



Institute of Actuaries of Australia

Target Capital for General Insurers

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Presented to the Institute of Actuaries of Australia
XVth General Insurance Seminar 16-19 October 2005

*This paper has been prepared for the Institute of Actuaries of Australia's (Institute) XVth General Insurance Seminar 2005.
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Keywords : minimum capital requirement, target capital range, benchmark capital, stage 2 reforms, risk measurement, trigger ratios, stochastic modelling

1. Introduction / Scope of Paper

Capital is critical in order for a general insurer to be able to offer security to policyholders, providing “*a buffer against losses that have not been anticipated and, in the event of problems, enables the insurer to continue operating whilst those problems are addressed or resolved*”¹. In recognition of this, general insurers are required to hold a minimum level of capital as specified by APRA. However, the level of capital the insurer holds in excess of the regulatory minimum is largely left to the insurer’s judgment².

The range of capital levels within which the insurer would prefer to operate, based on a consideration of the risks in their business, growth prospects, profitability and other pertinent considerations, is referred to in this paper as the “target capital range”. Clearly, under any sensible consideration of the risks, an insurer’s target capital range should lie above their minimum regulatory capital.

Insurers may also have a particular level of capital within their target capital range which is viewed as their **preferred** level (not to be confused with the minimum level), referred to hereinafter as their “benchmark capital”. An insurer’s strategy for ensuring their capital base remains within their target range, is referred to as their “target capital strategy”.

Whilst insurers have certainly been cognizant of the need to meet minimum capital requirements, there does not appear to have been widespread recognition in past periods of the need and value of a clearly defined target capital strategy. However, pending regulatory changes (APRA stage 2 reforms due in 2006) will formalize the requirement for capital management planning and effectively entrench the need to maintain a target capital strategy.

This paper attempts to discuss some of the issues to be considered when setting a target capital strategy for a general insurer, with particular reference to the expected impact of the APRA stage 2 reforms. The paper does not attempt to provide a comprehensive discussion of all issues, but rather to provide an introduction to some of the key issues which insurers will need to consider.

Sections 2 to 5 are concerned with the regulation of capital management. The current regulatory approach to minimum capital is described in section 2, whilst current regulatory constraints on selection of a target capital range are described in section 3. The current market practice regarding capital levels (current actuals) and disclosed targets is discussed in section 4. Implications of regulatory change (principally the APRA stage 2 reforms) for target capital are discussed in section 5.

Key considerations in developing a target capital framework are discussed in section 6, including the need to balance strategic and risk considerations, optimal measures of risk and the development of “trigger ratios” (as required under the stage 2 reforms).

Modelling considerations are discussed in section 7, including a worked example of a simple stochastic model which allows the risk of minimum regulatory capital being breached to be quickly assessed for any given level of target capital.

¹ APRA prudential standard, GPS 110

² Although APRA impose additional “soft” capital thresholds, as discussed later in this paper

The ongoing role for actuaries in setting and reviewing target capital strategies (with reference to pending regulatory change) is discussed in section 8.

Key conclusions are summarized in section 9.

Note: Any references to the ‘regulator’ in this paper should be construed as referring to APRA, unless stated otherwise.

2. Background – Minimum Capital Requirements

The regulatory minimum capital requirement (MCR) for insurers is clearly defined in APRA’s prudential standard GPS 110 and associated guidance notes GGN 110.1 to 110.5.

GPS 110 states that:

*“An insurer may choose one of two methods for determining its **Minimum Capital Requirement (MCR)**. Insurers with sufficient resources are encouraged to develop an in-house capital measurement model to calculate the MCR (this is referred to as the **Internal Model Based (IMB) Method**).”...“Insurers that do not use the IMB Method must use the **Prescribed Method** outlined in this Standard.”*

*“Regardless of which method is used to calculate the Minimum Capital Requirement, an insurer’s MCR is determined having regard to a range of risk factors that may threaten the ability of the insurer to meet policyholder obligations. Under the Prescribed Method, these fall under three broad types: **insurance risk** (the risk that the true value of net insurance liabilities could be greater than the value determined under Prudential Standard GPS 210 Liability Valuation); **investment risk** (the risk of an adverse movement in the value of an insurer’s assets and/or off-balance sheet exposures); and **concentration risk** (the risk associated with an accumulation of exposures to a single catastrophic event). An insurer using the IMB Method will be expected to include these risks, as well as other relevant risk factors, within its calculation methodology.”*

The method of calculation for the various risk components is prescriptively defined in guidance notes GGN 110.3 to 110.5.

