



May 28, 2008

To: International Actuarial Association (IAA) ad hoc Risk Margin Working Group
Via e-mail to: katy.martin@actuaries.org.

Re: American Academy of Actuaries'¹ (Academy) Risk Margin Task Force (RMTF) comments on the IAA March 24, 2008 Second Exposure Draft '*Measurement of Liabilities for Insurance Contracts: Current Estimates and Risk Margins*'

The American Academy of Actuaries (AAA) recognizes the importance of the work being completed by the IAA ad hoc Risk Margin Working Group and, thus, formed a task force in early 2007 to review the papers related to current estimates and risk margins. The AAA's Risk Margin Task Force (RMTF) submitted comments to the IAA in May 2007. We appreciate that many of our suggestions were taken into account. We especially support the development of the risk margin section to address the pros and cons of the different methods. We are also complimentary on this second exposure draft in that there is significant improvement in readability. The RMTF has the following comments and observations concerning the March 24, 2008 Second Exposure Draft, "*Measurement of Liabilities for Insurance Contracts: Current Estimates and Risk Margins*".

Generally the comments focus on the need to shorten the paper in order to be useable by the target audience. We have provided some possible revised drafting of Chapters 2 and 3. We also recommend moving Chapter 7, Chapter 8, and the appendices to a separate, supporting paper. In this way, the reader would benefit by having a targeted paper, but yet the valuable information is not lost for those who want additional information.

Our further comments are detailed in four attachments, organized as follows:

- Attachment One is a proposed shortened version of the introductory chapter, Chapter 2. We have attempted to define the objectives in a clear way to match what is presented in the paper.
- Attachment Two is a possible shortened and revised chapter on measurement, Chapter 3.
- Attachment Three contains our responses to some of the questions posed in the exposure cover letter. We have provided answers to the questions discussed by the working group, but for other questions, we offer no comment at this time.
- Attachment Four contains detailed comments about specific paragraphs within the document.

¹ The American Academy of Actuaries is a national organization formed in 1965 to bring together, in a single entity, actuaries of all specializations within the United States. A major purpose of the Academy is to act as a public information organization for the profession. Academy committees, task forces and work groups regularly prepare testimony and provide information to Congress and senior federal policy-makers, comment on proposed federal and state regulations, and work closely with the National Association of Insurance Commissioners and state officials on issues related to insurance, pensions and other forms of risk financing. The Academy establishes qualification standards for the actuarial profession in the United States and supports two independent boards. The Actuarial Standards Board promulgates standards of practice for the profession, and the Actuarial Board for Counseling and Discipline helps to ensure high standards of professional conduct are met. The Academy also supports the Joint Committee for the Code of Professional Conduct, which develops standards of conduct for the U.S. actuarial profession.

Thank you for the opportunity to comment. Should you have any questions or need further information on our comments, please feel free to contact us through Tina Getachew, Risk Management and Financial Reporting Policy Analyst at getachew@actuary.org or at (202) 223-8196.

Sincerely,



Kris DeFrain, FCAS, MAAA, CPCU
Chairperson, Risk Margin Task Force
American Academy of Actuaries

Representatives on the RMTF:

Kris DeFrain
William Dove
Richard Goldfarb
Ken Griffin
William Horbatt
Valentina Isakina
Darrell Knapp
Robb Luck
Steven Malerich
Jay Morrow
Bill Odell
Ikwhan Oh
Bernard Rabinowitz
Larry Rubin
Alan Seeley
Henry Siegel
Stephen Strommen
Andrea Sweeny
Douglas Van Dam
Miles Williams

Attachment One: Proposed Re-write of Revised Chapter 2 - Objectives**2. Objectives of Paper**

This paper presents the thoughts of the Risk Margin Working Group (RMWG) on applying the liability measurement approach utilizing three building blocks: projected cash flows, discount rates, and risk margins.

- Projected future cash flows take into account a weighted average of all material potential outcomes.
- Discount rates anticipate that assets are held to fund liability cash flows and that such asset values normally appreciate over time.
- Risk margins reflect financial reporting principles, either general purpose or regulatory. In general purpose reporting, the risk margin represents the reward an investor requires as an inducement to accept risk. For regulatory reporting, the risk margin represents a buffer that is intended to absorb a limited amount of adverse experience, without tapping into capital.

