



# Strategic and Tactical ALM in an Insurance Company





# Agenda

- 1. Introduction**
2. Risk management and ALM
3. Strategic and tactical asset allocation
4. Summary



# Introduction – Yesterday's agenda

- Overview of insurance business
- Assets and liabilities
- Economic view vs. accounting view
- Risk management
- Economic risk capital
- Capital adequacy



# Introduction – Today's agenda

- ALM as part of integrated risk management
- Strategic and tactical asset allocation
- ALM processes



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# Risk management and ALM

- ALM must be embedded in an enterprise-wide and integrated risk management
- ALM processes must be in line with risk management processes
- Risk management is a prerequisite for ALM
- Recall main principles of risk management

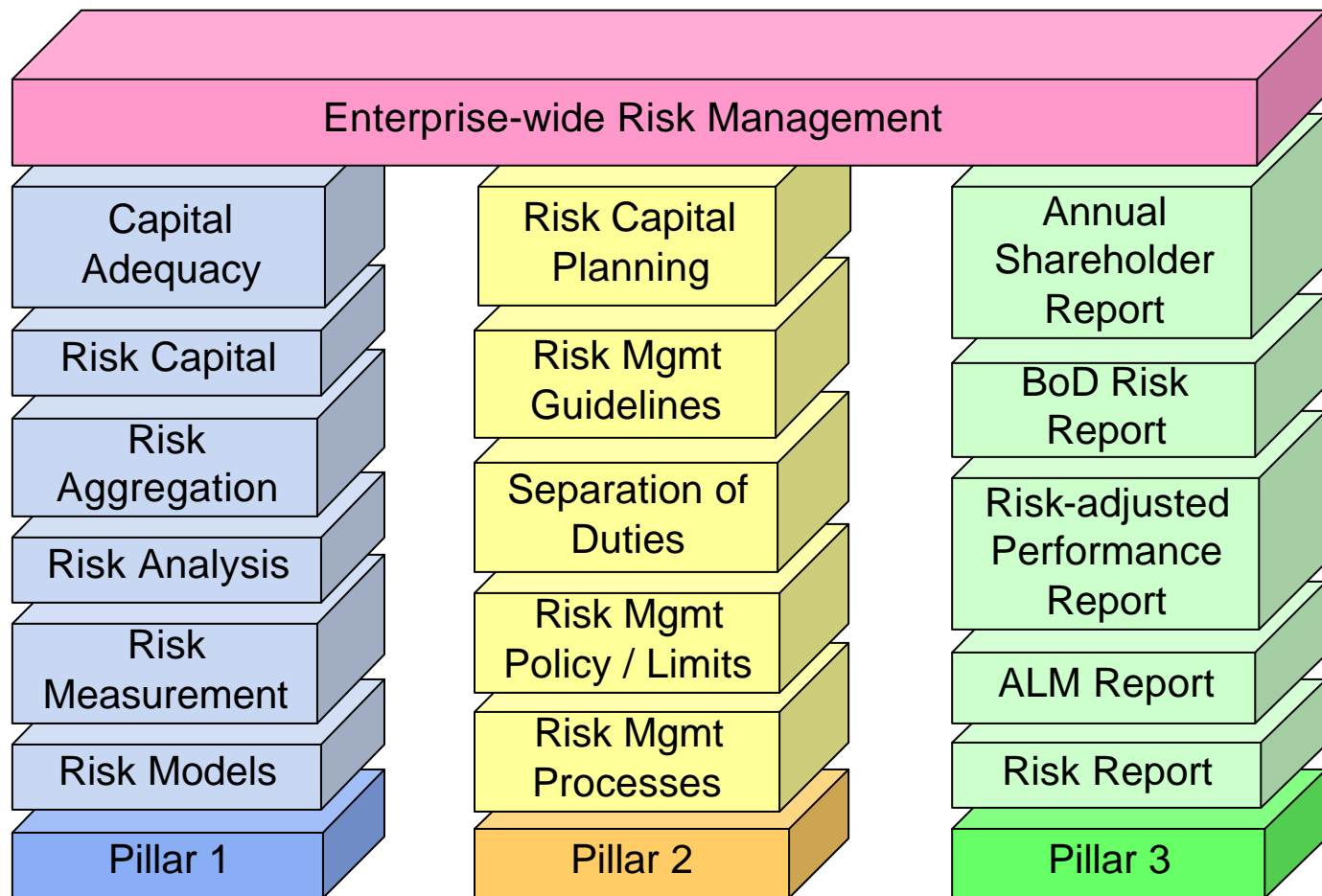


# Risk management philosophy: The three pillars

- Pillar 1 - quantitative risk measurement
  - systematic determination of total risk and the contributions of individual risk sources
  
