Allowance for Surplus Funds under Solvency II:

Adequate reflection of policyholders’ contribution in a risk-based solvency framework?

- Tobias Burkhart
- DVfVW-Jahrestagung 2016, Wien
Outline

Introduction
Motivation
Existing Literature

Analysis of Surplus Funds

Conclusion and Outlook
Introduction
Motivation

Dual character of the RfB (reserve for premium refunds under local GAAP):

- collective reserve for policyholders’ **future surplus participation** (balancing over time)
- emergency buffer to (partially) **cover future losses** according to § 140 VAG (German insurance supervision act)
  - but: not explicitly specified which proportion of a loss can actually be covered by withdrawals of RfB funds

→ How to recognize the risk-reducing character of the RfB under Solvency II? (relevant in particular for Germany and Austria)
Introduction
Motivation

Allowance for Surplus Funds (SF) under Solvency II

- special consideration of **initial RfB** (at the valuation date) that is **available to cover future losses** (“undeclared RfB”)
  - broadly comprises Terminal Bonus Funds (TBF) and free RfB
- not to be considered as insurance liabilities, but as part of the Basic Own Funds (BOF)
- to be valued in line with the economic approach
  - nominal local GAAP value **not** to be used
- in addition: current stochastic valuation models in Germany (e.g. BSM) include an **explicit modelling of § 140 withdrawals** from both, initial and future RfB
  - BaFin addresses several aspects concerning valuation of Surplus Funds, however, there exists no analysis concerning impact and adequacy of current implementation.
**Introduction**

**Motivation**

**Does the allowance for Surplus Funds fit into the Solvency II framework?**

- market-consistent valuation of all assets and liabilities
- in particular: **transfer value concept** for valuation of Technical Provisions (TP)
  - TP = amount an insurance undertaking has to pay if it transferred its contractual obligations immediately to another (reference) undertaking
  - TP = Best Estimate of Liabilities (BEL) + Risk Margin (RM)
    - BEL = expected present value of future cash flows (including future discretionary bonuses)
    - RM = present value of cost of capital for a reference undertaking that takes over the obligations and has to hold SCR for unhedgeable risks
- derivation of Basic Own Funds (BOF) \( \approx \) excess of assets over liabilities
- standard formula capital requirement reflects quantifiable risks over a 1-year time horizon
  - Solvency Capital Requirement (SCR) \( \approx \) change of BOF in pre-specified stress scenarios

\( \Rightarrow \) The allowance for Surplus Funds does **not appear in line with the definition of BEL (and RM)** (policyholder cash flows counted as BOF).
Open questions:

■ How does the way to recognize the risk-reducing character of the RfB affect the **Solvency II balance sheet**?

■ Is the current implementation (Surplus Funds in combination with § 140 withdrawals) appropriate concerning **double counting of cash flows**?

■ Does the allowance for Surplus Funds adequately **reflect the loss-absorbing capacity of the initial RfB**?

■ How should Surplus Funds be reflected in the calculation of **Solvency Capital Requirement** and **Risk Margin**?
Introduction
Existing Literature

- legal provisions
  - Solvency II Directive (➔ implementation in insurance supervision act (VAG))
  - interpretative decisions of BaFin

- practical implementation
  - Fachkonzept BSM (version 2.1): practical implementation concerning Surplus Funds
  - Burkhart et al, 2015: Analysis of the Going Concern Reserve

- collective reserves
  - Goecke, 2013: return smoothing effects of inter-generational risk transfer in pension schemes

- Surplus Funds
  - Wagner, 2013: motivation behind the allowance for Surplus Funds
  - Walter, 2015: Surplus Funds in German health insurance
Outline

Introduction

Analysis of Surplus Funds
  Valuation Framework
  Numerical Results

Conclusion and Outlook
Analysis of Surplus Funds
Valuation Framework

Model framework

- stochastic projection model from Burkhart et al, 2015
  - extended by RfB and TBF
- insurance company
  - assets: coupon bonds and stocks (constant stock ratio)
  - liabilities: participating endowment policies against recurring premium
  - surplus participation in line with German provisions:
    - management rule for § 140 withdrawals: losses shared in the same proportion as raw surplus has been split in the past 10 years
    - Surplus Funds = present value of cash flows to policyholders resulting from the initial RfB

→ economic balance sheet derived from cash flow projection until complete run-off
Consideration of **four alternatives** for reflection of risk-sharing between policyholders and shareholders (via the RfB)

<table>
<thead>
<tr>
<th>Allowance for § 140 withdrawals?</th>
<th>... Surplus Funds?</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>No</td>
<td>Alternative 1</td>
</tr>
<tr>
<td>Yes</td>
<td>Alternative 3</td>
</tr>
<tr>
<td>Yes</td>
<td><strong>Alternative 4</strong></td>
</tr>
</tbody>
</table>
Analysis of Surplus Funds

Results – Development of initial undeclared RfB in a single Scenario

Alternatives 1 & 2:
no allowance for § 140 withdrawals

Alternatives 3 & 4:
allowance for § 140 withdrawals

Withdrawals of funds from initial undeclared RfB in line with § 140 VAG:
- are not to be counted for valuation of Surplus Funds and
- affect profile of withdrawals relevant for calculation of Surplus Funds.
Analysis of Surplus Funds

