International Association for the
Study of Insurance Economics

Études et Dossiers

Extract from

Études et Dossiers No. 340

4th International Insurance and Finance Seminar of The Geneva Association

6-7 December 2007
London

February 2008

Working Paper Series of
The Geneva Association

The Geneva Association - General Secretariat - 53, route de Malagnou - CH-1208 Geneva
Tel.: +41-22-707 66 00 - Fax: +41-22-736 75 36 - secretariat@genevaassociation.org - www.genevaassociation.org

The Geneva Association Working Paper Series “Études et Dossiers” appear at irregular intervals about 10 - 12 times per year. Distribution is limited.

The “Études et Dossiers” are the working paper series of The Geneva Association. These documents present intermediary or final results of conference proceedings, special reports and research done by The Geneva Association. Where they contain work in progress or summaries of conference presentations, the material must not be cited without the express consent of the author in question.

Layout & Distribution: Valéria Kozakova

Asset Liability Management in Insurance : The Current Challenges

Michael Bös

Contents

1.) Management of investments: MR's approach

2.) Current Challenges:

a) Understand the liabilities

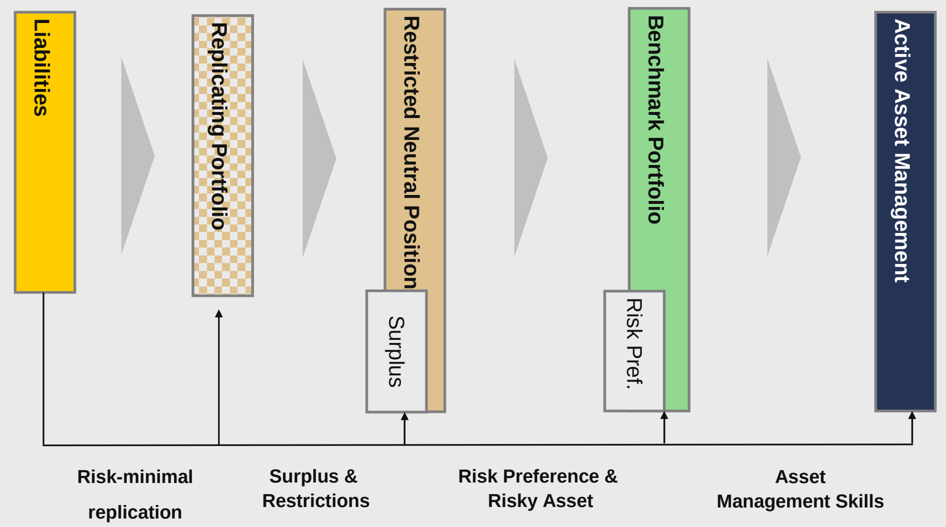
b) Formulate the risk/return preference for AL-Mismatch

c) Optimise the excess return over the Replicating Portfolio

d) Measure the performance of active asset management

2

Clear separation of value chain



3

Liability-driven investment style and strategic AL mismatch

Key elements of ALM strategy

- Investment decisions support underwriting business (“liability-driven investments”)
- Clear distinction between

  1.) Group strategic investment decisions (replication, restrictions, AL-Mismatch / long-term risk preference)

  ➢ Responsibility with the management board

  2.) Active investment management decisions based on a short/medium-term tactical market view

  ➢ Responsibility for active management delegated to asset-manager

- Central investment decisions are taken from a group perspective:
  - ALM officers at local units provide an interface to ALM and asset-manager
  - Group AL Committee and local AL Teams

4

Liability-driven investment style and strategic AL mismatch

Two-stage investment process

1. Preparation of
   - Replicating Portfolio (RP) as a reflection of the stochastic characteristics of the liabilities with lowest possible consumption of risk capital
   - Restricted Neutral Position (RNP) takes surplus and restrictions (legal and statutory) into account
     * based for calculation of transfer rates for pricing, etc
   - Benchmark Portfolio (BMP) additionally meets
     * the strategic AL-Mismatch criteria
     * incorporates the risk preference for investments and
     * sets conditions, restrictions and permitted degree of flexibility for the active management of investments