3. Current Regulatory Constraints on Target Capital Range

As defined in section 1, the target capital range represents the insurer’s preferred capital “trading range”, based on their consideration of business risks, growth prospects, profitability and any other relevant considerations. Hence, the target capital range is not (and cannot) be defined by the regulator. However, the regulator’s preferences as to minimum capital levels clearly impact on an insurer’s target capital range, by imposing a constraint at the lower end of the range. In this section we will examine the current regulatory constraints on the target capital range.

The most obvious regulatory constraint is in the form of the MCR, which represents a “hard” capital threshold which insurers are required to maintain their capital base above at all times. Indeed, the consequences for an insurer allowing their capital base to fall below the MCR are potentially severe as APRA may revoke their authorization to carry on insurance business³ if ‘the

³ In fact, a more likely outcome (initially at least) is for APRA to make the licence conditional e.g. no new business. Revocation is not a likely option as it would put the company beyond the reach of the Insurance Act

insurer has inadequate capital and is unlikely to have adequate capital within a reasonable period of time”⁴.

Within the confines of the prudential standards, the level of capital (beyond the MCR) ultimately held by an insurer is largely left to their discretion, subject to some broad guidance as to the relevant considerations. For example, GPS 110 states that:

“Beyond the minimum levels of capital specified by this Standard, it is the responsibility of an insurer’s Board and senior management to ensure that the insurer’s capital resources are appropriate to the size, business mix and complexity of its business. Accordingly the insurer must have reasonable systems in place to identify, manage and monitor the risks associated with its business activities, and to hold capital commensurate with its overall risk profile”.

However, outside the (written) prudential standards, APRA have consistently stated their strong preference for insurers to maintain a minimum buffer of 20% above MCR⁵. The primary purpose of APRA’s preferred buffer over MCR appears to be to protect against breaches of the MCR due to short term fluctuations. APRA have publicly acknowledged that their preferred 20% buffer over MCR has been set somewhat arbitrarily. Nonetheless, the outcome for insurers has been to create an additional “soft” capital threshold of 1.2 times MCR which insurers should strongly endeavour to maintain to maintain their capital base above at all times. Hence, this “soft” capital threshold of 1.2 times MCR should be viewed as an additional constraint on the lower end of the target capital range.

4. Current Market Practice

In this section we examine the level of capital currently held by insurers and (where available) any disclosures by insurers which may provide insight to their benchmark capital and/or target capital range.

Current market solvency coverage levels

The distribution of solvency coverage ratios (ratio of capital base to MCR) for active direct insurers in Australia is shown in Table 4.1.

Table 4.1 – Distribution of solvency coverage ratios for active direct insurers as at 30 September 2004

	Solvency coverage ratio as at 30 Sept 2004
Weighted average	2.2
25th percentile	1.6
Median	2.0
75th percentile	2.8

Source : APRA Insight, 1st Quarter 2005

The solvency coverage ratio shown in Table 4.1 relates to a total of 88 active direct insurers who were operating in the Australian market at that time. It is apparent that most insurers are currently maintaining a very comfortable buffer over the MCR (or indeed the “soft” capital

⁴ Source : section 15, Insurance Act 1973.

⁵ APRA’s preferred buffer over MCR has sometimes been set at a level higher than 20% for particular insurers, typically communicated to the affected insurers by way of private correspondence.

threshold of 1.2xMCR), with 66 of the 88 insurers being at or above a solvency coverage ratio of 1.6.

Solvency coverage levels for larger insurers

Solvency coverage ratios (at the group level) and disclosures relevant to the target capital range for some larger listed insurers is shown in Table 4.2.

Table 4.2 –Solvency coverage ratios for larger listed insurers as at 30 June 2005

	Solvency coverage ratio as at 30 June 2005	Disclosures (if any) relevant to target capital range
IAG	2.0	Benchmark multiple of 1.55xMCR, set by reference to the group’s economic capital requirements which <i>“takes into account the financial metrics used for ‘AA’ insurer financial strength ratings as well as risk of statutory insolvency of no more than 1-in-750 years”</i>
Promina	1.9	-
QBE	1.8	<ul style="list-style-type: none"> • <i>“To maintain Group capital adequacy multiple of more than 1.5 times MCR.”</i> • <i>“To maintain borrowing and capital adequacy ratios within S&P AA rating category.”</i>
Suncorp	1.9	<i>“Board target”</i> of 1.6xMCR

Source : Annual reports

The solvency coverage levels for the larger insurers are observed to be relatively close and are broadly in line with the overall market.

