

**Recommendations by the Risk Equalisation Technical
Advisory Panel**

to the Council for Medical Schemes

Solvency Implications of the REF for Medical Schemes

RETAP Recommendations Report No. 5 of 2005

Adopted 31 May 2005

Risk Equalisation Technical Advisory Panel (RETAP)

Following the approval of the Social Health Insurance (SHI) policy by the National Department of Health, the Minister of Health appointed a Ministerial Task Team (MTT) on Social Health Insurance to support the implementation of the SHI system in South Africa over the next five years. The MTT is made up of officials from the Department of Health, the Department of Social Development and the Council for Medical Schemes. In late January 2005 Cabinet approved the shadow implementation of the Risk Equalisation Fund (REF) and placed the responsibility for implementation with the Council for Medical Schemes.

The Risk Equalisation Technical Advisory Panel (RETAP) was established on 20 October 2004 as a consultative group used to assist in the development of technical requirements for implementation of the REF. RETAP's role flows from some of the key recommendations made by the original Formula Consultative Task Team (FCTT). In particular, the panel must focus its attention on the practical requirements for the implementation of the REF formula. Its recommendations should enable an action plan to be developed for implementing the formula, taking into account all the practical and technical issues that will arise in the implementation phase.

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1. Introduction

1.1 Purpose of the Report

RETAP is required to advise on any changes that need to be made to the current statutory solvency basis as a result of the commencement of the REF. During the shadow period, medical schemes are to submit data and will receive notification of the amounts that would be payable from the REF, however no money will change hands.

The purpose of the shadow period is to ensure that medical schemes and the REF Authority are able to handle the technical and administrative requirements of the full implementation of the Risk Equalisation Fund. The REF Authority is the Council for Medical Schemes during this period.

A critical impact of the flow of funds through the Risk Equalisation Fund is the impact on medical scheme solvency. The purpose of this report is to set out the recommendations of RETAP in respect of any action that may be required especially with regard to changes to the current statutory solvency requirements.

The Formula Consultative Task Team report of January 2004 (the FCTT Report) will serve as the basis for these recommendations. The initial FCTT Report is adapted by the recommendations of the International Review Panel that reported in February 2004 (the IRP Report). The recommendations of the FCTT and the IRP are discussed later in this report.

RETAP delegated the preparation of this report to Paul la Cock with the assistance of George Marx. The document was circulated for input by RETAP members during early February 2005. The issues need wider stakeholder discussion and this draft report is thus released for further comment. The issues will be discussed again at a RETAP meeting at the end of March 2005.

1.2 The Need to Review Solvency Requirements

The introduction of the REF raises the need to review the current statutory solvency requirements for a number reasons:

- **Potential change in schemes' risk levels** - Solvency requirements should reflect the level of solvency risk that a scheme is exposed to. To the extent that the introduction of the REF changes a scheme's level of solvency risk it can be argued there should be a corresponding change to the level of solvency reserves that a scheme is required to hold.
- **Impact on contributions** - Solvency requirements are currently expressed as a function of contributions. The introduction of the REF will have an impact on contributions.
- **Definition of "gross contribution income"** – The current legislation did not anticipate the introduction of the REF. The current legislation refers to "gross contribution income" for which no definition is provided. It is therefore not clear how payments to or from the REF should be treated in the context of the current legislation.
- **Health Policy considerations** - Health Policy objectives relating to the solvency of medical schemes and the equalisation of the cost of providing a PMB-only package to the public need to be taken into account.

Note that all of these factors come into effect only with the implementation of the full REF. The REF will have no impact from a solvency perspective until actual cashflows between schemes and the REF commence.

2. Solvency Framework Prior to the REF

2.1 Existing Statutory Solvency Basis

2.1.1 The Current Basis

The current solvency basis requires that the net assets of the scheme (“accumulated funds”) expressed as a percentage of “gross contribution income” for the accounting period in question, equal or exceed 25%. The accumulated funds are defined as total assets less total liabilities. “Gross contribution income” is not defined in the Act or Regulations but is interpreted to include all contributions received from members, including savings account contributions. No allowance is made for the netting off of reinsurance premiums, or of any other fees paid to third parties in respect of risk transfer arrangements.

The legislation is not clear on how solvency is to be calculated during the course of a year when contribution income for the remaining part of the year is not yet known. The issue was considered by the Financial Soundness Focus Group of the Council for Medical Schemes during 2002 and a methodology has been adopted internally by the Financial Soundness Unit to facilitate monthly and quarterly reporting by schemes.

The full text of the current solvency legislation is set out in Appendix A. An example of the current solvency calculation is shown in Appendix E.

2.1.2 Implications of the Current Basis

There are a few features of the current solvency requirements that need to be taken into account when considering any adjustment to the requirements:

- The current solvency basis would seem to have its origins in the work of Professor Campagne of the Netherlands which was presented in 1957. While this approach was widely adopted in various markets in the 1960s, the academic work on solvency has since been extensive and more sophisticated solvency approaches have been implemented. The Medical Schemes Act has not taken into account these developments in solvency in recent decades.
- Schemes must hold reserves of 25% of gross contribution income regardless of their actual solvency risk profile.

- The 25% requirement is not broken down into components which can be mapped against the various solvency risks to which schemes are exposed.
- The appropriateness of the 25% requirement at industry and scheme level is questioned by industry participants.

An explicit adjustment to the solvency requirements in order to recognize any change in solvency risk brought about by the REF does not fit comfortably in the current solvency requirement framework:

- It isn't clear what allowance, if any, there is in the current solvency requirements for the risks that might be affected by the introduction of the REF.
- In the absence of explicit allowance for risks, or of any rationale or derivation, it is difficult to determine an appropriate and objective adjustment to accommodate any change in solvency risk.
- Given the broad-brush nature of the current solvency requirements it is quite possible that an adjustment to the current requirements would result in some schemes enjoying a reduction in their solvency requirements when they would/should hold higher reserves if their true solvency risk profile was taken into account (i.e. if RBC was applied).

An 'accurate' adjustment made to a fairly arbitrary set of solvency requirements will not necessarily produce a more appropriate overall set of requirements.

Conclusion 1: That changes to the current solvency basis be limited to those that are considered essential. A full review of the solvency risks faced by schemes can be undertaken as part of the investigations into the appropriateness of a Risk Based Capital approach to solvency.

2.2 Recommendations of the Financial Soundness Focus Group

The Financial Soundness Focus Group was formed by the Registrar of Medical Schemes in December 2001 to advise on the various issues that have arisen with regard to the Financial Soundness of Medical Schemes.