- Pillar 2 - clearly defined risk management processes, incl. organisation as well as roles and responsibilities
  - common understanding of risk management function and basis for implementing and monitoring risk management policies
  
- Pillar 3 - transparency, which leads to proper behaviour, promotes mutual understanding, trust, and discipline in taking risks
  - confidence in the risk management organisation



# The three pillars (illustrative)



Quantitative Risk Measurement

Processes, Roles, Responsibilities

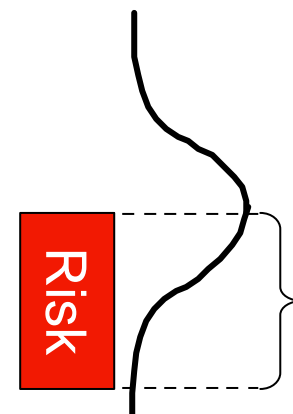
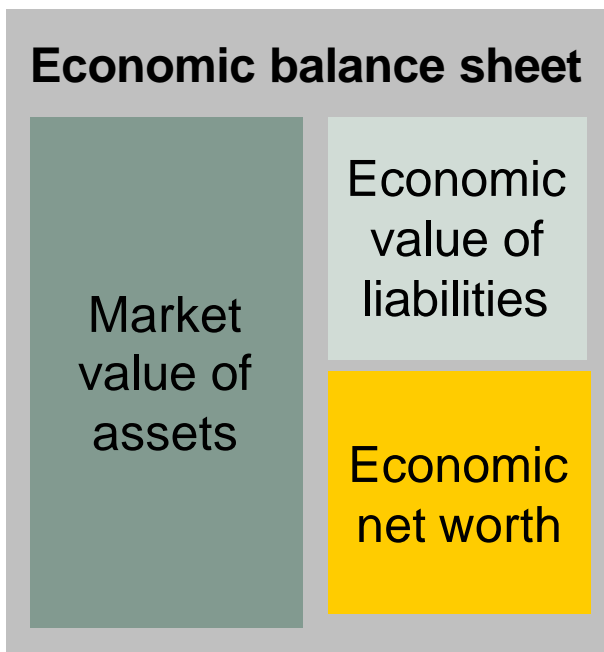
Transparency





