Society of Actuaries in Ireland

Risk budgeting using risk based capital and return

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Agenda

- What is risk budgeting?
- Which risks should we consider?
- Which trends do we see?
- Why does old style asset allocation not work?

- How risk based capital budgeting can work
- Examples
- Concluding remarks

What is risk budgeting?

Translation from a text book

Text book?

- Risk budgeting can be defined as the process of analyzing, allocating and deciding whether resources should be allocated to each asset class (or even single asset) towards the goal of shareholder wealth maximization
- Risk budgeting is the process of setting and allocating active (alpha) risk to enhance the returns available from passive management (beta)
- The process of decomposing the aggregate risk of a portfolio into its constituents, using these risk measures to allocate assets, setting limits in terms of these measures, and then using the limits to monitor the asset allocations and portfolio managers is known as risk allocation or risk budgeting

- Allocation of available resources optimizing risk vs. return
- Use risk limits to monitor the allocation

- Main focus on market risk but which risk should we consider?
- What should we use for risk and return? Are there any trends?

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Which risks should we consider?

Approach to meeting management expectations for any of the key risks is the same

Risk	Approach
Underwriting Risk	Optimize to achieve risk-adjusted returns using advanced underwriting and reinsurance programs
Financial Risk	Optimize to achieve risk-adjusted returns via risk optimization
Operational Risk	“Minimize risks”
Business/Strategic Risk	“Minimize risks”

All risks should be considered
We need a consistent framework to compare different types of risk

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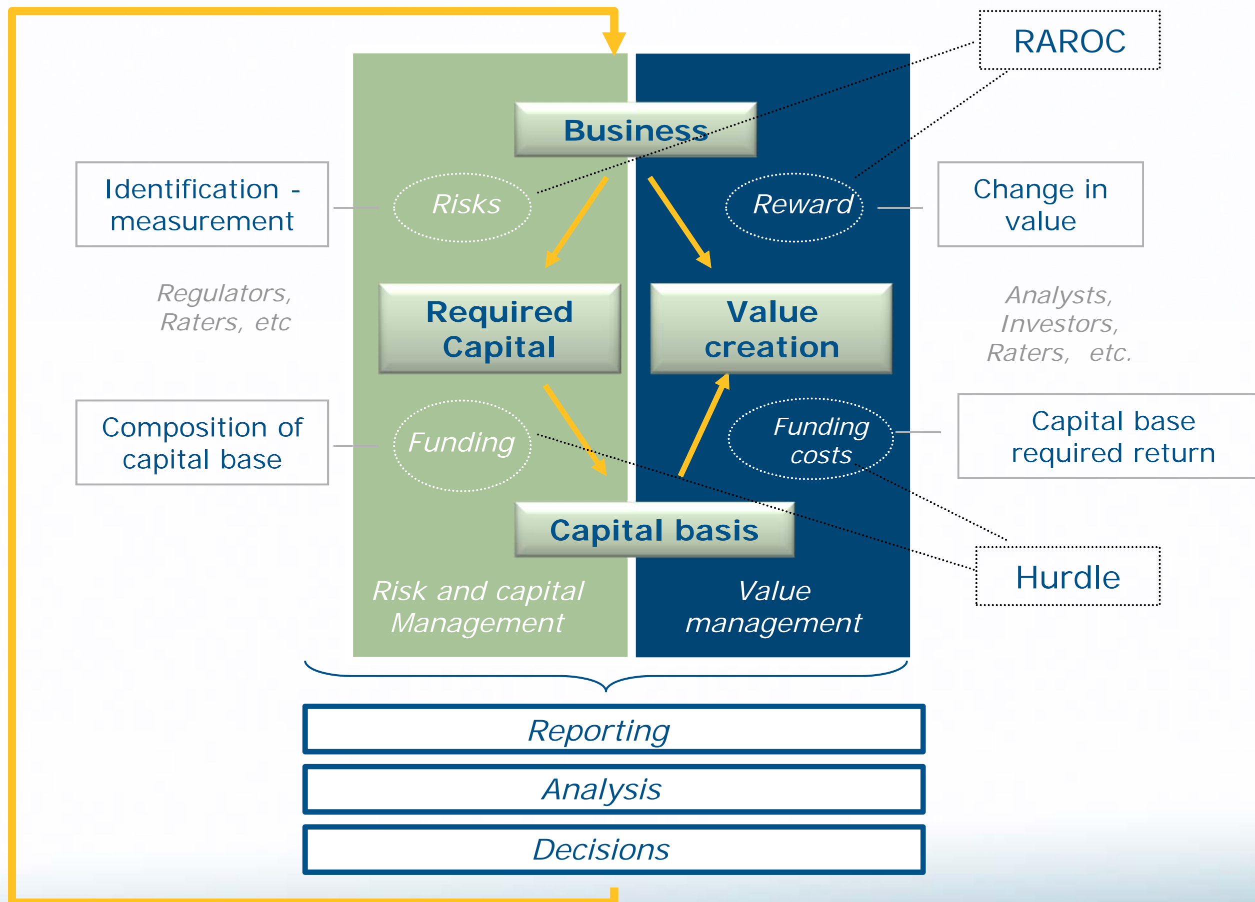
Example: consistent framework