   The BMP is derived by optimizing the risk against the RNP on a long-term horizon and is handed over to asset manager together with the available risk capital

Liability-driven investment style and strategic AL mismatch

Two-stage investment process

2. Preparation of
   - Business Plan (BP) by asset manager
     * with focus on short-dated market forecasts and
     * active Tactical Asset Allocation

   The benchmark portfolio will be used to measure the absolute and relative performance of the asset manager´s active investment management

   Reinsurance business will have priority over active capital management in the planning process

6

Contents

1.) Management of investments: MR's approach

2.) Current Challenges:

a) Understand the liabilities

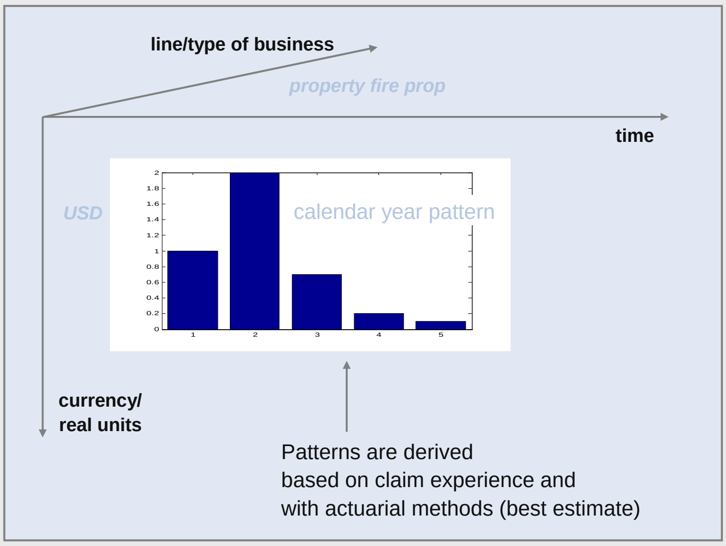
b) Formulate the risk/return preference for AL-Mismatch

c) Optimise the excess return over the Replicating Portfolio

d) Measure the performance of active asset management

7

Understand the liabilites : Modelling insurance claim cash flows – example non-life insurance



Main components of insurance liabilities:

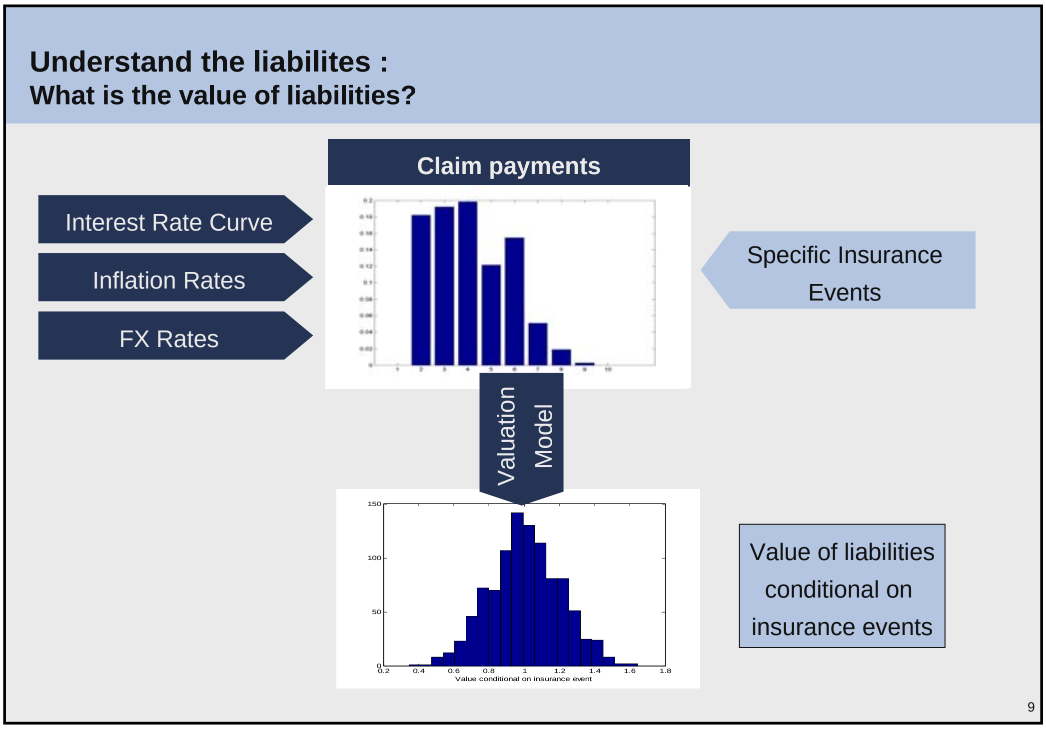
Expected net insurance claim payments – future premiums (et. al. net loss reserve, net unearned premium reserve)

