRA decided to pursue a separate insurance concentration risk charge, then the Working Group would recommend that allowance for an aggregation benefit be made as it is unlikely that a 99.5th percentile single event would occur at the same time as a 99.5th percentile underwriting outcome that was not the result of a single event.

We recommend that the total capital requirement include allowance for aggregation in a like manner to the LAGIC framework. That is, allowance for diversification between asset risks and the insurance risks should allow for these risks not occurring at the same time. The Working Group could not identify any reasons why PHI would differ from GI in this respect.

Allowance for risk equalisation and tax

Recommendation

Insurance charge (Balance sheet)

- The balance sheet insurance risk charge should explicitly consider a prescribed charge for the risk equalisation accrued liability held on an insurer's balance sheet. The present application within the prudent liabilities amount in the current capital standards seems the most practical solution.
- We recommend a review of the calculation of the risk equalisation charge be conducted to ensure that the magnitude of the charge is consistent with the volatility inherent in the estimation of the risk equalisation accrued liability.

Insurance charge (Premium)

- The premium insurance risk charge will have a risk factor that is calibrated by APRA. The allowance for risk equalisation should implicitly be allowed for whilst APRA is calibrating the risk factor.
- As we are not recommending a stress test type capital charge like in the current capital standards, there is no requirement for an explicit allowance for tax offset. The Working Group agrees with the LAGIC principle, under a gone concern basis, the recoverability or use of tax offsets should not be included in the capital calculation.

Allowance for future profits

Recommendation

It is recommended that future profits not be taken into account in the capital calculation with respect to future premium insurance liability risk.

Support

An allowance for future profits is inconsistent with the intent of a gone concern in our understanding. This underscores the importance of our earlier suggestion that APRA clearly outline to industry the difference in the intent and implications of gone concern versus going concern in its principles paper.

One advantage of not allowing for future profits is that the capital charge will be predictable and stable, and easily compared between insurers. It also removes the risk that some insurers include forecasts at the more optimistic end of a reasonable range in order to reduce the amount of the capital requirement.

Should overseas (non-resident) health insurance business be treated separately to resident health insurance business

Non-resident business covers overseas students and visitors (including working visa holders). As this was a late requested addition to the terms of reference the consideration is necessarily limited. We have briefly set out some of the arguments for and against considering the business separately.

At this time the Working Group has not had opportunity to consider a group recommendation, noting that while this is immaterial to the industry, it may not be for individual insurers.

Arguments for treating non-resident business separately include:

- Overseas student business is paid up front for potentially extended periods (up to 5+ years – mean duration is more like 2-3 years but may have quite a long tail). There is no recourse to adjust pricing if experience changes for business already written.
- Risk equalisation does not apply to overseas products, so there no risk sharing for insurers who sell these products across industry as with resident hospital claims.
- Currently, profitability is considerably higher for non-resident products than for resident products. There is an argument that selling these products may contribute to an insurer's resilience to stressful events.
- Concentration risk could be higher for non-resident business. For example, an insurer might suffer heavy losses because it is exposed heavily to students in one university.

Arguments for not treating non-resident business separately include:

- Visitors business is much more like resident business i.e. pay as you go and has fewer restrictions on pricing compared to resident business.
- Non-residents business is relatively small - 2.3% of total PHI business in Australia (by premium income) at 30th June 2018. In addition, Visitors business represents almost two-thirds of non-resident business.
- Practically, there is a more limited data history available with which to calibrate appropriate insurance risk charges.

5. Calibrating the insurance risk charge – practical challenges

Measuring insurance risk will involve either (or both):

- Determining an appropriate risk factor calibrated to the right level of risk;
- Specifying and then measuring a scenario/stress to model.

Some specific practical challenges to these are:

- Sourcing relevant historical data to consider a 1 in 200 event;
- Allowing for management actions (in the future, and also adjusting for these in past data);
- How best to allow for differences between insurers.

The practical challenges are different depending on the how the risk is being measured (prescribed formula or scenario/stress) and who is doing the measuring (APRA or the insurer). The following table describes some potential approaches in each case.

