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Dear Mr. Guérard,

the Austrian Actuarial Association (AVÖ) welcomes the opportunity to give its comments to this very helpful exposure draft.

Our comments are not exactly following the questions you raised, but are a hint to some specific observations regarding the cost-of-capital approach. This comment was written as a short paper from our colleague Ms. Eva Fels and we decided to take this paper as the official comment of the Austrian Actuarial Association.

Yours faithfully,

Dr. Klaus Wegenkittl  
President

Mag. Christoph Krischanitz  
Chairman

“International Accounting and Solvency”
Reliability and Stability of Cost of Capital Measures

A comment on the IAA exposure draft ”Measurement of Liabilities for Insurance Contracts: Current Estimates and Risk Margins”

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This note focuses on problems which might arise from the determination of risk margins of expected payments by their cost of capital (CoC). We should not restrict our critical analysis on the adequacy of the static approximation of statistical risk measurements by CoC but also take dynamic aspects into account. The preliminary note offers some arguments in favour of the conjecture that the CoC approach might increase the volatility of the solvency margins inappropriately.

Appraisal of IAA’s Cost of Capital analysis

A worthwhile input of IAA’s paper it’s comparison of quantile risk measures with the cost of capital (CoC) approach (chapter 6). It shows on one hand that - if correctly calibrated - both methods might lead to similar result, as long as LOBs with similar terms and tails are compared.

However a given CoC risk margin corresponds to a higher quantile when the runoff period or the skewness of the risk increases. On the other hand a quantile safety loading can be realized by lower costs of capital for portfolios with shorter runoff periods or less severe risk distributions.

Although it was occasionally discussed to calibrate a simpler CoC-model in such a way that it generates risk margins equivalent to that of quantile calculations, it is obvious that such a unique mapping does not exist.

Dynamic aspects

The draft considers a static comparison of CoC - and VaR - techniques. However, for practical purposes the stability respectively volatility of the risk margins between successive years should also be verified.

We guess that the relation of expected future payment to fundamental insurance data like paid-off claims or premiums stays relatively stable in actuarial models like Chain-Ladder, Bornhuetter-Ferguson et al. Hence - without an obvious variation of the runoff pattern or the distributional assumptions - one can expect that also the quantiles of the expected cash flows will stay approximately proportional to fundamental values of insurance business like the paid off sums.
On the other hand, we have no evidence concerning the volatile of CoC-based risk margins, since it’s computation is still vague. Since several approaches might be considered for the implementation of CoC we will discuss possible effects separately.

**Risk premiums depending on rating classes**

Referring to the Swiss Solvency Test one might consider that the CoC factor is determined by the rating of the enterprise, for example 6% over the risk free rate for BBB-rated insurers. This looks to be a practical approach for the standard model. Changes of financial policy and expected inflation would affect the CoC ratio only through the adjustment of the risk free rate.

However it should be recalled that the relation between discount factors and rating classes was verified only for one sample for the year 2005 (FOPI, 2006). One can not expect an increase of the market risk, respectively it’s volatility, would not effect the relation between reasonable risk premiums and rating scales.

Furthermore the field test demonstrated that the CoC-approach is misleading for smaller and less capitalized firms (FOPI, 2006, p. 16).

**CAPM models**

In general - and in especially for insurance companies who apply individual internal models - the CoC - discount factors have to be justified by some CAPM model, e.g. in the simples case

\[ r_{it} = r_{ft} + \beta_{mi}(r_{mt} - r_{ft}) + u_{it} \]

with

- \( \beta_{mi} \): CAPM beta coefficient for company i
- \( r_{it} \): return of stock i in period t
- \( r_{ft} \): risk-free rate of return
- \( r_{mt} \): market portfolios return in period t
- \( u_{it} \): period’s t residual for stock i, \( E(u_{it}) = 0 \)

It should be noted, that the fundamental influence factor, the risk free rate of return \((r_{ft})\), which is usually measured according to short term rates, varied between 1,01% (2003) and 16,72% (1981) within the last 30 years.

The expected capital cost margin of stock i, e.g. \( E(r_{it} - r_{ft}) \), depends not only on the market return and the risk free rate but also on the estimated \( \beta_{m} \) coefficient. Analysing this equation for property-liability insurers David Cummins and Richard Phillips (2003) demonstrate a huge variability between successive years (Table 1).

Even for large insurers - where a better fit of this specification can be assumed - the \( \beta_{m} \) - estimates dropped from 0,92 to 0,69 before they rose again.

More sophisticated CAPM-specifications will take into account size- and financial distress effects, lagged effects or long term market risk premiums. Nevertheless, reviewing the estimates of such models for insurance companies shows that an inter-temporal stable

<table>
<thead>
<tr>
<th>Year</th>
<th>Average ( \beta_{m} ) for small insurers</th>
<th>Average ( \beta_{m} ) for big insurers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>0,646</td>
<td>0,820</td>
</tr>
<tr>
<td>1998</td>
<td>0,632</td>
<td>0,917</td>
</tr>
<tr>
<td>1999</td>
<td>0,570</td>
<td>0,690</td>
</tr>
<tr>
<td>2000</td>
<td>0,316</td>
<td>0,712</td>
</tr>
</tbody>
</table>

Table 1 CAPM coefficients
Source: Cummins J. D., Phillips R. D. (2003), Table 2

1) At least CAPM-models would not expect such a stable relation.

2) Swiss Re (2005), Table 2.
parameterisation can not be achieved by increasing complexity\textsuperscript{4}. Even after separating short- and long-tail lines of business the parameter volatility could not be reduced\textsuperscript{5}.

**Extended return models**

It is obviously that individual risk models might identify further variables with a significant influence on the returns. One might analyse firm specific variables which are not even known to the public as well as individually constructed indicators. Even proxies which measure networking cooperation might carry a significant weight\textsuperscript{6}.

According to the multiplicity of “reasonable” specifications one can not expect, that an uniform approach will be implemented. This will affect as well the temporal as the cross-market comparability of the results.

**Conclusion**

The question has to be raised, whether a reproduction of capital markets volatility in insurance solvency models is desirable. It’s practical advantage, that the inter-temporal distribution of obligations has not to be specified\textsuperscript{7}, might be achieved only on the cost of increasing variability.

**References**


\textsuperscript{3} see the 3-factor model of Fama and French (1992).

\textsuperscript{4} Cummins and Phillips (2003), Table 5.

\textsuperscript{5} Cummins and Phillips (2003), Table 8.

\textsuperscript{6} Hochberg, Ljungqvist and Lu (2007).

\textsuperscript{7} IAA, RM WG (2007), p. 72.