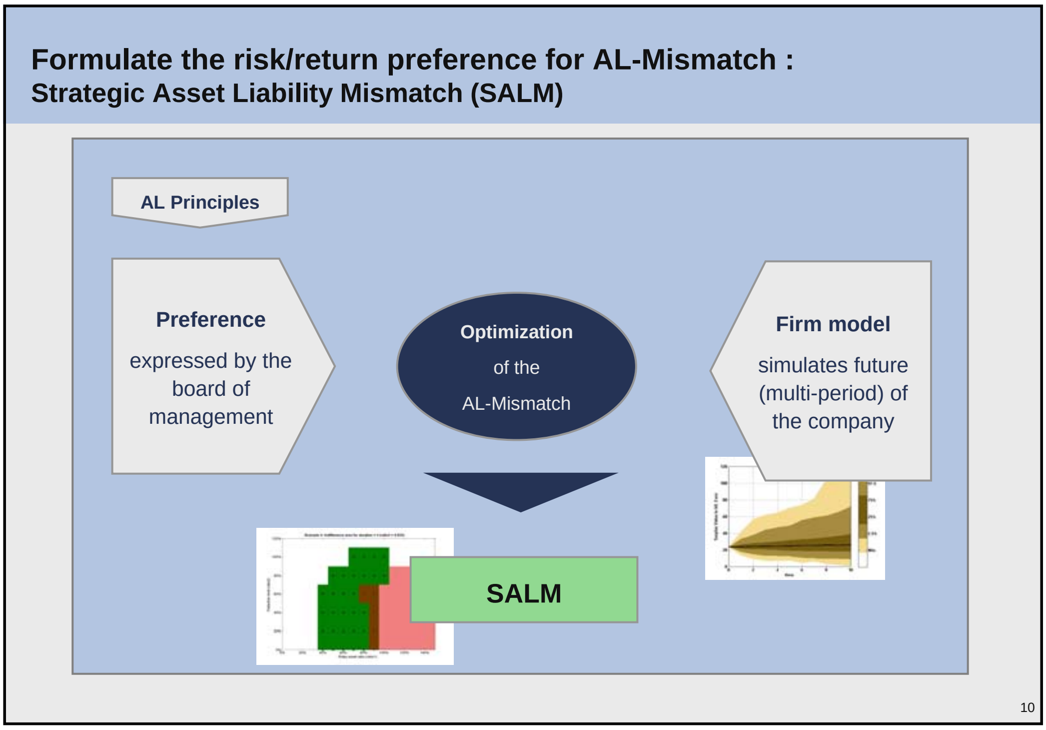
Issued debt

Expenses

Tax

8


Understand the liabilites :
What is the value of liabilities?
Claim payments
Interest Rate Curve
Inflation Rates
FX Rates
Specific Insurance Events
Valuation Model
Value of liabilities conditional on insurance events
Value conditional on insurance event
9


Formulate the risk/return preference for AL-Mismatch :
Strategic Asset Liability Mismatch (SALM)
AL Principles
Preference
expressed by the board of management
Optimization
of the
AL-Mismatch
Firm model
simulates future (multi-period) of the company
SALM
10