In a consistent framework ‘everything’ is linked:



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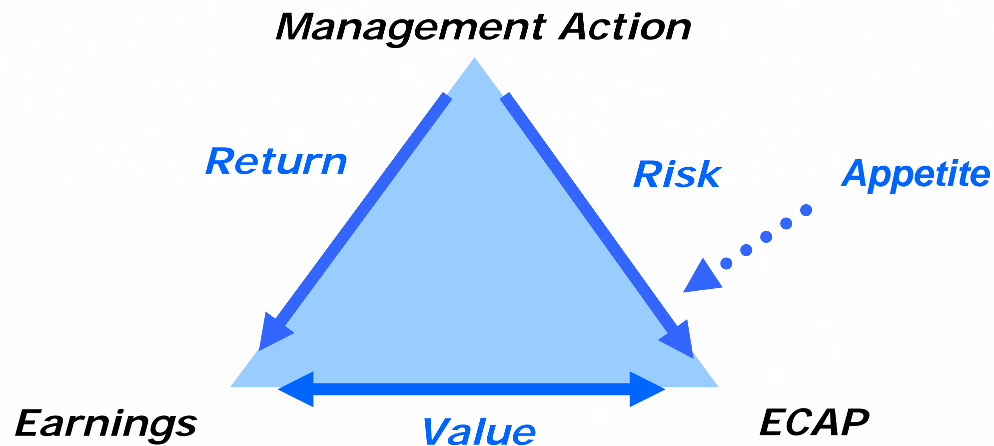
Optimizing risk versus return

Aligning with trends in financial reporting and management

How can we optimize return versus risk with different types of risks?



Using return on capital will align with these trends!

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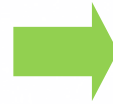
Why old style asset allocation does not work