The following is a summary of the observations and recommendations of the Focus Group as described in their report “Review of the Factors that Influence Financial Soundness of Medical Schemes” completed in August 2003. The full text of these recommendations is set out in Appendix B. The numbering of the following paragraphs corresponds to the numbering used by the Focus Group in its report.

5.6 Recommendations on including claims

The issue raised is the fact that the current solvency requirements ignore the actual claims and total expenditure of a medical scheme. A scheme that is under-priced will therefore be required to hold a lower level of solvency reserves than one that is conservatively priced. This undermines the objectives of solvency requirements as a scheme that has under-priced is at higher risk of insolvency. The Focus Group states “It has been suggested that the solvency requirement should take into account total claims and/or expenditure” and goes on to describe a solvency basis that would be based “on the greater of total contributions or total claims or expenditure”.

The Focus Group mentions that this approach brings its own “complications”. Some of these complications are described in Section 6.

5.10 A Risk Based Capital (RBC) Approach to Solvency Requirements

The issue raised is the view that the current solvency requirements are based on a broad-brush approach that doesn’t take the actual risk profile of a scheme into account. The Focus Group mentions that a RBC approach has been suggested as the “correct way to go in this regard”. It is stated that existing RBC methodologies have been developed for other environments and would not be appropriate for South Africa without modification. At the time of writing of the Focus Group report the Actuarial Society of South Africa was busy with research into appropriate RBC bases for the South African environment.

5.11 Recommendations on using RBC action levels

The issue raised is the fact that the Medical Schemes legislation gives the Registrar broad powers to take action in the event of medical schemes not meeting the financial soundness requirements of the legislation. This results in uncertainty for schemes regarding the action that the Registrar will take, and when. The US RBC approach includes solvency level trigger points and the action to be taken by the regulator in the event of a scheme falling below each trigger point is described explicitly.

3. Impact of REF Payments

3.1 Summary of RETAP REF Accounting Recommendations

The full text of the RETAP recommendations can be found in the document “RETAP Recommendations Report No.3 of 2005 – Accounting and Financial Implications of the REF for Medical Schemes”.

The main recommendations which have a bearing on the impact of the REF on solvency are the following:

- Income statements per option will be split into PMB and non-PMB income statements.
- Payments from the REF will be regarded as contribution income [not an explicit recommendation, but implied in the recommended income statement format].
- Payments to the REF will be netted off overall contribution income [not an explicit recommendation, but implied in the recommended income statement format].

3.2 Impact of the REF on Solvency Risk

Of the solvency related risks faced by schemes the only ones that would arguably be affected by the introduction of the REF are:

- the risk of a scheme’s beneficiary risk profile worsening, and
- bad debt risk in respect of contributions.

These are discussed below.

3.2.1 Risk of an Adverse Shift in Beneficiary Risk Profile

Schemes are exposed to the risk of an adverse shift in beneficiary risk profile not anticipated in the pricing. Different schemes will have different levels of exposure to this risk. It is likely that this risk is more substantial for schemes with risk profiles that are already significantly worse than the industry average and the level of risk will also vary according to factors such as whether a scheme is an open scheme or a restricted membership scheme.

The REF will largely equalize schemes' expected costs per beneficiary of delivering the PMB set of benefits by adjusting for differences in the beneficiary risk profile between schemes. It can be argued that the REF would reduce both:

- the likelihood of an adverse shift in beneficiary profile (one of the main objectives of the REF being to bring about improved stability in risk profiles in the industry), and
- the financial impact (since schemes would be immunized against any impact on the expected cost of providing the defined package cost-effectively).

The extent of the immunisation achieved through the REF will however be limited to the PMB set of benefits delivered at an assumed level of cost-effectiveness (80% of current costs). This represents a relatively small part of the total potential impact an adverse shift in risk profile, which in turn is one of many solvency related risks faced by schemes. A sophisticated modelling exercise would be required to quantify this risk, and the reduction brought about by the introduction of the REF. Despite the absence of such an exercise it seems unlikely that there will be anything more than a marginal reduction in solvency risk.

Note that neither the US nor the Australian RBC solvency models isolate this risk. In both environments this risk is included in the broader category of claims variance.

3.2.2 Contribution Collection Risk

In the context of solvency risk, contribution default risk can be defined as the risk of the bad debt arising through non-payment of contributions being higher than anticipated. Normal levels of contribution default can be allowed for in the contribution rates set for the scheme.

It can be argued that contribution default risk might be reduced by the introduction of the REF as part of the total contribution is channelled through the REF and is therefore (virtually) guaranteed. The impact could be twofold:

- Overall rates of contribution default might reduce as the direct payment made by the member becomes significantly smaller and therefore more affordable (especially in the case of low income members).
- Even if a member defaults a contribution may still be received from the REF.

The second point would not be true if:

- schemes have a policy of terminating membership retrospectively once contributions have not been paid for a specified number of months, and
- the REF links payment strictly to active membership and makes appropriate retrospective adjustments in respect of membership that is terminated retrospectively.

Any reduction in solvency risk resulting from the introduction of the REF is likely to be small in relation to total solvency risk since:

- Total bad debts, including claims shortfalls, are typically no more than 1% of total contributions.
- The REF payments will represent a fraction of total contributions.
- From a solvency risk perspective the risk reduction is only in respect of the risk of actual bad debts exceeding expected levels.

3.2.3 Impact of REF Cashflows on Scheme Cashflow and Liquidity

REF cashflows have the potential to have a significant impact on the cashflows and liquidity of schemes. The potential impact arises firstly from any difference in the timing of payments to the REF and payments from the REF, and secondly from the difference in timing of the receipt contributions from members, and receipt of any net amounts due from the REF. In the latter case, schemes expecting a net payment from the REF are likely to take this into account in determining the direct contribution due from the member. The contributions received from members will therefore be less than the expected outgo of the scheme and the expected net payment from the REF will be received some time after that outgo is incurred.

Conclusion 2: It is the view of RETAP that it isn't appropriate to attempt to address the cashflow and liquidity issues through changes to the solvency requirements. In determining the timing of REF cashflows the potential impact on scheme cashflow and liquidity is a crucial factor that has to be taken into account. The cashflow and liquidity impacts of the proposed REF cashflows will be explored in a separate RETAP report.