Each of the insurers is also observed to express their capital targets as a multiple of MCR. This is probably due more to accepted market practice rather than a belief that a multiple of MCR is the best way of equating to a specific risk level (particularly where the insurer has an internal risk model which differs from the Prescribed Method MCR).

However, the insurer disclosures do not provide a clear direction as to their target capital strategies or range. Although the disclosures shown in Table 4.2 make reference to “benchmark” and “target” capital, it is not evident that these words convey the same meaning as defined for the purposes of this paper. In particular, stated multiples of MCR may conceivably refer to minimum capital levels (i.e. lower end of the target capital range) or alternatively to the desired level within the target capital range. Nonetheless, we note that each insurer is also currently above their intended capital level (as disclosed), which are also observed to be relatively close.

5. Implications of Stage 2 Reforms for Target Capital

This section discusses the implications of APRA's stage 2 reforms on insurer's methods for setting and reporting on their target capital strategy. In discussing these implications, we are basing our view of the stage 2 reforms on the current draft guidance notes circulated by APRA. However, we understand that APRA has received significant industry feedback in relation to these draft guidance notes and material revisions to the draft may occur prior to final release.

Summary of changes to capital management planning under stage 2 reforms

Under the stage 2 reforms, insurers will be provided with specific guidance as to the expected structure for their target capital strategy, which needs to be expressed in the form of “*trigger or target ratios in relation to the MCR, additional capital reserves, or other mechanisms to alert management to, and avert, potential breaches of the MCR.*”⁶

Insurers will also receive further guidance as to the range of factors to be considered in setting their target capital strategy. For example, in setting their trigger ratios, insurers are asked to take into account:

- “(i) the asset and liability profile for the business as a whole and for material sub-sets of the business;*
- (ii) the impact on capital requirements of forecast growth rates and growth in insurance liabilities;*
- (iii) the risks to which an insurer is exposed, such as market, credit, insurance and operational risks. This should include quantitative and qualitative stress testing;*
- (iv) peer and industry capital ratios;*
- (v) capital requirements across the business lines;*
- (vi) head office requirements imposed on the local business;*
- (vii) internally set target returns on capital or investments; and*
- (viii) access to internal and external sources of capital.”⁷*

The insurers target capital strategy needs to be detailed within their Risk Management Strategy with financial aspects included within the insurer's Business Plan (already required documents under current APRA standards).

Implications for insurers

Changes to capital management planning under the stage 2 reforms (as summarized above) are likely to result in significant upfront work for many insurers, particularly those who have not undertaken internal risk modeling previously. This is likely to be the case particularly for smaller insurers, who may effectively need to formulate and communicate their target capital strategies from “scratch”.

Many larger insurers may already have a capital benchmark and/or target capital range in place which have been formulated based on internal risk modeling. This modeling may also already be at a level of sophistication which allows for the risk and business factors specified in the draft guidance note. However, even in these cases, significant work may still be required to express the target capital strategy in the required form (i.e. inclusive of trigger ratios and associated management actions), as well as including the extra detail required under their Risk Management Strategy (RMS) and Business Plan (BP).

⁶ Source : draft guidance note GGN 220.1

Insurers will also need to consider the level of public disclosure of their target capital strategy. There is no current or pending regulatory requirement for insurers to publicly disclose their target capital strategy, as neither the RMS or the BP are public documents. However, the insurer's target capital strategy would certainly be of significant interest to the shareholders and also to policyholders (to the extent that it relates to solvency issues). Under the current regulatory framework, insurers appear comfortable with making some voluntary disclosures regarding capital "targets" or "benchmarks" (refer to disclosures from larger listed insurers as shown in section 4). Public disclosure of the target capital strategy would provide stakeholders with further valuable information as to the management actions which would be taken to ensure capital stays within the target range. Notably (from an investor perspective), it should also highlight at what point the capital base may be considered excessive (not readily apparent from the current disclosures) and how excess capital may be dealt with.

Given that insurers are now being asked to define their target capital strategy and trigger ratios, it appears unlikely that APRA will continue to express a preferred minimum capital level for insurers (beyond the 1.2xMCR "soft" capital threshold) other than by way of response to an insurer's nominated targets.