As a matter of background, the Risk Margin Working Group of the International Actuarial Association (IAA) was formed in response to a request by the Solvency and Actuarial Issues Subcommittee (Solvency Subcommittee) and Insurance Contracts Subcommittee of the International Association of Insurance Supervisors (IAIS). While this request involved a focus on accounting for regulatory purposes, during the course of its work, the Working Group expanded its scope to consider general purpose financial reporting under standards being considered by the International Accounting Standards Board (IASB).

The RMWG is composed primarily of actuaries practicing in countries with mature financial markets, hence the concepts in this paper apply best within this context. Although the building-block approach is appropriate for a large proportion of the insurance liabilities in these markets, alternative approaches may be more appropriate for certain products and situations. This paper is not intended to provide a comprehensive survey or identify the single best practice. In many cases, more than one method may be acceptable, depending on the financial reporting standards and circumstances that apply.

Attachment Two: Proposed Re-write of Revised Chapter 3 – Measurement

Introduction to Measurement

3.1 Purposes of measurement

Financial statements are prepared to provide useful information to their readers who, in general reporting, are primarily investors and, in the case of solvency, are primarily regulators (as well as possibly, agents and policyholders among others).

Financial statement measurements often involve uncertainty. With respect to insurance liabilities, future cash flows are not expected to exactly match those anticipated when the liability was determined. The uncertainty is reflected in financial reporting by setting the measurement of the liability at an amount higher than the average anticipated amount to provide for statistical uncertainty due to estimation error and adverse deviation in the underlying anticipated experience. The excess over the average anticipated amount is termed a margin. Over time, if the cash flows turn out to be as anticipated, the margin is released into earnings.

In general purpose reporting, investors see the earnings that arise from release of margins as their reward for taking risk. In regulatory reporting, regulators view the margin in liabilities as a provision for moderate deviations from anticipated results such that in the event of regulatory intervention sufficient assets are held by the company to allow another entity to take over the liabilities. Such provisions are released into earnings when the results are known and the risk of deviations is past.

Regulators are also concerned not only with moderate deviations from anticipated results, but also with the possibility of very large deviations. Therefore, regulators require capital in addition to the measure of liabilities. The measurement of the sum of liabilities and capital has been referred to as a total balance sheet approach. However, the measurement of the capital that forms part of a total balance sheet approach is outside the scope of this paper.

Financial statements permit practical approaches whenever improved accuracy from more extensive work is immaterial to their users.

3.2 International standard setter developments

Several significant standard setting developments occurred during the time that the RMWG was working on this paper.

- The International Association of Insurance Supervisors (IAIS) published the *Second Liabilities Paper* (2006), where it expressed the desire to use the International Financial Reporting Standards (IFRS) as the basis for regulatory reporting, and *The IAIS Common Structure for the Assessment of Insurer Solvency* (2007).
- The IASB exposed for comment its Preliminary Views on Insurance Contracts in 2007 as part of Phase 2 of its project on accounting for insurance contracts. These Preliminary Views proposed an exit value approach, which, in the absence of a sufficiently active and relevant market for insurance contracts to observe these values, takes a prospective view at the

reporting date that reflects the amounts required for the insurer to transfer the rights and obligations of the insurance contracts.

Two significant elements of these developments are the convergence of general and regulatory reporting, and separation of the liability valuation from asset valuation.

The simultaneous evolution of financial reporting and regulatory discourse during the RMWG mandate raised the question whether substantial consistency or convergence of general purpose and regulatory methodologies is practical. This possibility was reinforced by the IAIS in the Executive Summary of its *Second Liabilities Paper*,

“(t)he IAIS believes that it is most desirable that the methodologies for calculating items in general purpose financial reports can be used for, or are substantially consistent with, the methodologies used for regulatory reporting purposes, with as few changes as possible to satisfy regulatory reporting requirements.” [IAIS Executive Summary]

As a basis for this position it is later noted that:

“There is widespread support for an effort to achieve a single set of accounts that could be utilised for both general purpose financial reporting and regulatory reporting, notwithstanding the potential differing purposes of such reports. Achievement of this aim is likely to reduce costs and workload for regulated insurance entities.