3.3 Advice from the International Review Panel

The IRP indicates that it believes that a Risk Based Capital approach would be most appropriate for the South African environment. They recommend that until such time that this approach is implemented the solvency requirements should be adjusted to be based on:

“written contributions (i.e. the sum of payments received by the medical scheme from both the consumer and the REF on a written accounting basis) and the cost of benefits each scheme has to pay (i.e. claims incurred)”

The full text of the relevant IRP recommendation is set out in Appendix D.

3.4 The Australian Approach

3.4.1 Solvency

The Australian statutory solvency standard takes the form of minimum solvency requirements which are expressed, in essence, as:

best estimate of liabilities plus margins plus explicit provision for identified risks

Total assets held must exceed this solvency requirement. There are two tiers of solvency requirement, the **Solvency Standard** and the **Capital Adequacy Standard**. The former is intended to provide reasonable confidence that a scheme is able to meet its liabilities to members and other creditors in the event of the scheme closing for new business and operating on a run-off basis. The latter standard is intended to provide reasonable confidence that a scheme is able to remain solvent for a period of three years while operating on a going concern basis, taking the scheme’s business plans into account.

3.4.2 Risk Equalisation

The risk equalisation mechanism in place in Australia is known as “Reinsurance” and the Australian equivalent of the REF is the Health Benefits Reinsurance Trust Fund. While the objectives and principles of Reinsurance are similar to those of the REF there are some key differences:

- Risk equalisation is achieved through the pooling of benefits in respect of medical expenses for chronic patients and beneficiaries older than 65.
- Pooling takes place at a state (provincial level)

The pooling means that schemes benefit not only from risk equalisation, but also from some protection against fluctuations in actual claims. In contrast, the South African REF provides no protection against fluctuation in actual claims.

3.4.3 Impact of Risk Equalisation on Solvency

The only reference to Reinsurance in the Australian solvency standards is the requirement that liabilities (which are included in the solvency requirement) be calculated net of any Reinsurance recoveries **that are due to the scheme at the time of valuation**. It is stated explicitly that these recoveries due should be netted off the liabilities and not considered as assets. This is consistent with the normal accounting practice of netting current assets off (current) liabilities rather than treating them as assets. A similar consideration arises in the South African context and must be addressed in the accounting treatment of REF amounts due to (or from) schemes. This accounting treatment has no impact on the calculation of the net assets that are taken into account in the South African solvency calculation.

Due to the explicit nature of the Australian solvency standards there is no reference to contributions and the issues relating to the appropriate definition of contributions to be used in a solvency basis therefore do not arise in the Australian environment.

3.5 Other International Experience

3.5.1 Ireland

John Armstrong provided Heather McLeod with the following feedback via e-mail on 24 January 2005:

“... there have been no discussion[s] about solvency related issues post-REF here. That is in part a function of the way our RE system is formulated and also because of the on-going discussions about the need for RE meaning that the issue hasn't arisen here yet.

In practice, any RE payments would be offset against claims by a recipient of funds and on the basis of this using our claims based solvency criterion the minimum solvency requirements would be reduced and overall solvency could be reduced depending on its significance compared to the premium basis.”

3.5.2 The Netherlands

Wynand van der Ven, Professor of Health Insurance, Erasmus University Rotterdam, provided Heather McLeod with the following feedback via e-mail on 21 January 2005:

“No, I am not aware of any literature on a change in the solvency formulation as REF is introduced in a country. I think the best is to ask John Armstrong, who, I think, is an expert in the field of solvency Yes, I see the problem you raise. If I understand you well, you say that with these actuarially based solvency requirements there is no level playing field for schemes who have many high risk members [and] schemes who have many low risk members. In our country this has not been an issue probably because the differences in risk portfolio between our sickness funds are only relatively small, and because of the gradual increase of the financial risks for sickness funds overtime (=10 year) and consequently the gradual implementation of the solvency requirements for the sickness funds.

“Could a solution be that the solvency requirements are not only based on actuarial arguments, but also on arguments to create a level playing field, i.e. that schemes with good risks are required to have more reserves than what is actuarially required?”

4. Alternatives for Solvency Bases Under REF

The following are the solvency calculation approaches under consideration. In each of the contributions-based approaches it is assumed that savings account contributions will be included and that there will be no allowance for netting off of reinsurance premiums or of any fees in respect of any other risk transfer arrangements.

Examples of each calculation method (other than the Risk Based Capital method) are provided based on the following sample income statement. The sample income statement and all the examples are also set out in Appendix E.

Sample Income Statement for Purposes of Demonstrating Solvency Bases				
R 000s				
Item	PMB	non-PMB	Total Option A	Basis
(a) Direct Member Contributions	250	750	1000	
(b) less Savings Contributions		100	100	
(c) Net Direct Member Contributions	250	650	900	(a) - (b)
(d) plus REF Scheme Contribution	230		230	
(e) less REF Industry Contribution	201		201	
(f) Net Contributions	279	650	929	(c) + (d) - (e)
(g) Benefits	268	610	878	
(h) less Savings Benefits		30	30	
(i) Net Benefits	268	580	848	(g) - (h)
(j) Gross Underwriting Surplus	11	70	81	(f) - (i)
(k) Total Operating Expenses			77	
(l) Net Underwriting Surplus			4	(j) - (k)
(m) Investment Income			10	
(n) Net Surplus			14	(l) + (m)

4.1 Direct Contributions

The solvency requirement would be calculated as 25% of contribution income received by the scheme directly from members.

Example - Direct Contributions Method		
Item	Value	Basis
(o) Direct Member Contributions	1000	(a)
(p) Solvency %	25%	
Solvency Requirement	250	(o) * (p)

4.2 Total Contributions

The solvency requirement would be calculated as 25% of total contribution income received by the scheme – i.e. including net payments received from or paid to the REF (including any tax subsidy distributed to schemes through the REF). This could be regarded as retaining the current statutory solvency basis.

Example - Total Contributions Method		
Item	Value	Basis
(q) Direct Member Contributions	1000	(a)
(r) plus REF Scheme Contribution	230	(d)
(s) less REF Industry Contribution	201	(e)
(t) Total Contributions	<u>1029</u>	(q) + (r) - (s)
(u) Solvency %	25%	
(v) Solvency Requirement	<u>257.25</u>	(t) * (u)

4.3 Scheme REF Contributions

The solvency requirement would be calculated as a percentage of the scheme's REF Contributions (as calculated by applying the REF Contribution Table to the scheme's beneficiary profile as reflected in the REF Grid). Since in most cases the scheme's REF Contributions will be a fraction of its current gross contribution income this percentage would have to be set at a level significantly higher than the current 25%. Alternatively the percentage could remain the same with additional factors applied to the REF Contributions to reflect things like the richness of benefits provided under an option and the size of a scheme relative to the industry average.