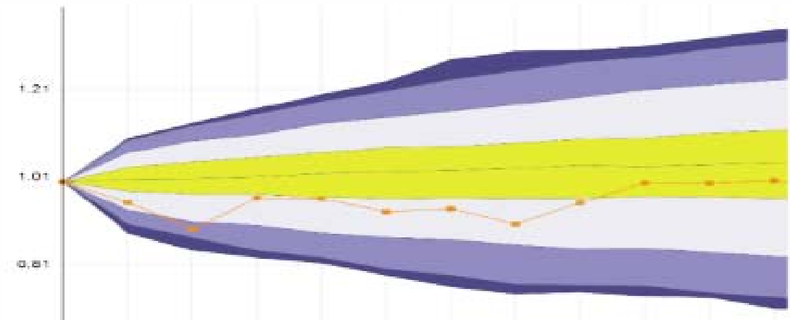
A traditional ALM study

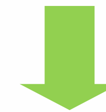
Input for the ALM analysis

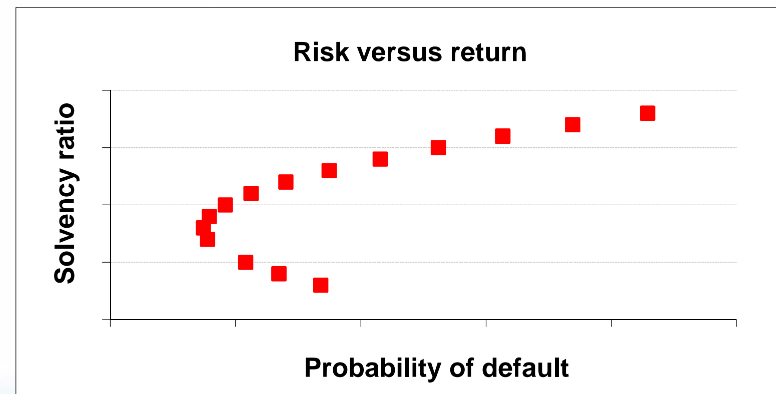
- (Economic) Balance sheet
- Available and Required Capital
- Assumptions on investment returns and correlations for different asset classes
- Risk appetite
- Strategies and economic scenarios



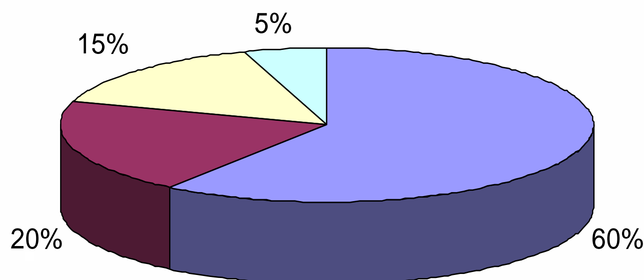
Scenario analysis







Strategic Asset Allocation



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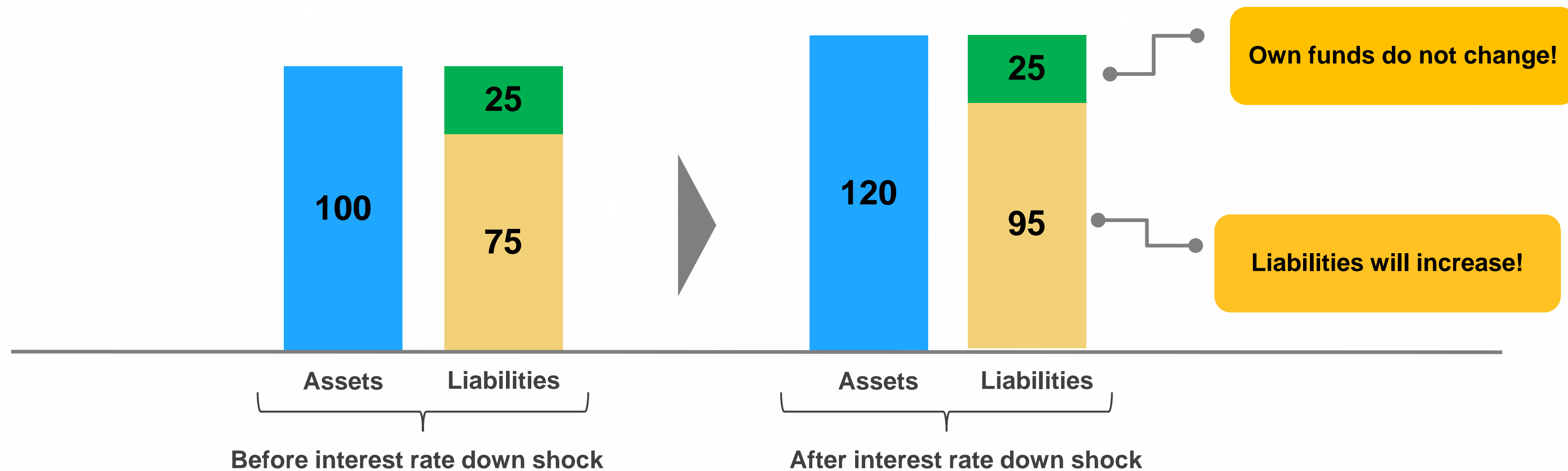
Why old style asset allocation does not work