The second significant element regarding IAIS and IASB developments relates to the separation of assets from liabilities. The IASB preliminary view has been that the assets held by an insurer should not affect the measurement of the liabilities of insurance contracts, unless the obligations for which the liabilities provide change as a result of holding those assets. This financial reporting proposition is generally in this paper by reference to a replicating portfolio concept for the measurement of hedgeable risks for insurance contracts, with asset credit risk and market risk factors addressed outside of the measurement of liabilities.

Attachment Three: Answers to questions asked in your cover letter

1. *In Section 4, key considerations for determining expected cash flows are described.*

- a. *Do you disagree with the description of any of them? Should any be left out or modified, or others added?*

Difficulties in Section 4 mostly arise from trying to explain methodologies when the underlying requirements are not yet positively established, defined, and finalized by the IASB and IAIS. One example is that there are on-going discussions about whether property/casualty (general insurance) reserves will need to be discounted. This paper makes the assumption that reserves will be discounted and that might be premature since there are situations where a non-discounted approach may develop appropriate margins.

- b. *In Section 4.3.1, reference is made to the relevance of the financial reporting context to the measurement and possible limitations and constraints that may be placed on the estimates. Do you believe this paper should discuss potential restrictions on current estimates or risk margins as is done in the current version of the paper or should this discussion be made in another research paper when more is known about the direction of specific constraints, e.g., later in the IASB Phase 2 project? If you believe that this paper should address these issues, please indicate the specific constraints that you believe should be addressed, and whether they should be discussed more extensively.*

There appears to be scope creep in that this section of the paper may be trying to address best practices and then identify all of the major potential constraints and/or deviations currently under consideration. It appears there is too much focus on the potential deviations as opposed to the basic concepts, and with a goal of producing a direct and readable paper, much of this could be eliminated from the paper.

- c. *Do you agree or disagree with the distinction provided in the selection of market based or non-market based assumptions? Why?*

The discussion on market versus non-market based assumptions seems to be well addressed. There are good explanations for when to use portfolio, entity, industry, or market assumptions.

- d. *Are there other aspects of expected cash flows that should be addressed?*

No.

2. *In Section 5, discounting is discussed.*

- a. *In Section 5.2 risk-free discount rates are discussed. Should these be the basis of discounting? If not, what should they be based on? Several approaches to determining risk-free rates are described -- if risk-free rates are used, what should their basis be (e.g. spot rates, swap rates) and why?*

The discussion of the discount rate should not be separate from the discussion of current estimate and risk margins. Different combinations of discount rates, current estimate and risk margins should be allowable according to different circumstances. Question 2c below mentions the idea that a different approach to discount rates might be needed for certain kinds of insurance contracts. Such contracts involve sharing the investment risk between the insurer and the insured. When investment risk is shared, risk to the insurer is reduced and the needed margin for investment risk is reduced. The appropriate discount rate, which is theoretically the total

investment return less the margin for investment risk, can be greater than the risk free rate when some investment risk is passed to the insured.

The lengthy discussion in the paper regarding optional definitions of the risk-free rate makes clear that it is a theoretical concept that has no agreed-upon real world definition. Any real-world measure has flaws relative to the theory. The matter of discounting needs to be left to professional standards that are more complex than the simple arbitrary definition of a risk-free rate. It is more important, here, to emphasize the objectives of discounting and how it relates to the current estimate and risk margins.

- b. A discussion of liquidity is included in section 5.3. Should this be a factor to consider in the measurement of liabilities and/or should it be included in the final version of this paper? If it should be included, is the discussion appropriate or do you have recommended modifications?*

A discussion of liquidity should be included. It is definitely a factor to consider in the measurement of liabilities; it affects price (and hence the current estimate), risk margin and discount rate. The discussion in the paper is good. What is lacking is the commitment to the idea that liquidity is definitely a factor that affects liability value.

- c. For cash flows that are not directly related (but are generally affected by the asset investment performance) to a designated set of assets (such as universal life or many, but not all, participating contracts for which competition also can play a role), should discount rates be based on the actual assets held or on a market-based set of yield rates or some other alternative?*

There are multiple ways to accomplish the objective of using discount rates that are consistent with the investment returns assumed when projecting liability cash flows.