Formulate the risk/return preference for AL-Mismatch :
BMP implements guidelines from SALM with further restrictions

SALM Guidelines

- The proposed utility function and the resulting strategic AL-mismatch results in

Risky asset ratio	Protection level	Duration mismatch
X % - Y %	X % - Y %	± X year

- Assumption of one "risky asset"
- Conversion of the above guidelines in
  - AL-mismatch-VaR (1-in-100-year loss) and
  - Maximum Loss
- Credit VaR of RNP is subtracted

Further Guidelines & Restrictions

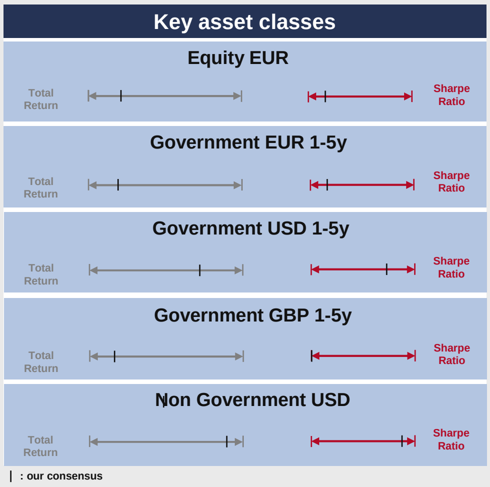
- Working hypotheses: Positioning of BMP at a specific risky asset ratio and protection level
- General Investment Guidelines
- Trigger Handbook
- Limiting the maximum turnover for the whole portfolio to keep effects on balance sheet and P&L in line
- Limit each illiquid asset class (hedge funds, real estate)
- Maximum increase in new holdings with limited experience / track record

→ Restrictions for the legal entities are considered in more detail within the breakdown process

11

Formulate the risk/return preference for AL-Mismatch :
Long term market assumptions mixed using several independent sources

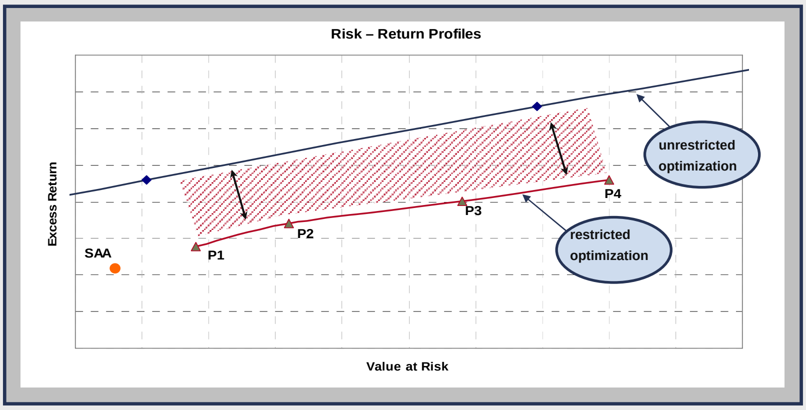
Mean Returns (Total Return)	▪ Barrie & Hibbert ▪ Long-term prognoses of SAA-consultants/ consensus ▪ Long term prognoses of Investment Banks ▪ Long term historic
Return distributions (around mean)	▪ Barrie & Hibbert



→ Best estimates of these have been used complemented with sensitivity analyses to derive conservative return and Sharpe ratio (Return/Risk) numbers