6. Key Considerations in Developing a Target Capital Strategy

Balancing risk and strategic considerations

The "shopping list" of information insurers are required to take into account when setting their trigger ratios under draft guidance note GGN 220.2 are listed in the previous section. The insurers target capital framework will need to make due consideration of each of the listed items of information. In a broad sense, insurers will be required to balance *risk considerations* (i.e. need to protect against uncertain outcomes) as well as *strategic considerations* (e.g. need to achieve a desired financial strength rating from a rating agency or to support organic business growth and/or acquisition activity). In balancing their needs for capital in respect of each of these considerations, insurers will also be cognizant of the consequences for falling short and also of the potential mitigation strategies which may be used, including the accessing of external capital (where possible). The benchmark level of capital selected by the insurer may ultimately be the greater of the capital required in respect of either the risk or strategic considerations. This approach is broadly consistent with the definition proposed by Griffin and Baillie (2004) in their consideration of target capital (referred to in their paper as "target surplus") for life insurers.

A framework for strategic considerations (e.g. achieving a desired financial strength rating from a rating agency) is outside the scope of this paper. Hence, for the remainder of this paper, we will be primarily concerned with a framework for insurers' risk considerations.

Measurement of risk

In regards to the assessment of risk, the insurer will need to consider the best measure of risk to be used when setting their target capital range and/or benchmark capital level within that range. In particular, there are two key alternative measures of risk⁷, namely:

- a) Insurers may focus on the risk of insolvency (i.e. defaulting on liabilities), in which case they may express points within their target capital range with reference to the corresponding probability of default (each point in the target capital range necessarily having lower probabilities of default than would be achieved under the MCR); or

⁷ An insurers target capital may of course allow for targets in respect of both of these risk measures.

- b) Insurers may focus on the risk of falling below the MCR, in which case they may express points within their target capital range with reference to the corresponding probability of breaching the MCR.

Risk measure a) provides a more holistic view of risk and hence appears to offer some technical advantages. However, measurement of a benchmark capital level equating to a specified probability of default may be problematic from a modeling perspective as we are dealing in the ‘tail’ of the distribution and consequently small changes in the model parameters can result in large changes in target capital. Furthermore, the capital benchmark may look “odd” relative to the MCR, particularly where the insurer is using an internal risk model to set target capital whilst using the Prescribed Method to estimate MCR⁸. Hence, for pragmatic reasons, we suspect that most insurers will focus on the risk measures under b) rather than a). Provided that the MCR provides an accurate risk based measurement of the true capital requirement for an insurer, then focusing on b) may also be sufficient as a means of targeting enhanced solvency under a). However, in the event that the MCR (as measured under the Prescribed Method) is not an accurate measure of the true risk for an insurer, then clearly a capital benchmark set with reference to the risk of breaching the MCR may mean little in terms of the overall level of solvency achieved.

Regardless of which measure of risk is selected, the insurer will need to decide on their appetite for risk with respect to this chosen risk measure. For example, the insurer may elect to target a level of capital which limits their opportunity for a breach of MCR to 10% (with trigger ratios applying beneath this target capital to ensure that remedial action is taken to prevent any breach of MCR ever occurring). The insurer’s risk appetite is largely a matter for the insurer’s own consideration as it is not specified by APRA⁹.

Trigger ratios

A key part of the draft stage 2 reforms is the requirement for insurers to express their capital management strategy in the form of trigger ratios. The trigger ratios represent the points above or below the benchmark level at which management actions may be taken to ensure that the capital base stays within the target capital range. The nature of the management action will in turn depend on the level of the trigger ratio within the target capital range and proximity to the actual MCR.

A variety of management actions may be considered for inclusion in a capital management plan, including:

- Increased monitoring and Board reporting;
- Change in asset profile;
- Change in liability profile (e.g. through change in the types or volume of business underwritten);
- Change in reinsurance arrangements;
- Commutation of liabilities or portfolio transfers; and/or
- Raising additional capital / capital repatriation.

⁸ For example, the MCR aims to provide a 0.5% probability of default. However, an internal risk model may suggest the Prescribed Method MCR is providing a materially different probability of default. This inconsistency between the internal risk model and Prescribed Method MCR becomes problematic where the insurer is targeting a particular probability of default.

⁹ Although APRA will certainly have concerns if the estimated risk of MCR breach appears too high.