- d. For cash flows that are linked to the performance of a set of designated assets (e.g., certain participating or unit-linked/variable contracts), should the discount rate(s) be based on the expected performance of those assets or another basis?*

We like the idea of addressing asset-linked cash flows in a separate section (5.4). However, the wording of this section needs to be improved. The assertion in the opening paragraph is too indefinite, and it is possible to reconcile the valuation with risk-free discount rates by appropriately adjusting the assumptions used in projecting cash flows.

It might help to begin this section with statements such as:

To the extent liability cash flows match asset cash flows, the value of the liability should match the value of the assets. Further, for as long as liability cash flows are tied to asset cash flows, any assumptions about future changes in the asset portfolio should have no effect on the current liability.

Any contractual benefits that are not available on the associated assets (such as minimum return guarantees and enhanced liquidity) will increase the liability. Any charges on the contracts that are not present in the associated assets will decrease the liability.

It might be better to put these statements earlier in the document; maybe in the introduction, in section 5.1.

When stated this way, it is easier to see insurance contracts as different points on a continuum. At one end of that continuum are contracts that can be valued using a replicating portfolio. The other end is probably a finite limit which is never reached, where the liability would be totally divorced from any available asset information.

Again, there are multiple ways to accomplish the objective of using discount rates that are consistent with the investment returns assumed when projecting liability cash flows.

- e. Do you believe that guidance is needed to develop market-consistent assumptions and why? If yes, who do you believe should provided it (e.g., regulator, the IAA, the IASB, the local actuarial association or regulator) and what form of guidance is needed?*

Guidance can be helpful. But the term “market-consistent” needs to be carefully defined. And any guidance regarding liability valuation should be considered by the actuarial profession.

3. In Section 6, risk margins are discussed.

- a. In 6.1, several possible objectives of risk margins are described. Do you believe that this discussion is reasonable? If not, what do you believe the objective of risk margins should be?*

Yes.

- b. Possible approaches to the quantification and qualification of risk margins are discussed in the remainder of Section 6.*

i) Are the desirable risk margin characteristics appropriately described?

ii) Are the identified pros/cons of methods reasonably presented? If they are not, please describe those that you disagree with.

iii) Should the IAA put forth a proposal for one or more preferred methods for the quantification of risk margins? If so, which method(s) should be recommended and should this be included in the final version of this paper or another work product?

We have no comment on these questions at this time.

- c. Practical issues of risk margin calculation methods are discussed. Are these issues appropriately identified and described?*

i) If so, what should the characteristics of the reference entity or portfolio be? If so, in what context should they be provided (e.g., in accounting standards, actuarial standards, by the regulator or developed by emerging practice)?

ii) If not, why?

We have no comment on these questions at this time.

- d. Is the use of a reference entity or portfolio appropriate?*

i) If so, what should the characteristics of the reference entity or portfolio be? If so, in what context should they be provided (e.g., in accounting standards, actuarial standards, by the regulator or developed by emerging practice)?

ii) If not, why?

We have no comment on these questions at this time.

- e. Should the size (with respect to process or random deviation uncertainty risk), diversification or other feature of the portfolio or entity be considered in the determination of risk margins? If so, what should the level be that they should be considered -- the portfolio or the entity? And if so, why should it be?*

We have no comment on this question at this time.

- f. *Do you agree with the assessment and comparisons included in Section 6.11?*

We have no comment on this question at this time.

4. *Section 7 deals with risk mitigation approaches.*

As we mentioned in our cover letter, we recommend Section 7 be removed from the paper and considered in other work to shorten the paper in order to be useable by the target audience.

- a. *Do you disagree with the treatment of any of the approaches indicated? If so, please provide your preferred approach?*
- b. *Do you believe that diversification should be reflected in the measurement of liabilities (either within a portfolio or inter-portfolio)? Why or why not? Are the approaches given in Section 7 regarding diversification or in Appendix C appropriate? If not, do you have any suggestions as to how the effect of diversification should be measured?*

We have no comment on these questions at this time.

5. *Section 8 deals with several miscellaneous topics. Are these treated sufficiently and do you disagree with the description of any of them? If not or if additional topics should be addressed here, please indicate them and why you believe they are relevant to this paper.*

As we mentioned in our cover letter, we recommend Section 8 be removed from the paper and considered in other work to shorten the paper in order to be useable by the target audience

6. *Are the appendices included useful and sufficient for the purpose indicated? If one or more are not, please indicate which and why.*

We recommend the Appendices be removed from the paper and considered in other work.