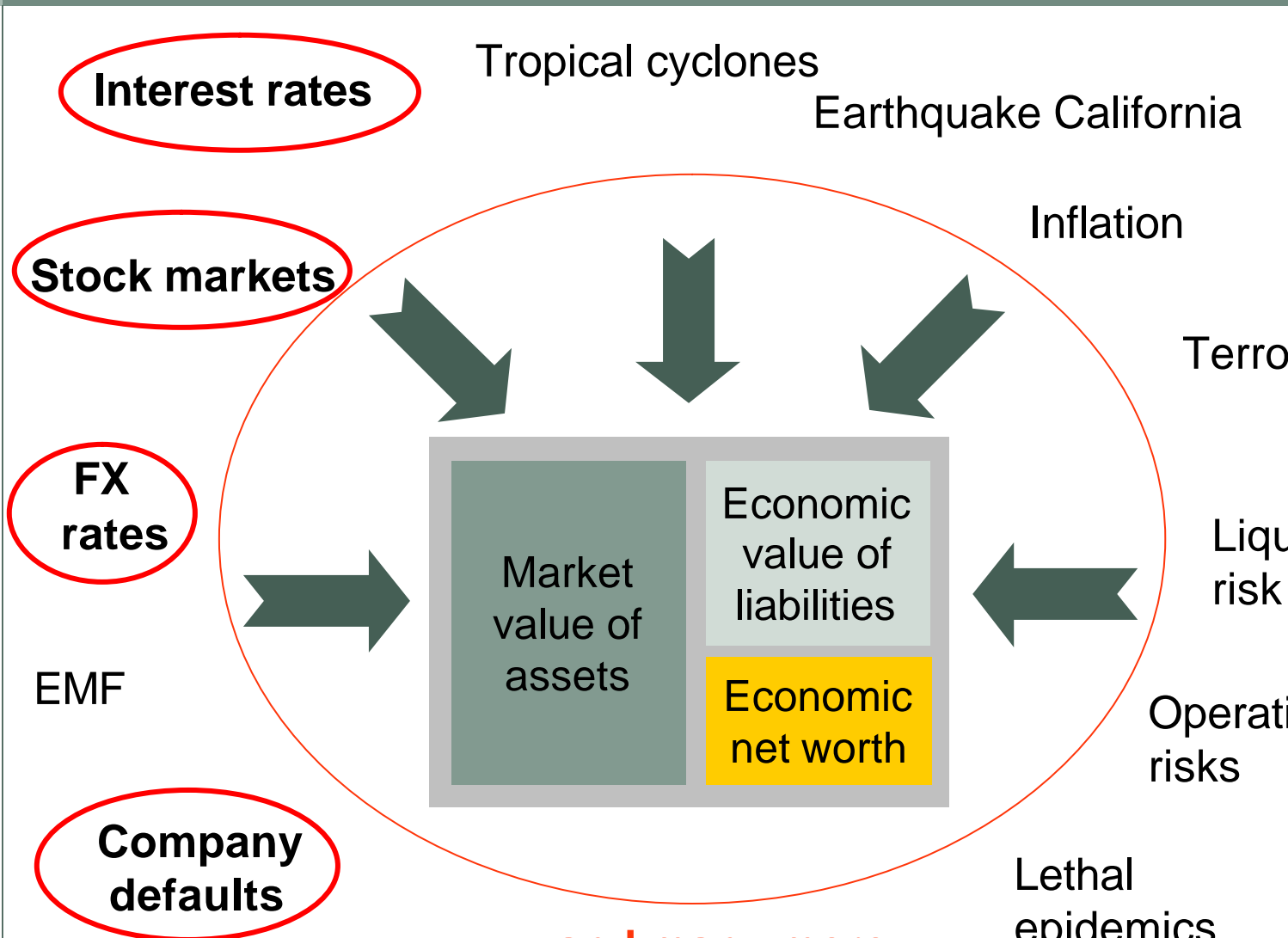
# Risk measurement

- Risk is measured as unexpected loss of economic net worth within a given confidence level and time period
- Assets and liabilities are affected in various ways by the individual risk factors