Example - REF Scheme Contributions Method		
Item	Value	Basis
(w) REF Scheme Contributions	230	(d)
(x) Industry Solvency %	25%	
(y) Option Richness Adjustment	3.5	
(z) Scheme Size Adjustment	1.1	
Solvency Requirement	<u>221.38</u>	(w) * (x) * (y) * (z)

4.4 Expenditure

The solvency requirement would be calculated as a percentage of total scheme expenditure in the year. In most cases total scheme expenditure would be of a similar order of magnitude as scheme contributions and the percentage may therefore be unchanged at 25%.

At the end of a financial year the calculation would clearly be based on actual expenditure for the year. During the year the calculation would presumably be based on actual expenditure for the year to date and an estimate of expenditure for the rest of the year. Guidelines or rules would have to be set with regard to estimates of future expenditure to ensure consistency between schemes in determining solvency requirements.

Example - Expenditure Method		
Item	Value	Basis
(aa) Benefits	878	(g)
(bb) Operating Expenses	77	(k)
(cc) Total Expenditure	<u>955</u>	(aa) + (bb)
(dd) Solvency %	25%	
(ee) Solvency Requirement	<u>238.75</u>	(cc) * (dd)

4.5 Claims

The solvency requirement would be calculated as a percentage of the total claims for the scheme for the year. Claims outgo would be expected to be around 10% less than gross contribution income and a review of the solvency percentage may therefore be required.

At the end of a financial year the calculation would clearly be based on actual claims for the year. During the year the calculation would presumably be based on actual claims for the year to date and an estimate of claims for the rest of the year. Guidelines or rules would have to be set with regard to estimates of future claims to ensure consistency between schemes in determining solvency requirements.

Example - Claims Method		
Item	Value	Basis
(ff) Benefits	878	(g)
(gg) Solvency %	30%	
Solvency Requirement	<u>263.4</u>	(ff) * (gg)

4.6 Higher of Total Contributions and Expenditure

The solvency requirement would be calculated as the higher of the Total Contributions requirement and the Expenditure requirement.

Example - Higher of Total Contributions and Expenditure		
Item	Value	Basis
(hh) Total Contributions Method Requirement	257.25	(v)
(ii) Expenditure Method Solvency Requirement	238.75	(ee)
Max of Contributions and Expenditure	257.25	max [(hh), (ii)]

4.7 Risk Based Capital Approach

This is a complex approach compared to the other approaches described above. Broadly speaking, each of the significant risks which pose a potential threat to solvency are identified and reflected in the solvency formula. For example, if fluctuations in the market value of assets is identified as a significant risk, the solvency formula will include an element which will have a value directly correlated to the extent of the market value fluctuation risk that the scheme is exposed to.

A RBC approach is followed in the USA and Australia. Neither of these methodologies are directly applicable to the South African environment due to significant differences compared to the US and Australian environments.

5. Criteria for Assessing Solvency Approaches

5.1 Objectives Specific to the REF Implementation

Objective 1: Equalisation

The adopted solvency approach should support the general REF objective of making the price charged for a PMB-only package independent of the clinical risk profile of the schemes' beneficiaries.

Objective 2: Adjust for any impact the REF has on solvency risk

These impacts are discussed in Section 3.2.

Objective 3: Accommodating likely future SHI developments

The proposed solvency basis should anticipate and appropriately accommodate expected future SHI developments such as the removal of the current tax subsidy applicable to contributions, the introduction of an earmarked SHI tax, and the channelling of both these elements of funding to schemes through the REF.

5.2 Opportunity to Address Issues with Current Solvency Basis

The need to review the solvency basis because of the REF also presents an opportunity to consider other changes that might address concerns that have arisen in respect of the current solvency basis.

The relevant issues are covered in the recommendations of the Financial Soundness Focus Group.

6. Assessment of Solvency Approaches

6.1 Direct Contributions

For

- This approach would equalise the solvency requirements in respect a PMB package delivered at the level of efficiency assumed in the REF contribution table. The cost of maintaining these solvency requirements would therefore also be equalised and schemes could in theory offer a PMB-only package at a single price across the industry. As discussed in Appendix F, the impact of 'un-equalised' solvency requirements on contributions is small relative to the Industry REF Community Rate.

Against

- The Direct Contributions approach combined with the impact of the REF will result in the solvency requirement being increased for schemes paying into the REF. The solvency requirement for schemes receiving from the REF will likewise be reduced. For schemes receiving from the REF this change in solvency requirements is in a direction that is consistent with the fact that the REF will reduce the risks associated with shifts in beneficiary profile. However:
 - there is no evidence that the magnitude of this change reflects the extent of the risk reduction in the industry,
 - it is unlikely that the variation of this movement by scheme will reflect the relative change in solvency risk for individual schemes. This movement will vary in direct relation to current beneficiary profile but the risk relating to shifts in beneficiary profile will also vary according to other factors such as open/closed schemes, current efficiency level, etc. The impact on the majority of schemes will be relatively small – Section 10.4 of the FCTT Report indicates that 117 out of 140 schemes would experience a change in their current solvency requirements of between –5% and +5%. There are however 7 schemes who would be able to reduce the Rand amount of their reserves by 6% or more (4 schemes could reduce by 10% or more). Detailed modelling would be required to determine the increase in the probability of solvency implied by this change but it is likely to be significant and not necessarily justified by any reduction in solvency risk experienced by these schemes.
 - it can be argued that all schemes would benefit from this risk reduction but this solvency approach would result in an increase in the solvency requirement for schemes paying into the REF. In terms of the FCTT Report there are 16 schemes that would have to increase solvency by 5% or more without being exposed to any increase in risk.
- If/when the tax subsidy for contributions is removed and an SHI tax is introduced these additional items of income for the REF will be distributed to schemes. Schemes will in turn reduce the direct contribution rates they charge to members. If a direct contributions

approach is being used for solvency the changes to the tax structures will therefore immediately result in a further decrease in the solvency requirements for all schemes. This is illustrated in Appendix F. Since this change to the tax structures doesn't have any direct impact on solvency risk this impact cannot be desirable. A direct contributions approach would therefore be unsuitable unless it was adapted to be "direct contributions plus the tax subsidies received by the scheme" or "total contributions less the net payment from the REF".

Recommendation 1a: Direct contributions (i.e. those paid by members, excluding payments from the REF) should not be used as the denominator in the solvency basis.