7. *Appendix D indicates that the operating expenses of a portfolio or the entity should be used rather than market-based expenses. Which basis for determination of expenses do you believe would be appropriate to be used? Should it vary depending on the application? If market-based expenses should be used, what approach(es) should be considered for use in determining them? Should the size of the entity or portfolio matter?*

We have no comment on this question at this time.

8. *Should any deviations or special considerations be made in the case of a jurisdiction in which the actuarial profession is not sufficiently developed or is emerging and the experience and skills of the actuaries involved are not at a level that the approaches described in the paper require? If so, please indicate in what way and what other approaches should be taken or guidance provided?*
- a. *Should there be any modifications of the methods described in the paper be made to apply either smaller companies, less sophisticated markets or products, or new coverages? If so, what are they and how should they be addressed?*
- b. *Should the IAA take any steps to address this area? If so, please provide suggestions.*

We have no comment on these questions at this time.

9. *Please provide additional references (to those already included in the reference section of the paper) or glossary definitions that you believe would be helpful to the reader of the final version of this report.*

Glossary definitions: market-based

10. Do you have any additional comments relating to the measurement of liabilities for insurance contracts that are relevant to this paper? Please mention the section number and offer proposed drafting as appropriate.

Please see Attachment 4.

11. The possibility of including a risk margin in the measurement of the liability for post-retirement benefits, including pensions has recently been discussed. Do you believe that this would be appropriate? Please explain the reason for your response?

We have no comment on this question at this time.

Attachment Four: Additional comments

We also offer the following paragraph by paragraph recommendations.

With an aim to improve clarity in Section 5.1, Introduction:

- a. The introduction begins with a statement about the objective of applying a discount rate – to reflect the time value of money. The end of the introduction mentions non-performance risk and liquidity as possible components of the discount rate. The subjects of time value of money, with or without provision for non-performance risk, and liquidity should be discussed together at the beginning of the introduction.
- b. It should be stated that whatever factors enter into the calculation of the current estimate and risk margins, these factors also need to be considered in the discount rate. While this is somewhat addressed in section 5.4 (linked and related approaches), the need is broader and is an underlying principle. For example, the current estimate is affected by nonperformance risk. Persistency can be affected by the perception of a company’s strength. To truly remove company-specific risk, the discount rate may have to be adjusted to obtain a market-consistent value of the liability.
- c. The separation of the two situations in Paragraph 2 and separate coverage of the first in 5.4 would be helpful.
- d. We noted the observation that, “The current view of both the IAIS and the IASB is that a liability should be measured independently from the actual assets held by the entity” (fourth paragraph). This adds emphasis to our earlier assertions that liabilities should equal assets to the extent liability cash flows match asset cash flows (question 2.d.), and that discount rates, current estimates and risk margins cannot be considered independently (question 2.a.). In contrast, for example, to project “current estimate” cash flows that are tied to asset cash flows without discounting at consistent interest rates would violate both of our assertions and would result in a liability value that is not measured independently from the actual assets held.
- e. In the last sentence of the first full paragraph on Page 31, two models are mentioned. The working group should consider whether any additional pros and cons, or perhaps nuances, to using either of the approaches should be noted.
- f. Page 31, 2nd full paragraph – This appears to insert a separate observation in front of a concluding line for the previous paragraph. It might clarify if the words “either approach” were changed to “any of these approaches” and if the entire sentence were moved to the end of the previous paragraph. The first sentence in this paragraph is a separate (though related) thought.
- g. Page 31, last paragraph – In the first sentence, it might help to rephrase the parenthetical expression as “(particularly if the contracts’ obligation is linked to equity assets)”. The reason for the change is that the key item here is that there is linkage. The nature of the linkage – e.g., to equity – is important but of secondary importance logically. We would recommend a footnote or reference to the literature describing the methodology used to determine “deflators” as all readers may not be familiar with this term.