In most instances, the capital management plan will commit to investigate the feasibility of management actions at nominated trigger points rather than commit in advance to actually doing them. However, as more serious trigger points are reached, the more emphasis may need to be placed on “doing” rather than “investigating”. Also, given the serious consequences attached to undercapitalization, it is reasonable to expect more serious actions for trigger ratios at the lower end rather than the higher end of the target capital range. There may also be a need to commit to some alternatives if the nominated action is not feasible, which suggests that there may sometimes be more than one action per trigger.

The capital management plan needs to recognize that some of the management actions above will take a long period of time to improve the capital position (e.g. change in types of business underwritten) whilst others will have an almost instantaneous effect (e.g. commutation of liabilities or raising additional capital) – but may be subject to implementation delays. Given the likely delays between the commitment to the management action and the impact on the capital position, the trigger ratios need to be sufficiently spaced to allow management actions to take effect prior to another trigger ratio being breached.

7. Modeling Considerations

Possible approaches

A variety of possible approaches may be taken to estimating the level of risk associated with a particular level of capital. These approaches may be broadly categorized as either 1) deterministic or 2) stochastic.

- 1) **Deterministic** : An example of a deterministic approach would be testing whether the particular capital level provides sufficient protection against nominated stress test scenarios e.g. a catastrophic claim or a severe drop in asset values. Whilst this type of stress testing may have some intuitive appeal in that it tests the insurer’s ability to withstand a specific scenario, it may be difficult to equate the results of the stress test to a particular risk tolerance level.
- 2) **Stochastic** : Stochastic methods model the stochastic nature of the assets and liabilities, as well as any correlations which may exist. Stochastic modeling may be undertaken using an internal risk model or dynamic Financial Analysis (DFA) model, provided that such a model exists for the insurer or the insurer is willing to invest in its development. A detailed description of these models is beyond the scope of this paper. However, suffice to say that a well constructed DFA model is likely to represent the theoretically optimal method of estimating the level of risk associated with any particular capital level, albeit requiring considerable time and resources to properly develop. In the absence of such a model however, there may be simpler, more approximate stochastic methods which insurers can apply to estimate the risk associated with particular capital levels. These methods may be particularly suited for smaller insurers, for which a DFA may represent spurious accuracy. An example of a simplified stochastic model is shown in the following section.

A simplified stochastic model

The following section presents a worked example of a simplified stochastic model which may be used to estimate the level of risk associated with particular capital levels as an input to setting a target capital strategy.

Consider a medium sized insurer XYZ writing business across a range of short tail and long tail product lines. XYZ wishes to maintain a buffer over MCR which provides them with an appropriate level of comfort that they will not breach their MCR.

Let L represent the true value of the liabilities and A represent the true value of the assets (as realized in order to meet the liabilities) of XYZ. Then A and L may be considered as random variables.

Assume XYZ maintains assets A in the balance sheet at central estimate, whilst maintaining liabilities L at the 75th percentile (in line with GPS 210). Hence, at any point in time, XYZ is maintaining a risk margin above the estimated value of L. For simplicity, we assume this risk margin is constant, denoted by r%.

For a given observation of A and L, the MCR for XYZ is fully defined (under the Prescribed Method) by applying the appropriate investment risk and insurance risk capital factors and adding the concentration risk, which is essentially constant. Hence, the MCR may itself be regarded as a random variable which is a function of A and L (plus the risk margin r%).

Under this notation, the probability of the MCR being breached is equal to:

$$\Pr(A - Lx(1+r\%) < \text{MCR}) \quad (\text{formula 7.1})$$

For any defined distributions for A and L and an assumed correlation between A and L, the above formula is easily evaluated using simulation techniques (remembering that the MCR is a function of A and L).

It is apparent from the structure of formula 7.1 that movements in assets will simultaneously result in movements in MCR in the same direction which hence provide a partial “hedge” against the MCR being breached. However, movements in liabilities will result in the left hand side of the equation moving in the opposite direction to the right hand side which “amplifies” the likelihood of the MCR being breached. This is further exacerbated by the need to keep a risk margin over the expected value of liabilities. Hence, liability movements are (relatively) more likely than asset movements to result in MCR breaches.