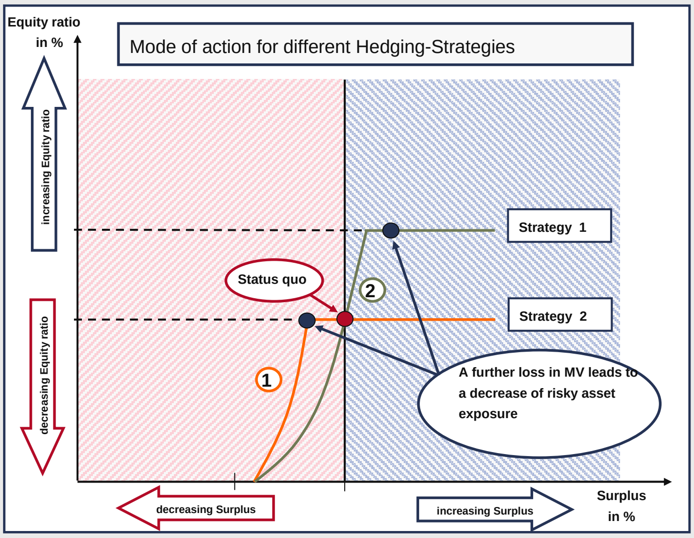
12

Formulate the risk/return preference for AL-Mismatch :
Optimisations generate buy & hold efficient frontiers



13

Formulate the risk/return preference for AL-Mismatch :
Finding the right hedging - strategy

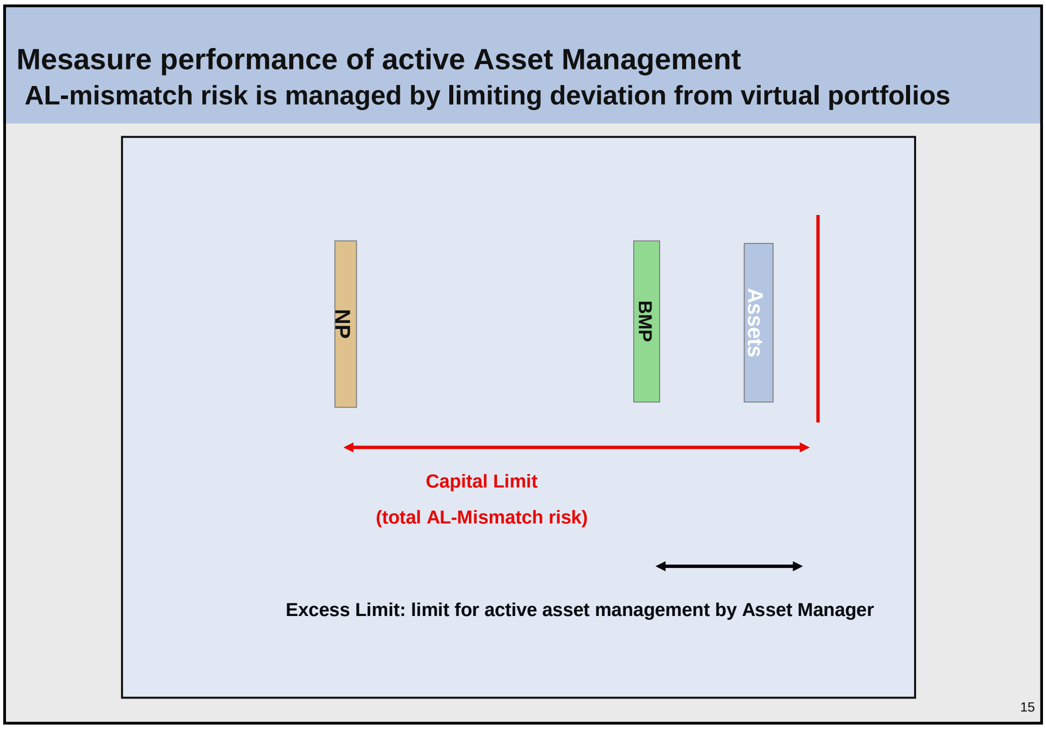


Max Loss € x

1 This strategy would not allow for an increase in equity ratio with increasing surplus. But leaves a minimum loss to happen before protection kicks in and starts to reduce rapidly the risky asset exposure.

2 This strategy would potentially allow for an increase in equity ratio with increasing surplus. But this is offset by an immediate reduction in equity ratio by decreasing surplus

14


Mesasure performance of active Asset Management
AL-mismatch risk is managed by limiting deviation from virtual portfolios
NP
BMP
Assets
Capital Limit
(total AL-Mismatch risk)
Excess Limit: limit for active asset management by Asset Manager
15