Example balance sheet after interest rate down shock

Change in assets and liabilities after interest rate down shock



Market Value of Assets
Market Value of Liabilities
Own funds

Available capital does not change

Risk appetite does not change

Based on strategic asset mix equity moves from 15 mln to 18 mln

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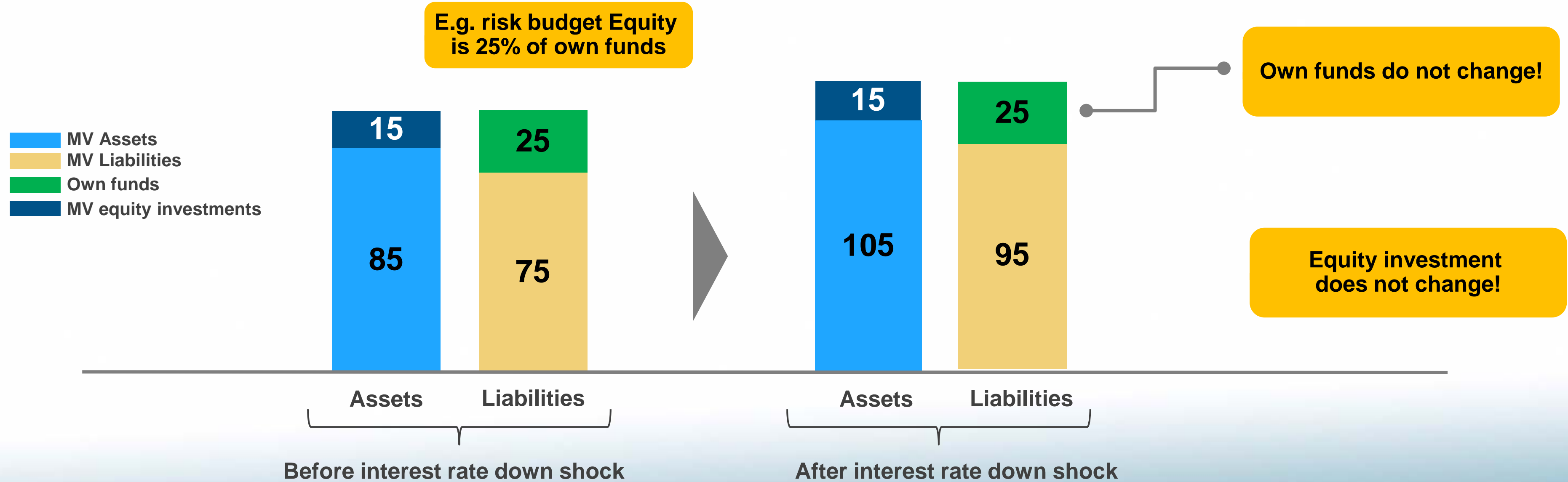
How risk based capital budgeting can work

Example balance sheet after interest rate down shock

Define equity investment as available capital / capital equity risk

When own funds does not change → same available capital
And risk appetite does not change → same equity charge

→ Total investment in equity does not change



Risk budgeting framework

- Define risk appetite for all risks
- Manage your available capital
- Setting risk budgets to different risk categories (market and non market).