It is important to note that evaluation of formula 7.1 does not involve any form of projection simulation, but rather entails a statistical analysis of the distribution of possible outcomes. Hence, the resulting output does not provide an annualized probability of the MCR being breached. Rather, it provides an estimate of the probability, at a particular point in time, that the true unknown realizable value of assets, exceeds the true unknown value of liabilities (with adjustment for risk margin) by an amount less than the MCR. For example, an insurer writing primarily long tail business may, at a point in time, have a high probability of the MCR being breached according to the formula above. However, it may be many years before any breach (caused by an adverse movement in assets and/or liabilities) is apparent. In the interim, the insurer may of course have written further business which further clouds the issue of whether a breach will occur.

In order to derive some numerical results for illustrative purposes, we assumed the following parameters (described at a high level here, with further detail shown in Appendix A). The assumptions have been selected in order to be broadly representative of a medium to large, active diversified direct insurer.

- A, L both lognormally distributed
- Asset class split : cash 5%, equities 20%, fixed interest 50%, non-investment assets 25% (broadly in line with observed asset split for overall market)
- Liability split : outstanding claims 60%, premium liabilities 25%, other liabilities 15% (broadly in line with observed liability split for the overall market)
- Outstanding claims split by product: domestic motor 15%, home 10%, fire & ISR 5%, liability 35%, CTP 35%
- Premiums liability split by product: domestic motor 30%, home 15%, fire & ISR 10%, liability 25%, CTP 20%
- Liability coefficients of variation (CV) for each of the outstanding claims liability and premiums liability were derived using the approach detailed in the Tillinghast risk margins paper¹⁰, based on an assumed size of liabilities representative of a medium sized insurer, constituting approximately 3% of the overall market ;
- Correlations between outstanding claim liabilities for different classes of business based on the correlation matrix within the Tillinghast risk margins paper¹⁰. A correlation of 75% was assumed to apply between outstanding claims and premiums liability; and
- Asset CVs were derived based on the values implicit in the APRA investment risk capital factors (assuming these factors were representative of investment risk at the 99.5th percentile).
- Correlations between assets and liabilities were assumed to be in the range of 0% to 50% (as compared to an observed correlation of approximately 20% between assets and liabilities for Australian direct insurers since 2002¹¹). A smaller assumed correlation between assets and liabilities **increases** the chance of the MCR being breached as it increases the chance of assets and liabilities moving in opposite directions.

Formula 7.1 was then evaluated for a range of buffers over MCR (20% to 50%). The results are shown in table 7.1.

Table 7.1
Probability of MCR being breached based on buffer over MCR

	Buffer over MCR			
Correlation (A,L)	20%	30%	40%	50%
50%	31%	24%	18%	13%
0%	33%	26%	21%	16%

¹⁰ Reed, Bateup; “Research and Data Analysis Relevant to the Development of Standards and Guidelines on Liability Valuation for General Insurance”; Tillinghast-Towers Perrin (2001).

¹¹ Analysis based on “deflated” assets and liabilities for direct insurers, sourced from APRA Quarterly General Insurance Performance, March 2005

Comments:

- Based on the stated assumptions (which attempt to be broadly representative of a medium to large diversified, active insurer), an insurer wishing to reduce the probability of breaching its MCR to below 20% would target a buffer over MCR of 50% or more.
- The probability of breaching MCR is not observed to be highly sensitive to the assumed correlation between assets and liabilities.

8. Role of Actuary in Setting Target Capital for General Insurers

The current regulatory regime does not explicitly require the Approved Actuary to be involved in setting the capital management strategy. Nonetheless, actuaries are frequently involved in setting capital management strategy, through involvement in DFA or in other modeling / advisory roles. The opportunity for actuarial input will be further enhanced with the introduction of Financial Condition Reports (FCR).

APRA's draft guidance note GGN 310.1 requires the actuary to include within the FCR:

- An outline of *“the insurer’s strategy for setting and monitoring capital resources over time and the processes and controls in place to monitor and ensure compliance”* (with their MCR);
- Comment on *“the strategy, including targets and trigger ratios included in the strategy, and any issues arising from the use of the strategy, having regard to the insurer’s MCR and future capital needs to support the business plan”* ; and
- Comment on the *“insurer’s capacity to continue to meet the MCR and its capital targets over the next three years. This assessment should include quantitative and qualitative stress and scenario testing”*.

9. Key Conclusions

We are likely to see a greatly increased focus on capital management disciplines from insurers over forthcoming periods, with pending regulatory change (based on the current draft guidance notes associated with the APRA stage 2 reforms) likely to require the development of capital management strategies which make due allowance for risk and strategic considerations.