	APRA	Insurer
Prescribed formula	• Data – APRA has access to individual insurer data over many years, including access to individual insurer forecast data, and so should be readily able to measure the extent to which the experience was adverse (i.e. different to expected). • Management actions – The difficulty is that in practice (and therefore throughout the historical data) management regularly intervenes when adverse experience emerges, and so an unadjusted analysis of insurance profit outcomes will naturally underestimate the underlying level of insurance risk. • A starting hypothesis might be that, in the past, management has been ineffective at averting (1 in 200) adverse experience. This can then be tested by investigating actual occurrences to see if an adjustment to historic experience is required. • Insurer differences – the formula could include a parameter for size, which has previously been shown to correlate with insurance risk. Growth could be incorporated too. Other differences would not be captured in a prescribed formula, which is one of the known drawbacks of this approach. • Level of application – it would be simplest to apply the formula to all insurance products in aggregate to remove this challenge. • General – APRA should compare and calibrate the formula with other formulae for health insurers in other countries.	N/A – one of the main reasons for the capital standards to take this approach should be that there are few practical challenges for insurers to apply the formula.

Scenario/stress	Given the challenges the Working Group had in defining a catastrophe event, it may be more helpful to explore adverse scenarios. For example: • An adverse event that results in a rapid destabilisation of the underlying risk profile. We note that stress scenarios reflecting mass lapse driven by economic downturns are already prescribed by APRA e.g. for lenders mortgage insurance and could potentially be adapted for private health insurance.	• APRA could issue a PHI industry stress test (as it has done in banking, life insurance and general insurance) to consider the impacts of an economic downturn, a prescribed increase in the unemployment rate that could result in a decrease in participation rates with a consequent increase in average claiming costs. • The challenge would then be interpreting the range and appropriateness of different approaches.

Appendix 1

Insurance risk in capital standards for health insurers around the world

Table 1 below presents a high-level comparison of the capital requirements relating to insurance risk for a number of different countries. Additional details are included below.

Table 1 – Capital requirements relating to insurance risk

Country	Underwriting/ premium charge – with time horizon	Catastrophe charge	Outstanding claims charge	Formula-based	Probability of sufficiency
EU (Solvency II)	✓ 12 months	✓	✓	(✓)**	99.5%
New Zealand	✓ 3 - 5 months (principles-based)	✓	✓	(✓)**	99.5%
United States*	✓ 12 months	×	×	✓	99.5%
Singapore	✓ Contract boundary	×		✓	99.5%
South Africa	✓ 12 months	×	×	✓	None stated

*NAIC approach – not adopted by all states
**underwriting and liability charges are formulae, but catastrophe is calculated from prescribed scenarios

EU (Solvency II)

Underwriting / premium charge: this is defined as 3 x 5% x annual premiums.

Catastrophe charge: based on standardised scenarios. For example, for VHI in Ireland:

Mass accident risk = proportion of population affected (0.95%) x proportion having to obtain medical treatment (30%) x total medical treatment benefits payable arising from such an event

Pandemic risk = 40% x number of members exposed x expected cost per insured member

Outstanding claims charge: this is defined as 3 x 5% x outstanding claims.

Other relevant notes:

Prescribed charges and correlations can vary between countries in the EU.

While the underwriting and liability charges are prescribed, insurers are allowed to apply for permission to reduce their charges. The application requires evidence and, if permission is granted, the lower 'Undertaking Specific Parameters' require regular monitoring and updating.

New Zealand

Underwriting / premium charge: this is defined as 16% x 'premium liabilities'. There are no instructions or guidance for the time horizon applicable to the premium liabilities. Typical practice is to assess premium liabilities over the effective period on risk, being a period of 3-5 months, or the period prepaid, whichever is longer.

Catastrophe charge: The requirements applying to all non-life insurers are either:

- If the insurer has exposure to extreme events, it must calculate its losses under a list of prescribed scenarios; or
- If the insurer does not have exposure to extreme events, this is 2 x the largest per risk retention plus the cost of one reinsurance reinstatement.