Also, the last sentence which begins “nevertheless--” applies not only to this paragraph but to the preceding paragraph. Also, this sentence is an entirely different subject than the first sentence. How about starting off this sentence as a new paragraph with, “Of course, the approach utilized will be a function of the applicable accounting guidance. Current accounting discussions --”.

The following are some paragraph by paragraph comments on Section 5.2, Risk Free Discount Rates:

- a. 5.2 – The word “alternative” is unnecessary, and could be confusing. One could think this implies the following are alternatives to something else. In this case, eliminating “alternative” would clarify.
- b. 5.2 – Does “sovereign risk” add anything? We would think the risk is confiscation (implying default) in most cases.
- c. 5.2.1, Second bullet – Since the hypothetical situation has to do with artificially high demand, should not the effect be “yield might be 50 bases points lower”? High demand presumes higher price which we think means lower yield.
- d. 5.2.2, Second paragraph – We did not know this was one of the reasons for failure of long - term capital management. Is there a source for this information that could be footnoted here?
- e. 5.2.4, Page 38, penultimate paragraph – We do not follow the logic that the absence of a deposit instrument at the six months LIBOR rate implies an additional deduction from the SWAP spread.
- f. 5.2.4, Page 39, Last paragraph – The first two sentences seem to be contradictory
- g. 5.2.5, First paragraph, first sentence – Is it “SWAP spreads”? Or “SWAP rates” that are risk free?
- h. 5.2.5, First paragraph, last sentence – For clarity, it might help to add the following at the end of the sentence“; in any event, as noted earlier, this Paper treats ‘own credit standing’ as not necessarily related to discount rates.”
- i. 5.2.6 – In figure 5.5, Is the information regarding “measures discussed above” or “securities discussed above”? In the graph at the bottom, some of the curves are defined as “SWAP curve”, “AAA” and in the discussion above, the rates appear to be adjusted. If so, then the figure is not showing “measures discussed above” but rather “securities discussed above” and it might be worthwhile to show adjusted rates in the graph.

The following are some paragraph by paragraph comments on Section 5.3, Liquidity:

- a. 5.3.1, Page 42, third paragraph – In the second sentence, “each liability” might be better than “the liability”. The last sentence seems to have an antecedent but no consequent. It seems to be of the form “In practice since ‘a’”. There appears to be no “therefore b.”
- b. 5.3.2, Page 43, last paragraph – This states “yields on new governments are less than old governments and implies that this may be because of differences in liquidity”. What difference in liquidity? Is it the fact that the old bond is going to mature sooner than the new one? Not clear.
- c. 5.3.2, Page 44, last paragraph – This brings up the “own credit risk” again and discusses at some length its incorporation in the discount rate. This seems to be the opposite from that put on the subject earlier. It might be clearer if the treatment in at least three spots in Section 5 were more clear and consistent. In other words, every reference might begin with “if own credit risk is considered in the discount rate, then”. There would probably need to be a sentence, the first time the subject is brought up, to the effect that the impact of “own credit risk” is generally considered not to be part of the discount rate and is discussed in Section 8.4 in a context other than the discount rate. However, in this Section 5, reference is made where pertinent to possible treatment if the “own credit risk” is considered as part of the discount rate.

The following are some paragraph by paragraph comments on Section 5.4, Linked and Related Approaches:

- a. Improvement could be made in the section by better addressing the many ways in which cash flows under a contract might deviate from those on the associated assets. After addressing the deficiency (described earlier in response to question 2.a.) it should be possible to improve the clarity of this section.
- b. Bottom of page 44, approach #1, second plus sign – This confuses us a bit because if there is linkage, then are premiums needed? And wouldn't the discount rate be one arising from the assets to which the liability is linked?
- c. Approach #1 also contains an error. The last addition is a margin for undiversifiable asset-liability mismatch risk. That component is also used in the top-down approach (#2), but it is subtracted, not added. This component is identical in both approaches, and its handling should be the same in both. Any margin for undiversifiable risk, if introduced into the discount rate, should be a subtraction.

This also highlights the need, mentioned earlier, for consistency between discount rates, current estimate and risk margins. Undiversifiable risk may already be addressed in the risk margins. If so, bringing it into the discount rate, as well, would be doubling its effect.