Recommendation 1b: If full equalisation is considered to be an absolute necessity it is recommended that this be addressed through the REF contribution table instead of by equalising the solvency requirements (and potentially compromising solvency objectives). An explicit adjustment could be added to the calculation of Scheme REF Community Contribution Rates to fully compensate for the varying cost of holding different solvency levels in respect of PMB benefits.

6.2 Total Contributions

For

- There would be no change in the Rand value of the solvency requirements.
- It will appropriately accommodate the REF-related changes that would be brought about by the removal of the current tax subsidy in respect of medical scheme contributions and the introduction of an SHI tax.

Against

- This approach can be criticised for making no adjustment in respect of any change in the solvency risk profile brought about by the implementation of the REF.

Conclusion 3: Total Contributions could be considered for use as the solvency basis post the introduction of the REF. This basis would be at least as appropriate as the current solvency basis (prior to the introduction of the REF) but does not take advantage of the opportunity presented to improve on that basis. There may therefore be more suitable bases.

6.3 Scheme REF Contributions

For

- Completely objective and not vulnerable to the risk of under-pricing of contributions because it is based on contribution rates determined by the REF.
- If the factors applied to reflect richness of benefits and scheme size are determined appropriately the solvency requirements will be better correlated to scheme solvency risk than the current solvency basis.

Against

- Research would have to be conducted to determine the appropriate values for the factors to be applied to reflect richness of benefits and scheme size. Consultation will be required with the Financial Soundness Focus group, the Council for Medical Schemes and schemes themselves. Timeframes required for the research and consultation may pose a problem with respect to finalising a basis in time for full implementation of the REF.

Conclusion 4: The medical schemes industry could consider a Scheme REF Contribution solvency basis. A significant amount of research and consultation would be required however and it is not believed that such a basis could be put in place in time for the commencement of the payments between schemes and the REF.

6.4 Expenditure

For

- This approach attempts to address the concern that contribution-based methods ignore actual expenditure and are thus vulnerable to the risk of the under-pricing of contribution rates. An Expenditure approach is not affected by under-pricing ...

Against

- ... but also does not explicitly identify and allow for risks introduced by under-pricing.
- Increased reliance on the reasonability of IBNR provisions. If IBNR is understated the net assets will be overstated and the solvency requirement will be understated.
- During the financial year the year-to-date element of the basis would be affected by claims seasonality and statistical variability and would respond only retrospectively to adverse trends in claims experience.
- During the financial year the prospective element of the basis would be subject to varying approaches and degrees of conservatism applied by schemes – i.e. the same disadvantage suffered by the contributions-based methods.

Conclusion 5: An Expenditure approach should not be used in isolation as a solvency basis as it has a number of serious drawbacks.

6.5 Claims

For

- Similar advantages to the Expenditure approach.

Against

- A purely claims based approach ignores, or only implicitly allows for risks associated with any non-healthcare expenditure. A scheme with equal claims but a higher proportion of non-healthcare expenditure would be required to hold the same level of reserves despite having potentially higher solvency risk.
- Since claims are generally lower than contributions it would be necessary to determine an appropriate solvency percentage (higher than the current 25%).
- Increased reliance on the reasonability of IBNR provisions. If IBNR is understated the net assets will be overstated and the solvency requirement will be understated.
- During the financial year the year-to-date element of the basis would be affected by claims seasonality and statistical variability and would respond only retrospectively to adverse trends in claims experience.
- During the financial year the prospective element of the basis would be subject to varying approaches and degrees of conservatism applied by schemes.

Conclusion 6: An Expenditure approach would be more appropriate than a Claims approach.

6.6 Higher of Total Contributions and Expenditure

For

- By requiring schemes to comply with the higher of these two requirements it is possible to address one of the criticisms of the current approach (that it ignores actual expenditure) while retaining all the advantages of the Total Contributions approach.

Against

- There would be a slight increase in complexity through the use, effectively, of two solvency bases.
- The issues regarding the prospective elements of the two component bases are not addressed.

Recommendation 2: Of the approaches considered, a solvency requirement equal to the higher of the Total Contributions requirement and the Expenditure based requirement appears to be the most appropriate and is recommended by RETAP as the approach that should be adopted with effect from the date that REF cashflows commence, unless it is possible to introduce a RBC or Scheme REF Contribution approach at or around this time.

6.7 Risk Based Capital Approach

For

- As discussed by the Financial Soundness Focus Group and the International Review Panel, a RBC approach addresses a number of the concerns with the current solvency basis and is the recommended route in the medium to long term.

Against

- Existing RBC bases were developed for other environments and types of funds and would not be appropriate for the South African environment without substantial modification.
- The investigations into an appropriate basis are ongoing and significant debate and consultation would need to take place before a RBC approach could be implemented. It is estimated that to introduce RBC would take another two to three years of research and testing, followed by a year of consultation, the regulation process and then possibly a five-year phasing-in period.
- While considerable research into RBC has been done by the University of Cape Town and Discovery Health, a key piece of work for considering an RBC framework in South Africa has not yet been done. It is necessary to do basic research on the appropriate level of solvency for healthcare funders collectively to hold in the South African environment. The RBC parameters can then be calibrated for both medical schemes and managed care organisations to ensure that the overall solvency in the industry is held at the required levels.

Conclusion 7: RETAP adds its support to that of the IRP and Financial Soundness Focus Group for the adoption of a RBC approach to solvency as soon as it is practically feasible to do so. The research needed in this area should be encouraged.

7. Conclusions and Recommendations to the Council for Medical Schemes

Except where otherwise indicated, the following recommendations, if adopted, could be implemented with effect from 1 January 2007. However once a framework is agreed it will be necessary to test the potential impact on medical schemes and the date of implementation or any phasing-in provisions would need to be guided by those results.

Conclusion 1: That changes to the current solvency basis be limited to those that are considered essential. A full review of the solvency risks faced by schemes can be undertaken as part of the investigations into the appropriateness of a Risk Based Capital approach to solvency.

Conclusion 2: It is the view of RETAP that it isn't appropriate to attempt to address the cashflow and liquidity issues through changes to the solvency requirements. In determining the timing of REF cashflows the potential impact on scheme cashflow and liquidity is a crucial factor that has to be taken into account. The cashflow and liquidity impacts of the proposed REF cashflows will be explored in a separate RETAP report.

Conclusion 3: Total Contributions could be considered for use as the solvency basis post the introduction of the REF. This basis would be at least as appropriate as the current solvency basis (prior to the introduction of the REF) but does not take advantage of the opportunity presented to improve on that basis. There may therefore be more suitable bases.