Results – Development of initial undeclared RfB in a single Scenario

**Regular withdrawals** from initial RfB for policyholders’ surplus participation

**Cash flows** to policyholders resulting from regular withdrawals from initial RfB

Cash flows (benefit payments) are relevant for valuation of Surplus Funds:
- A valuation based on the book value of initial undeclared RfB or withdrawals from initial undeclared RfB neglects shareholders’ part of future investment earnings on these funds and would result in double-counting of Own Funds.
Analysis of Surplus Funds
Results – BOF (before Risk Margin)

- BOF (before Risk Margin)
- alternative 1
- alternative 2
- alternative 3
- alternative 4

- allowance for Surplus Funds (alt. 2 & 4) results in material increase of BOF
- note: no adjustment to allow for shareholder part of future losses (cf. § 140 withdrawals)
- allowance for § 140 withdrawals only (alt. 3) also increases BOF (but less material)
- expected value of initial RfB used to cover losses (in alt. 3) only 15% of Surplus Funds (in alt. 2)
- highest BOF in combined approach (alt. 4)
- note: only withdrawals from future RfB funds create additional BOF (compared to alt. 2)
- but: Surplus Funds are also “at risk” (and therefore have to be reflected in the SCR).
Analysis of Surplus Funds

Results – SCR for Equity Risk

- allowance for Surplus Funds increases SCR (alt. 2/4 vs. alt. 1/3): economic value of Surplus Funds changes in stress
- without Surplus Funds: additional § 140 withdrawals from RfB in a stress scenario reduce the SCR (alt. 3 vs. alt. 1)
- highest SCR for combined approach: allowance for Surplus Funds decreases risk-reduction via additional § 140 withdrawals (alt. 4 vs. alt. 2)

→ All effects depend on type of stress (equity vs. interest rate vs. underwriting stresses).
Analysis of Surplus Funds
Results - Excess Capital (before Risk Margin)

Combined impact on BOF and SCR

<table>
<thead>
<tr>
<th></th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Alternative 3</th>
<th>Alternative 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOF (before RM)</td>
<td>4,105</td>
<td>10,578</td>
<td>6,494</td>
<td>12,034</td>
</tr>
<tr>
<td>SCR (total)</td>
<td>7,059</td>
<td>7,121</td>
<td>5,459</td>
<td>7,150</td>
</tr>
<tr>
<td>Excess Capital (before RM)</td>
<td>-2,954</td>
<td>3,457</td>
<td>1,035</td>
<td>4,884</td>
</tr>
<tr>
<td>Solvency ratio (before RM)</td>
<td>58%</td>
<td>149%</td>
<td>119%</td>
<td>168%</td>
</tr>
</tbody>
</table>

- If impact on both BOF and SCR is considered, the difference between alt. 2/4 and alt. 3 is less pronounced.
- Highest amount of excess capital for alt. 4
  - Is the resulting solvency ratio adequate?
Analysis of Surplus Funds
Results – Sensitivity concerning Size of Equity Stress

Consider different size of equity stress
- e.g. 59% stress factor instead of 39%
- Alt. 3 results in less volatile solvency ratios, since additional losses can partly be absorbed by additional § 140 withdrawals of RfB funds.
- It is unclear which proportion of a loss can actually be covered by § 140 withdrawals.
  ➔ critical aspect for alt. 2 & 4 (implicit assumption that losses can be fully covered by initial RfB funds)
Analysis of Surplus Funds
Results – Expected § 140 Withdrawals from RfB

The **actual loss absorbency** of the undeclared RfB (by application of § 140)
- is linked to losses based on local **GAAP accounting** and
- therefore depends on how Solvency II stresses affect the local GAAP P&L.
Analysis of Surplus Funds
Results – Risk Margin

Link between SCR and Risk Margin

■ Is it necessary to recalculate the SCR used for determining the cost of capital of the reference undertaking?

⇒ Detailed considerations of the transfer scenario suggest that it is appropriate to calculate RM based on the original undertaking’s SCR (no need for recalculation of SCR).

■ but: current Solvency II provisions neglect local GAAP accounting perspective (which is relevant for the reference undertaking)

■ RM depends on approach applied to consider the risk-reducing character of the RfB

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Risk Margin</th>
<th>Solvency ratio (after RM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>286</td>
<td>54%</td>
</tr>
<tr>
<td>2</td>
<td>297</td>
<td>145%</td>
</tr>
<tr>
<td>3</td>
<td>265</td>
<td>114%</td>
</tr>
<tr>
<td>4</td>
<td>312</td>
<td>164%</td>
</tr>
</tbody>
</table>
Conclusion and Outlook

The current valuation approach of Surplus Funds does **not appear in line with the definition of BEL (and RM)**.

However, it is **internally consistent** regarding its overall impact on Solvency II results (BOF, SCR and Risk Margin).

A careful implementation in stochastic valuation models can ensure that **no double counting** occurs.

Some underlying assumptions appear critical:

- In particular, the methodology implicitly assumes that the insurer is allowed to **fully cover losses** by withdrawals from the initial RfB based on § 140 VAG.
- Current Solvency II provisions **neglect local GAAP accounting perspective** which represents a binding secondary condition for an appropriate Solvency II valuation, e.g.:
  - § 140 VAG my only be applied for losses incurred under local GAAP,
  - a reference undertaking also has to fulfil local GAAP accounting requirements.

**→ Given the material impact of Surplus Funds on solvency ratios, a critical review of the corresponding valuation methodology is recommended.**
Thank you for your attention!

Tobias Burkhart

+49 (731) 20 644-261
@ t.burkhart@ifa-ulm.de
web www.ifa-ulm.de
Appendix

Literature


