Asset Liability Management at Insurance Companies
A Supervisor’s Perspective

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ALM Conference
March 2015
Vienna
Interpretation of the EIOPA Stress-Test from an ALM View

Recent Study on ALM Risks at Insurance Companies

Implications of ALM in the Current Investment Environment
EIOPA Stress-Test

Set Up
- application of Solvency II (standard model)
- year end 2013 balance sheet and yield curve
- shocks on market factors
- low yield („Japanese“) scenario
- 167 participating groups + solos from all EU countries + CH, IS, NO

Intention
- test on the impact of Solvency II
- test on robustness of financial condition
- assess preparedness (both industry and regulator)
- calibration of final specification
Riskfree Interest Rate

Stress-Test Baseline (Dec 2013)
Riskfree Rates (Dec 2014)
99.5% down shock
low yield scenario

Source: EIOPA, FMA
Stress-Test Results

Source: EIOPA
Stress-Test Results

Pre-stress SCR decomposed

- Core Sample -

Source: EIOPA
(Modified) Duration $D$ is used to measure the relative sensitivity of value $V$ on the change of interest rate $i$:

$$\Delta V/V \approx -D \times \Delta i$$

German life + health insurers reported an average duration of less than 10 (years) for their assets ($DA$) vs. more than 20 for their liabilities ($DL$).

The reported duration mismatch ($MM = DA - DL$) for Austrian insurers was -10.

$DE$, the „duration“ of equity (eligible own funds $EOF \approx A - L$) can be approximated by the duration mismatch $MM = DL - DA$ and the leverage $Lev = A / EOF$ as follows:

$$DE = DL + Lev \times MM$$
interest down shock sensitivity

change in assets as % of balance sheet

change in EOF as % of balance sheet

change in liabilities as % of balance sheet

Source: FMA
Recent Study on ALM-effects for Insurance Companies

- stress-test cashflow profile for Austrian market (“demo”)
- additional “artificial” portfolios (unbalanced, balanced, matched)
- equity impact of Solvency II standard shock (1 in 200 years, 99.5% confidence)
- estimated change in equity over rolling 1 year period since 1996

Intention

- validation and applicability of standard method (parallel shift)
- effect of non-parallel, real world shocks
- effect of non-balanced cashflow profiles
- benchmark for own risk assessments (ORSA) of insurers
Liabilities shows the aggregate (unweight) cashflows reported in the EIOPA stress-test.

“Demo” was chosen as the reported aggregate (unweight) asset cashflow profile.

“Unbalanced” refers to a possible asset allocation profile under a low yield environment.

“Balanced” shows a profile with matched duration of assets and liabilities, exposed to twists.

“Matched” has identical A+L cashflows in every year except for equity at t=0.
rolling 1-year %-change in equity

Source: FMA
distribution of 1-year equity-change

standard down shock has less than 90% confidence for unbalanced sheets, 99.5% quantile shows nearly double risk

stress-tested interest rate risk might only provide 90% confidence due to amplitude and parallelity of shock

balanced sheets will gain equity increase under down shocks

Source: FMA
implications of ALM in a low yield world
implications of ALM in a low yield world

Source: EIOPA, FMA

Riskfree Rates (Feb 2015)

average maturity of liabilities

average guaranteed rate

Tenor