Conclusion 4: The medical schemes industry could consider a Scheme REF Contribution solvency basis. A significant amount of research and consultation would be required however and it is not believed that such a basis could be put in place in time for the commencement of the payments between schemes and the REF.

Conclusion 5: An Expenditure approach should not be used in isolation as a solvency basis as it has a number of serious drawbacks.

Conclusion 6: An Expenditure approach would be more appropriate than a Claims approach.

Conclusion 7: RETAP adds its support to that of the IRP and Financial Soundness Focus Group for the adoption of a RBC approach to solvency as soon as it is practically feasible to do so. The research needed in this area should be encouraged.

Recommendation 1a: Direct contributions (i.e. those paid by members, excluding payments from the REF) should not be used as the denominator in the solvency basis.

Recommendation 1b: If full equalisation is considered to be an absolute necessity it is recommended that this be addressed through the REF contribution table instead of by equalising the solvency requirements (and potentially compromising solvency objectives). An explicit adjustment could be added to the calculation of Scheme REF Community Contribution Rates to fully compensate for the varying cost of holding different solvency levels in respect of PMB benefits.

Recommendation 2: Of the approaches considered, a solvency requirement equal to the higher of the Total Contributions requirement and the Expenditure based requirement appears to be the most appropriate and is recommended by RETAP as the approach that should be adopted with effect from the date that REF cashflows commence, unless it is possible to introduce a RBC or Scheme REF Contribution approach at or around this time.

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Appendix A – Current Solvency Legislation

Medical Schemes Act No. 131 Of 1998

CHAPTER 7 - FINANCIAL MATTERS

35. Financial arrangements.-

(1) A medical scheme shall at all times maintain its business in a financially sound condition by-

- (a) having assets as contemplated in subsection (3);
- (b) providing for its liabilities; and
- (c) generally conducting its business so as to be in a position to meet its liabilities at all times.

...

(3) A medical scheme shall have assets, the aggregate value of which, on any day, is not less than the aggregate of—

- (a) the aggregate value on that day of its liabilities; and
- (b) the nett assets as may be prescribed.

...

(10) A medical scheme which fails to comply with subsection (1) shall, within 30 days after becoming aware of it, notify the Registrar of such failure and state the reasons for it.

67. Regulations.—(1) The Minister may, after consultation with the Council, make regulations relating to—

...

(c) the assets to be held by a medical scheme in the Republic including the limiting of the amount which or the extent to which such a medical scheme may invest in particular assets or in particular kinds or categories of assets;

...

(k) the nett assets to be held by a medical scheme;

...

(q) all other matters which he or she considers necessary or expedient to prescribe in order that the purposes of this Act may be achieved.

Regulations in Terms of the Medical Schemes Act No. 131 Of 1998

CHAPTER 8 - ACCUMULATED FUNDS AND ASSETS

29. Minimum accumulated funds to be maintained by a medical scheme.-

(1) In this Regulation “accumulated funds” means the nett asset value of the medical scheme, excluding funds set aside for specific purposes and unrealised non-distributable reserves.

(2) Subject to subregulations (3), (3A) and (4), a medical scheme must maintain accumulated funds expressed as a percentage of gross annual contributions for the accounting period under review which may not be less than 25%.

[Sub-r. (2) substituted by GNR.1360 of 2002 wef 1 January 2003.]

(3) A medical scheme must maintain accumulated funds, expressed as percentage of gross annual contributions, of not less than 10% during the first year after these regulations have come into operation, 13,5% during the second year, 17,5% during the third year, and not less than 22% during the fourth year.

(3A) Notwithstanding the provisions of subregulation (3), a medical scheme which is registered for the first time after the coming into operation of these regulations must maintain accumulated funds, expressed as a percentage of gross annual contributions, of not less than -

- (a) 10% during the first year after the scheme was registered;
- (b) 13,5% during the second year;
- (c) 17,5% during the third year; and
- (d) 22% during the fourth year.

[Sub-r. (3A) inserted by GNR.1360 of 2002 wef 1 January 2003.]

(4) A medical scheme that for a period of 90 days fails to comply with subregulations (2), (3) or (3A) must notify the Registrar in writing of such failure, and must provide information relating to-

- (a) the nature and causes of the failure, and
- (b) the course of action being adopted to ensure compliance therewith.

[Sub-r. (4) substituted by GNR.1360 of 2002 wef 1 January 2003.]

Appendix B - Recommendations of the Financial Soundness Focus Group

5.6 Claims experience and total expenditure

The issue

The current manner of calculating the solvency requirement ignores the level of claims and total expenditure. If a medical scheme incurs an underwriting deficit, the requirement to calculate required solvency on the basis of the (inadequate) contribution seems inappropriate. The problem of inadequate contribution discussed above is relevant here.

This issue is also closely related to the question of the amount of scheme funds spent on non-healthcare expenditure. It has been the Registrar's concern for a while that the proportion of every Rand that is expended on non-healthcare expenditure is increasing.

It has been suggested that the solvency requirement should take into account total claims and/or expenditure. Essentially, the requirement would be rephrased such that the required solvency level is calculated on the greater of total contributions or total claims or expenditure. The calculation of total expenditure brings with it complications such as how to treat investment gains and losses for instance. This will have to be assessed against the simplicity of the calculation based on gross contribution.

The effect of this requirement would be to adjust upwards the required solvency level early, immediately a scheme incurs underwriting losses. This will push the scheme trustees to address the deficit early before scheme reserves are depleted to unacceptable levels.

Registrar's view

The 25% of gross contributions is a legislative requirement in terms of the Act. However, trustees are encouraged to seek other monitoring tools and methods to assist them in ensuring that medical schemes are financially sound. The use of claims expenditure and/or total expenditure is a good monitoring tool for trustees to consider.

Also, developments relating to statutory supervision as discussed in Item 5.1 above, have the effect of further reducing the perverse results created by this issue.

5.10 Scheme specific risk not taken into account

The issue

The current manner of calculating required reserves has been criticised for being a broad brush approach. Schemes face different levels of risks depending on the several circumstances that each scheme faces. For instance, the level of risk will differ depending on the following factors:

- Open versus restricted membership schemes
- Size of scheme
- Demographic profile
- Growth plans
- Business plans
- Management expertise
- Board of Trustees expertise
- Ownership of own facilities
- Etc

It has been argued that there needs to be a more appropriate measure for calculating a scheme's solvency requirement. Such appropriate measure would take into account the level of risk facing a scheme and set the requirement at a level appropriate for that scheme taking into account the risk that the scheme faces.