- d. 5.4, Page 45, penultimate paragraph – The statement here is true. We do not end up with a market consistent rate. However, this may not be the best wording. One approach might be to say something like “this is really a market consistent rate because, if a market participant took over the liability, their earnings would be linked to certain assets and, hence, the rate they could earn on the assets matching the liability would be the same as the entity being valued”. There may be better wording to express this idea than we have provided here.
- e. 5.4, Page 45, last paragraph – The words “with in” should probably be “within”. Also, the term “SWAPTION” in the fourth to last line needs to be defined.

The following are some paragraph by paragraph comments on Section 6, Risk Margin Measurement Methods:

- a. Page 62, Sensitivity Tests: The description of Line 4 results states “no value is shown in line 4 for Product A because the base case assumed that the capital ratio was constant.” The base case refers to Table 6.6, which assumes that the ratio of capital to current estimate increases by 10% each year after the reporting date. In any event, the cost of capital method cannot produce a result of 0 unless there is 0 capital required.
- b. Table 6.10 on page 69 contains a listing of risks “to be included in the risk distributions” divided by business type (life, general, health, etc.). The general/property & casualty list is missing a number of key risks including trend/inflation, timing of loss payments, and legal/contractual risk.

While we prefer to move the appendices to a separate paper(s), the following are some paragraph by paragraph comments on Appendix C, Diversification:

- a. To be market consistent, liability valuation should assume diversification. Beyond that, diversification (or lack thereof) is a capital issue and does not need elaboration in the paper. With that caveat, there are several minor recommended changes:
- b. The last bulleted point near the beginning of section C1 – replace “interdependent” with “correlated.”
- c. The first line of the first paragraph after the bullet list – “independent” should be replaced with “dependent”.

- d. Delete “this effect” in the second sentence of the second paragraph
- e. At the end of section C1, the wording of points b and c is confusing. Replace point b with “Between risk-types within a line of business or a business unit.”
- f. In the middle paragraph of section C2, an improvement to the third sentence would be “But a severe pandemic like the Spanish flu, for example, with millions of deaths worldwide, would certainly have economic consequences and would impact market risk.”
- g. In the first paragraph of section C3, the second sentence is confusing. It seems to be the beginning of one sentence and the end of another.
- h. Later, in section C3, in the paragraph immediately before table C.1 – the second sentence needs the word “be” inserted between “will” and “satisfied” at the end of the sentence.

While we prefer to move the appendices to separate paper(s), the following are some paragraph by paragraph comments on Appendix D, Current Estimate Assumptions:

- a. Page 133 Paragraph D1.1.1 the "not" in the last sentence should be "no".
- b. Page 139 Paragraph D1.2.17 the sub-paragraphs begin numbering at (2) instead of (1).
- c. Page 146 D2.5.7 - The first half of the first sentence has a wording problem, and we are not sure exactly what is intended.
- d. Page 147 D2.5.8 - Second to last sentence has the word "be" twice. One needs to be deleted.
- e. D4.2 - Second paragraph, the word “insure” should be “insurer”.
- f. D4.13 - In the third sentence the word "be" should be eliminated.
- g. Page 153 Paragraph 5.2 the reference should be to section 4.7, not 4.1.6.

While we prefer to move the appendices to separate paper(s), the following are some additional comments on Appendix E, Background:

For Appendix E, extensive editing could be beneficial. The Background and history of the IAA committee structure is interesting, but is far more detailed than necessary to support this paper. This appendix also ties to our suggestion to re-work the objective part of the paper. It appears that the original intent of the paper is not necessarily what is being delivered. If this appendix remains in the paper, we suggest labeling the terms of reference as "original" and providing explanation about whether the objective and aims were met in the paper. For example,

- Does the paper provide quantitative benchmarks that will enable appropriate comparisons across insurers and jurisdictions?
- Does the paper fulfill its aim to explore the likely areas of difference between the solvency assessment and public financial reporting?

This section would be strengthened by clarifying what is accomplished in the paper and what is left to study. In the third to last paragraph there is some mention of the change in scope. This should be further elaborated.

One minor issue would be to modify the sentence in the last paragraph of E2.1.1, "Note that, in other professional literature, the 'current estimate' concept sometimes includes both concepts." to "Note

that, in other professional literature, the meaning of a 'current estimate' encompasses both the 'current estimate' as defined in this paper and a risk margin."