- Part of the market risk budget is required for the mismatch related to liabilities.
- Optimize return portfolio
- Short term risk (solvency) and long term goals (continuity)
- Risk tolerance (allowed deviation) is expressed in terms of risk limits

- Within insurance risks considerations are made to assess whether or not to enter reinsurance arrangements and other forms of risk transfer
- Considerations made are based on risk and return for a given risk limit
- Risk limits are monitored

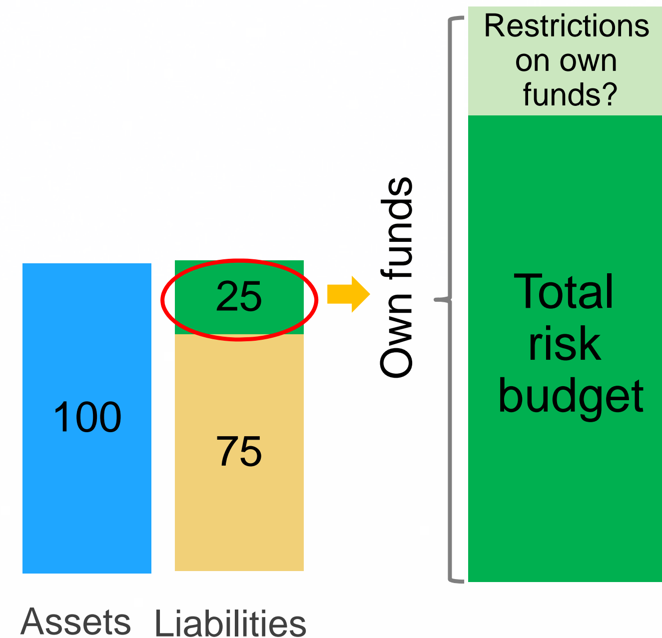
Risk versus return

Risk versus return

Example on how it could work in practice

A cycle consisting of 4 steps

1. **Define risk appetite**
2. **Manage available capital**
3. **Define total risk budget**
4. **Optimize risk and return → Allocate risk budget**



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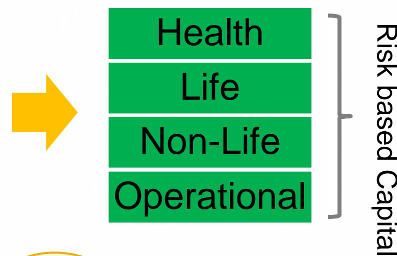
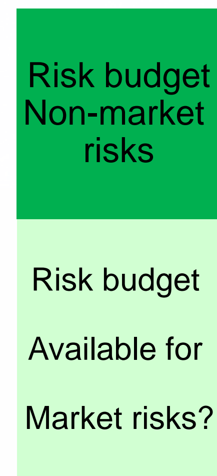
Example: risk budget for non-market risks

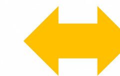
Translate strategies to risk budgets

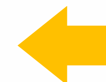
Translate current business + new ideas in risk based capital using risk appetite