The Risk Based Capital (RBC) approach has been suggested as the correct way to go in this regard. The RBC approach was developed for HMO's in a foreign environment (USA) that is vastly different from South Africa. These organisations are different from South African medical schemes, and their regulatory environment has progressed significantly compared to the local one.

Trustees have indicated their reluctance for the adoption of this approach because they found the manner in which the calculation is done very complicated. The feeling was that it would dis-empower the trustees if they are unable to understand how the calculation is derived.

ASSA have volunteered to conduct research on RBC for the South African environment. This research is currently under way. It is expected that results of this research will be available by the end of 2003. The research results will form the basis for the review of whether the approach can be adopted in South Africa.

The Registrar's view:

The RBC approach is a useful guide for identifying risk elements that medical schemes face and can be very useful as a framework. However, the RBC approach utilises factors that have not been tailored for South African conditions.

It is necessary for a detailed study of the RBC approach to be undertaken. The purpose should be to tailor the approach for South African conditions. The study will have to identify risk elements that local medical schemes face and determine the factors in a manner that will be plausible. Until this study has been finalised, it is not appropriate to adopt the RBC approach.

In light of the above, it is the view of the Office that RBC should be considered over a longer term. In the meantime, however, the risks faced by the schemes are currently being addressed by a different forum, viz. the Risk Assessment Framework (RAF) developed by the Registrar's Office. This framework is considered a measure which will go along way towards addressing some of the issues highlighted above.

5.11 Regulatory action - the RBC way

The issue:

Regulation 29 (4) places the onus on medical schemes to report to the Registrar when the required level of reserves has not been met. Legislation gives wide powers to the Registrar and the Council for Medical Schemes to take action that is considered necessary when this situation arises.

In contrast, the RBC approach gives trigger points and provides a more specific guideline on the regulatory action that needs to be adopted. The following table illustrates the trigger points and Regulator and entity responses¹:

RBC LEVEL	RESPONSE
Company Action Level (CAL = 200% ACL)	The entity must notify the Regulator of corrective actions it plans to take
Regulatory Action Level (RAL = 150% ACL)	The entity must submit or resubmit a corrective plan of action to remedy. After examining the entity, the Regulator will issue an order specifying corrective actions to be taken.
Authorised Control Level	The Regulator is authorised to take whatever

¹ Source: Research Report – RISK BASED CAPITAL REQUIREMENTS FOR MANAGED CARE ORGANIZATIONS by *Milliman & Robertson Inc*

	regulatory action is necessary to protect the interests of policyholders, including taking control of the entity.
Mandatory Control Level (MCL = 70% ACL)	The Regulator is required to place the entity under regulatory control

There has been rare unanimity that this approach is preferable because of the certainty that it provides. The remaining question is, of course, what the different trigger points should be within the current solvency requirement framework. What level of solvency would attract mandatory control, for instance?

There have been further suggestions that there should be a required solvency level (currently 25%, and subject to the phase in provisions) and a recommended solvency level that would be in excess of the required level.

Registrar’s view

This issue has been sufficiently dealt with as per 5.10 above.

Appendix C – Recommendations of the Formula Consultative Task Team

The following observations are set out in the report “The Determination of the Formula for the Risk Equalisation Fund in South Africa” prepared by the Formula Consultative Task Team:

Section 4 – Definition of Risk

The element of risk which the REF is intended to manage is:

“The expected and predictable significant deviation from the theoretical national community-rated price for groups of beneficiaries with a measurable set of risk factors.”

The section concludes with the comment:

“Trustees of medical schemes and the Registrar’s Office should not reduce their vigilance with regard to the solvency requirements for medical schemes as these deal with risks that are not equalised by the REF.”

Section 5.3 – Principles for the Operation of the REF

“The timing of payments needs to take into account the potential impact on scheme ... solvency”

Section 10.4 – Impact of the REF on Solvency

“The payments from the REF to schemes have been assumed to be applied to reduce the contributions charged to members. Where a scheme has to pay to the REF in this model (no per capita contribution subsidy has been assumed), this is assumed to increase the contributions collected from members. As the statutory calculation of solvency uses contributions as the base, the REF payments change the solvency status of the scheme.”

“The calculation of solvency needs to be considered in the light of REF payments. As an immediate step this might include measuring solvency both against contributions and total claims.”

Section 14.4 – Adjustment of the existing solvency calculation

“With the introduction of the REF certain risks are alleviated but there are risks that are not addressed through the REF, inter *alia* the risk of random fluctuation of costs of benefits.”

“With regard to claim risks the existence of a REF Contribution Table provides a fair guide to expected claims of schemes on the PMBs. Hence the calculation of the total REF contribution for a scheme for the year in question can be used in the interim, rather than the claims or the contributions of the scheme per se, particularly for schemes that show large membership movements over the short term.”

Terms of Reference of Team 5 – Consequences of Formula

“3. Recommend the adjustment needed to the existing solvency calculation for medical schemes, to take into account actual and anticipated cashflows from the REF. Ensure liaison with the Financial Oversight area of the Council for Medical Schemes and with SAICA in this regard. Both the annual calculation and quarterly calculation of solvency to be considered.”

Appendix D - International Review Panel Recommendations

“Section 2.11.2 [Solvency] Of the medical schemes

The introduction of REF will arguably improve the solvency of most schemes, as the risks associated with ‘cream-skimming’ are removed. Single medical schemes who charge a contribution which is inconsistent with their risk profiles, and who will receive from the REF lower amounts than they expect, may become insolvent after the introduction of the REF. While such developments would be unwelcome, the Panel thinks that the regulator should be concerned with underlying solvency of the industry as a whole, rather than with the solvency of a single scheme. The regulator will have to ensure that individual beneficiaries in medical schemes that become insolvent are protected. This is the underlying logic why medical schemes are required to meet a minimum level of solvency.

Introduction of the REF should be accompanied by a change to solvency requirements that medical schemes must meet. The current method of calculating the minimum solvency level is based upon written contributions (premiums), and takes no account of the underlying expected level of claims the schemes will pay. The Panel thinks that in the longer term, the best method to determine minimum solvency requirements is a risk-based capital approach, a method that, we understand, is under consideration.

In the interim, the introduction of REF should be accompanied by a change to current solvency requirements; the adjusted written contribution levels (premiums) for schemes will be based upon the REF contribution table, rather than the underlying contribution that could be charged by those schemes.