In formulating their capital management strategies, insurers need to think beyond their minimum capital thresholds. It may be useful for insurers to think of their capital targets in terms of a target range, with perhaps a selected benchmark level representing the preferred level within the range. The trigger ratios and associated management actions required by the draft stage 2 reforms may then be thought of as the mechanisms for ensuring the insurer stays within their target capital range. The choice of risk measure and selection of trigger ratios are particularly important features of the insurers target capital strategy and require careful consideration.

The formulation of the target capital strategy (including supporting analyses) may represent a significant work commitment for many insurers, particularly those who have undertaken limited internal risk modeling to date. In some instances it may be possible to reduce this work commitment through the use of simplified models.

Insurers may also wish to consider fuller public disclosure of their target capital strategy, including disclosure of trigger ratios and associated management actions. Although not

compulsory, such disclosure would provide valuable information to investors and other stakeholders.

The role of actuaries in setting and reviewing target capital strategies for insurers is likely to be enhanced under the stage 2 reforms, as commentary on these strategies is forms a key part of the FCR.

10. Acknowledgements

I would like to thank David Rush and Keith Chapman for reviewing drafts of this paper and Greg Taylor and Sam Wills for providing assistance with the mathematical aspects. The views expressed in this paper are those of the author alone and are not necessarily representative of the views of my employer.

11. References

APRA Insight, 2005 1st Quarter

APRA Prudential Standards GPS 110 and GPS 210

APRA Guidance Notes GGN 110.1 to 110.5

Griffin K and Baillie R (2004) : “Target Surplus : Developing an Industry Approach”

Appendix A
Assumptions / parameters for illustrative example of simplified stochastic model

Hypothetical Balance Sheet:

Hypothetical Balance Sheet: XYZ Insurer

Assets	%
Investment Assets:	
- Cash	5%
- Equities	20%
- Fixed Interest	50%
Non Investment:	25%
Total	100%

Liabilities	%
Other Liabilities	15%
Insurance Liabilities:	85%
- Outstanding Claims	60%
- Premium Liability	25%
Total	100%

Liability Assumptions		
Classes of Business	Proportions	
	OSC %	PL %
Motor	15%	30%
Home	10%	15%
Fire & ISR	5%	10%
Public Liability	35%	25%
CTP	35%	20%

These figures are in line with the asset and liability profile for Active Direct Insurers, taken from APRA Insight, 1st Quarter 2005.

Minimum Capital Requirement¹²:

Insurance Risk Capital

Classes of Business	Risk Capital Factor	
	Outstanding Claims	Premium Liability
Motor	9.00%	13.50%
Home	9.00%	13.50%
Fire & ISR	11.00%	16.50%
Public Liability	15.00%	22.50%
CTP	15.00%	22.50%

¹² APRA guidance note GGN 110.4

Investment Risk Capital

Investment Assets	Risk Capital Factor
Cash	0.50%
Equities	8.00%
Fixed Interest	4.00%
Non Investment	4.00%

Catastrophe Risk Capital: 5% of Total Liabilities

Coefficients of Variation:

Classes of Business	Coefficient of Variation	
	OSC	PL
Motor	12.4%	21.7%
Home	18.9%	33.1%
Fire & ISR	18.9%	28.4%
Public Liability	23.7%	29.6%
CTP	21.8%	27.2%

The Coefficients of Variation were derived using the approach detailed in the Tillinghast Risk Margins paper¹³, as applied to a medium / large insurer¹⁴.

Correlation Matrix¹⁵:

	Correlation Matrix (applied to total variance)				
	Motor	Home	Fire & ISR	Public Liability	CTP
Motor	1.00	0.20	0.10	-	0.25
Home	0.20	1.00	0.10	-	-
Fire & ISR	0.10	0.10	1.00	-	-
Public Liability	-	-	-	1.00	0.25
CTP	0.25	-	-	0.25	1.00
Correlation coefficient for OSC and PL			75%		

¹³ Reed, Bateup; "Research and Data Analysis Relevant to the Development of Standards and Guidelines on Liability Valuation for General Insurance"; Tillinghast-Towers Perrin (2001).

¹⁴ Assumed to have 3% share of the total insurance liabilities for the Australian market. By comparison, IAG are observed to have approximately 15% share of total liabilities.

¹⁵ Reed, Bateup (2001).