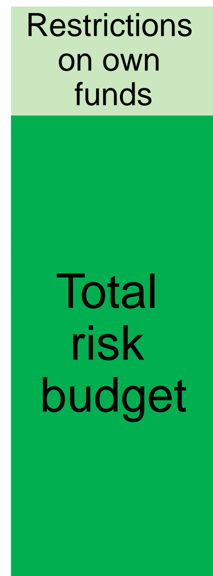




Check and monitor







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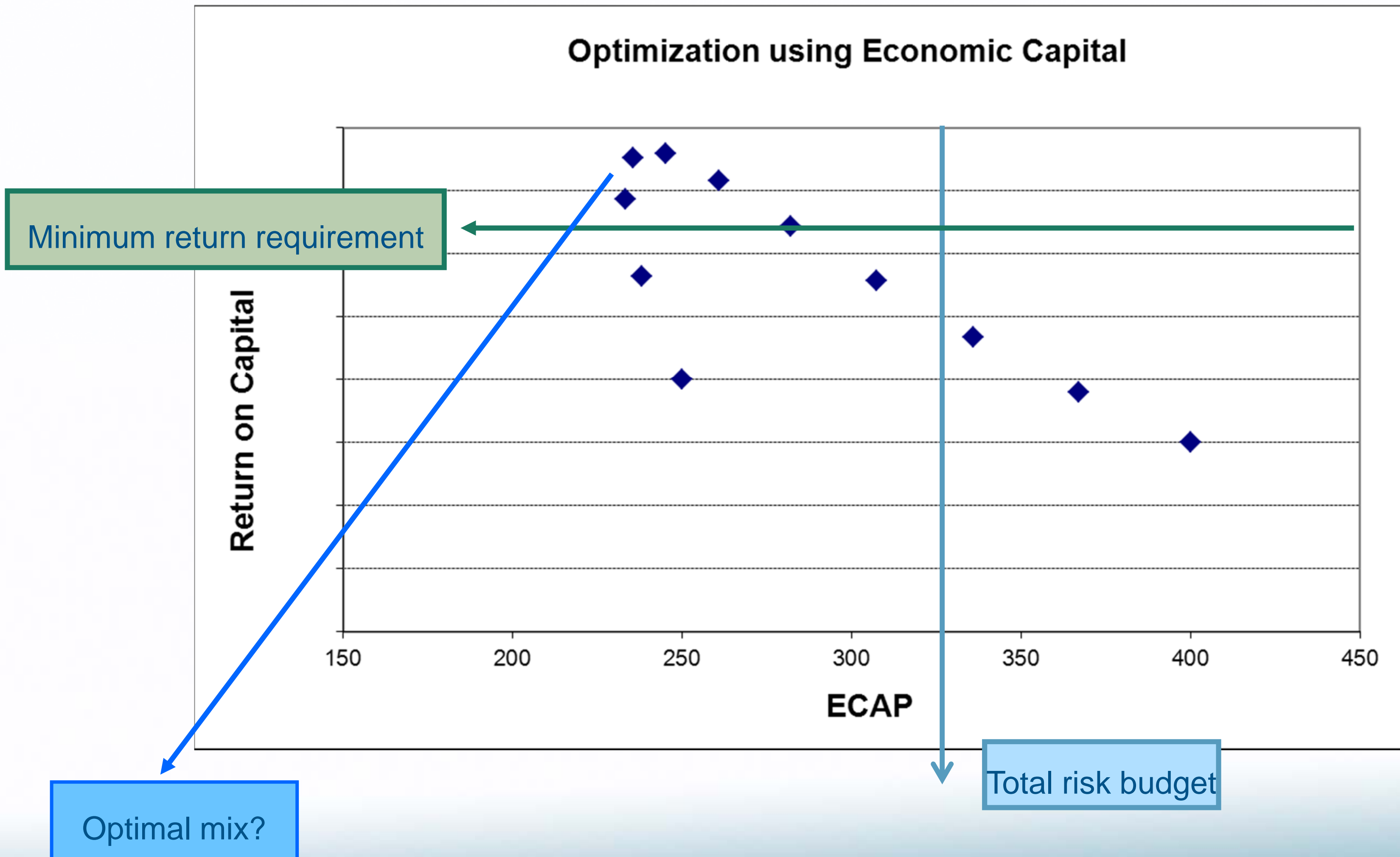
Example: Allocation of budget to market risks

Optimizing using known methods



Recap and concluding remarks

- Traditional asset allocation does not work
- All risks should be taken into account in an optimization, not only market risks!
- Economic Capital is a measure to compare different types of risk
- Long & short term risk and return can and should be analysed
- More criteria to analyse management actions other than expected return and required capital, e.g.
  - Time to implement
  - Flexibility to withdraw or amplify
  - Availability of actions (also in stress scenario)
  - Volatility of P&L
- Create Management buy in, they are used to old style asset allocation
- Solvency II is approaching (?), this is the time to implement!

Questions?

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