Recommendation 27:

After the introduction of REF, solvency requirements of medical schemes should in principle be calculated based upon both the volume of business written by each medical scheme, as measured by written contributions (i.e. the sum of payments received by the medical scheme from both the consumer and the REF on a written accounting basis) and the cost of benefits each scheme has to pay (i.e. claims incurred). In the longer term, the Panel would favour retaining a risk-based capital approach. The Panel urges that the C-M-S should study in more detail the consequences of this rule-change on the solvency of single schemes.”

Appendix E – Sample Solvency Calculations

Sample Income Statement for Purposes of Demonstrating Solvency Bases

Item	R 000s			Basis
	PMB	non-PMB	Total Option A	
(a) Direct Member Contributions	250	750	1000	
(b) less Savings Contributions		100	100	
(c) Net Direct Member Contributions	250	650	900	(a) - (b)
(d) plus REF Scheme Contribution	230		230	
(e) less REF Industry Contribution	201		201	
(f) Net Contributions	279	650	929	(c) + (d) - (e)
(g) Benefits	268	610	878	
(h) less Savings Benefits		30	30	
(i) Net Benefits	268	580	848	(g) - (h)
(j) Gross Underwriting Surplus	11	70	81	(f) - (i)
(k) Total Operating Expenses			77	
(l) Net Underwriting Surplus			4	(j) - (k)
(m) Investment Income			10	
(n) Net Surplus			14	(l) + (m)

Example - Direct Contributions Method

Item	Value	Basis
(o) Direct Member Contributions	1000	(a)
(p) Solvency %	25%	
Solvency Requirement	250	(o) * (p)

Example - Total Contributions Method

Item	Value	Basis
(q) Direct Member Contributions	1000	(a)
(r) plus REF Scheme Contribution	230	(d)
(s) less REF Industry Contribution	201	(e)
(t) Total Contributions	1029	(q) + (r) - (s)
(u) Solvency %	25%	
(v) Solvency Requirement	257.25	(t) * (u)

Example - REF Scheme Contributions Method

Item	Value	Basis
(w) REF Scheme Contributions	230	(d)
(x) Industry Solvency %	25%	
(y) Option Richness Adjustment	3.5	
(z) Scheme Size Adjustment	1.1	
Solvency Requirement	221.38	$(w) * (x) * (y) * (z)$

Example - Expenditure Method

Item	Value	Basis
(aa) Benefits	878	(g)
(bb) Operating Expenses	77	(k)
(cc) Total Expenditure	<u>955</u>	$(aa) + (bb)$
(dd) Solvency %	25%	
(ee) Solvency Requirement	238.75	$(cc) * (dd)$

Example - Claims Method

Item	Value	Basis
(ff) Benefits	878	(g)
(gg) Solvency %	30%	
Solvency Requirement	263.4	$(ff) * (gg)$

Example - Higher of Total Contributions and Expenditure

Item	Value	Basis
(hh) Total Contributions Method Requirement	257.25	(v)
(ii) Expenditure Method Solvency Requirement	238.75	(ee)
Max of Contributions and Expenditure	257.25	$\max [(hh), (ii)]$

Appendix F – Impact of Solvency Requirements on Equalisation

The following is an extract from an e-mail from Paul la Cock to various RETAP members on 18 January 2005:

“Note the relatively small impact that [the] proposed solvency basis has on the price of the REF package (R1.88 pbpm in the worst case scenario ... modelled). Keep in mind that the solvency impacts quantified in the Report of the REF Formula Consultative Task Team were the one-off impacts at the time that the full REF comes into effect. The long-term impact (i.e. the impact on contribution rates) will reflect only the opportunity cost of holding the [mostly slightly] higher reserves.”

The model mentioned above is shown on the following page. Based on a single simple sample scheme, the model varies the Scheme REF Community Rate (first red line) to illustrate the amount added (removed) (second red line) from the cost of providing the PMB package at the REF assumed level of efficiency as a result of holding overall solvency reserves no different from the current requirement (i.e. the same as the recommended Total Contributions approach).

An extension of the "With REF" model set out on the Minimum Transfer sheet

Scheme	1	2	3	4	5	6	7	8	9	10
Direct Contributions pbpm	283	417	550	683	817	950	1,083	1,217	1,350	1,483
Net REF Contributions pbpm	(125)	(100)	(75)	(50)	(25)	-	25	50	75	100
Total Contribution pbpm	158	317	475	633	792	950	1,108	1,267	1,425	1,583
Expected Claims pbpm	158	317	475	633	792	950	1,108	1,267	1,425	1,583
PMB	25	50	75	100	125	150	175	200	225	250
non-PMB	133	267	400	533	667	800	933	1,067	1,200	1,333
Beneficiaries	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Industry REF Community Rate pbpm	150	150	150	150	150	150	150	150	150	150
Risk-adjusted REF rate pbpm	25	50	75	100	125	150	175	200	225	250
Direct contribution income	3,400,000	5,000,000	6,600,000	8,200,000	9,800,000	11,400,000	13,000,000	14,600,000	16,200,000	17,800,000
Net contributions FROM REF	(1,500,000)	(1,200,000)	(900,000)	(600,000)	(300,000)	-	300,000	600,000	900,000	1,200,000
Total contribution income p.a.	1,900,000	3,800,000	5,700,000	7,600,000	9,500,000	11,400,000	13,300,000	15,200,000	17,100,000	19,000,000
Total claims expenditure p.a.	1,900,000	3,800,000	5,700,000	7,600,000	9,500,000	11,400,000	13,300,000	15,200,000	17,100,000	19,000,000
Underwriting surplus/deficit	-	-	-	-	-	-	-	-	-	-
Solvency ratio	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Solvency value - direct contributions	850,000	1,250,000	1,650,000	2,050,000	2,450,000	2,850,000	3,250,000	3,650,000	4,050,000	4,450,000
Solvency value - total contributions	475,000	950,000	1,425,000	1,900,000	2,375,000	2,850,000	3,325,000	3,800,000	4,275,000	4,750,000
Difference	(375,000)	(300,000)	(225,000)	(150,000)	(75,000)	-	75,000	150,000	225,000	300,000
Opportunity cost %	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
"Opportunity Cost" pbpm	(1.56)	(1.25)	(0.94)	(0.63)	(0.31)	-	0.31	0.63	0.94	1.25
Solvency value - REF "risk contributions"?	75,000	150,000	225,000	300,000	375,000	450,000	525,000	600,000	675,000	750,000
% change in reserves in moving to a direct contribution solvency basis	79%	32%	16%	8%	3%	0%	-2%	-4%	-5%	-6%