Outstanding claims charge: this is defined as 11% x outstanding claims.

Other relevant notes: there is no allowance for diversification between different elements of the regulatory minimum capital requirement.

United States

Underwriting / premium charge: defined factors for each line of business are multiplied by annual premiums. Medicare supplement and dental business lines have lower factors, and adjustments are made for reinsurance.

Catastrophe charge: none

Outstanding claims charge: none

Other relevant notes:

A growth charge is included in the formula, but it is treated as a business risk rather than an underwriting risk. Its formula relates to changes in premium

The National Association of Insurance Commissioners has designed and issued the capital requirements described in this paper; however, it is up to individual states whether or not they are adopted. Some states that have not adopted this approach have simpler, flat dollar amount, capital requirements.

Singapore

Underwriting / premium charge: defined factors for each line of business are multiplied by annual premiums. It applies until the contract boundary, although this can lead to varying interpretations due to the different types of health insurance product available.

Catastrophe charge: none at present, although the Monetary Authority of Singapore (MAS) has expressed an intent to incorporate such a charge.

Outstanding claims charge: none

South Africa

Underwriting / premium charge: this is defined as 25% of annual premiums.

Catastrophe charge: none

Outstanding claims charge: none

Other relevant notes: the Financial Sector Conduct Authority (FSCA) is considering options for changing its requirements, which includes the current Australian model.

Appendix 2

A basis for estimating insurance risk parameters

The following tables show an example of an analysis of the volatility of the history of net margins for the 10 largest funds over different time periods. The net margin and average membership are from the published industry data by PHIAC/APRA in the annual reports on the operation of private health insurers.

The analysis highlights the different volatility experienced by the health insurance industry during two key periods (10 years 1991-2000 and 15 years 2003-2017). These two periods were chosen for analysis to show the period prior to and the period post the introduction of MLS, PHI rebate and LHC reforms. The period prior characterised an industry with a declining participation rate and many funds experiencing losses. The period post characterised an industry with a steady participation rate and most funds making strong surpluses.

The standard deviation is weighted by the exposure of each fund. The exposure is the sum of the membership over the relevant time period.

The weighted standard deviation calculation for the 10 years from 1991 to 2000 is approximately 4.5%. By comparison, the weighted standard deviation calculation for the 15 years from 2003 to 2017 was 2.4%. We have a reasonably long history of data in Australia that covers a normal operating period and a stressed operating period.

The Working Group does not recommended the use of international data as the private health insurance system in Australia is very different from other jurisdictions.

It important to include as much historical information as possible when calibrating a risk factor for a 1 in 200 year event. Any scenario analysis, whether it is data based or not, should utilise and understand the stressed period of the 1990's. In theory, the data should adjust for impacts of management responses and operational events that occurred, however such adjustments will be necessarily subjective.

Net margin volatility

10 years data (1991-2000)

	Exposure	Stdev
AHMG	361,805	5.6%
Aust. Unity	1,406,544	4.7%
HBA	4,309,975	3.7%
HBF	3,007,359	3.8%
HCF	2,802,057	4.4%
MBF/BUPA	6,488,050	3.9%
Medibank	9,507,274	5.4%
NIB	1,882,763	4.4%
MBF Alliances	496,076	3.4%
Teachers Fed	518,659	4.4%
Weighted standard deviation		**4.5%**

Net margin volatility

15 years data (2003-2017)

	Exposure	Stdev
AHMG	1,390,093	3.5%
Aust. Unity	2,617,315	1.4%
HBA	3,878,558	1.6%
HBF	6,442,430	2.7%
HCF	7,852,397	2.0%
MBF/BUPA	17,998,007	2.3%
Medibank	23,670,921	2.5%
NIB	5,886,848	2.4%
MBF Alliances	800,071	6.8%
Teachers Fed	1,495,617	3.3%
Weighted standard deviation		**2.4%**

Source: PHIAC/APRA Annual Reports, various