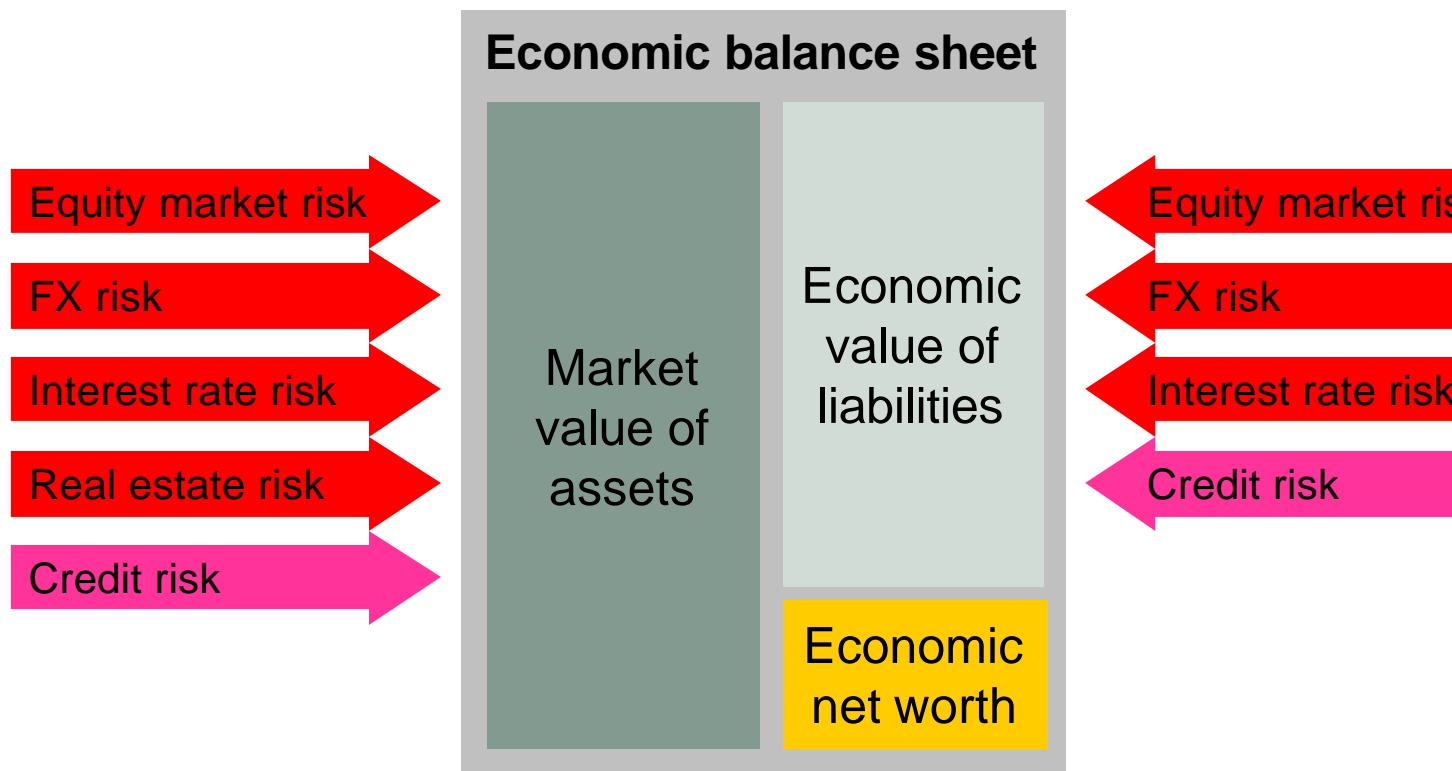
# Risk identification of ALM relevant risks





# Financial market risks

- Financial market (and credit) risks typically affect both sides of the economic balance sheet





# Gap analysis – Equity market exposure

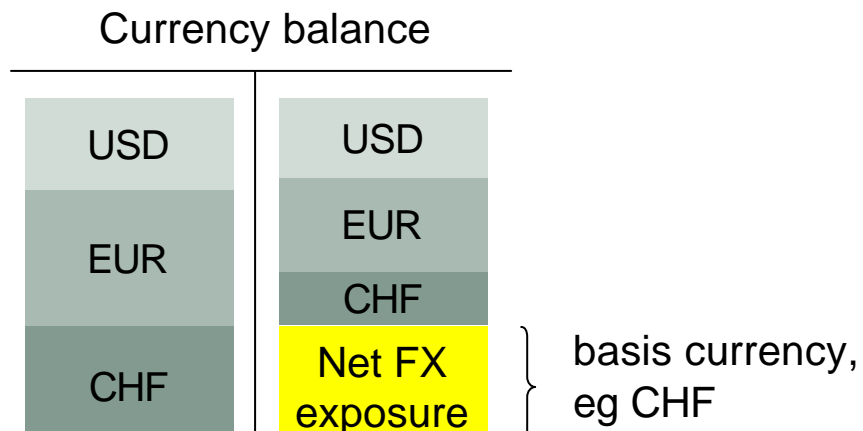
- Equity market exposure on the asset side
  - shares and participations
  - derivatives
  - convertibles
  - others
  
- Equity market exposure on the liability side
  - equity options granted to policyholders
  - GMDB (guaranteed minimum death benefit)
  - profit sharing business
  - others



# Gap analysis – FX exposure

- FX exposure on the asset side
  - assets are denominated in various currencies
  - FX derivatives
  
- FX exposure on the liability side
  - replicating portfolio for various currencies
  - debt issued in various currencies

- FX balance





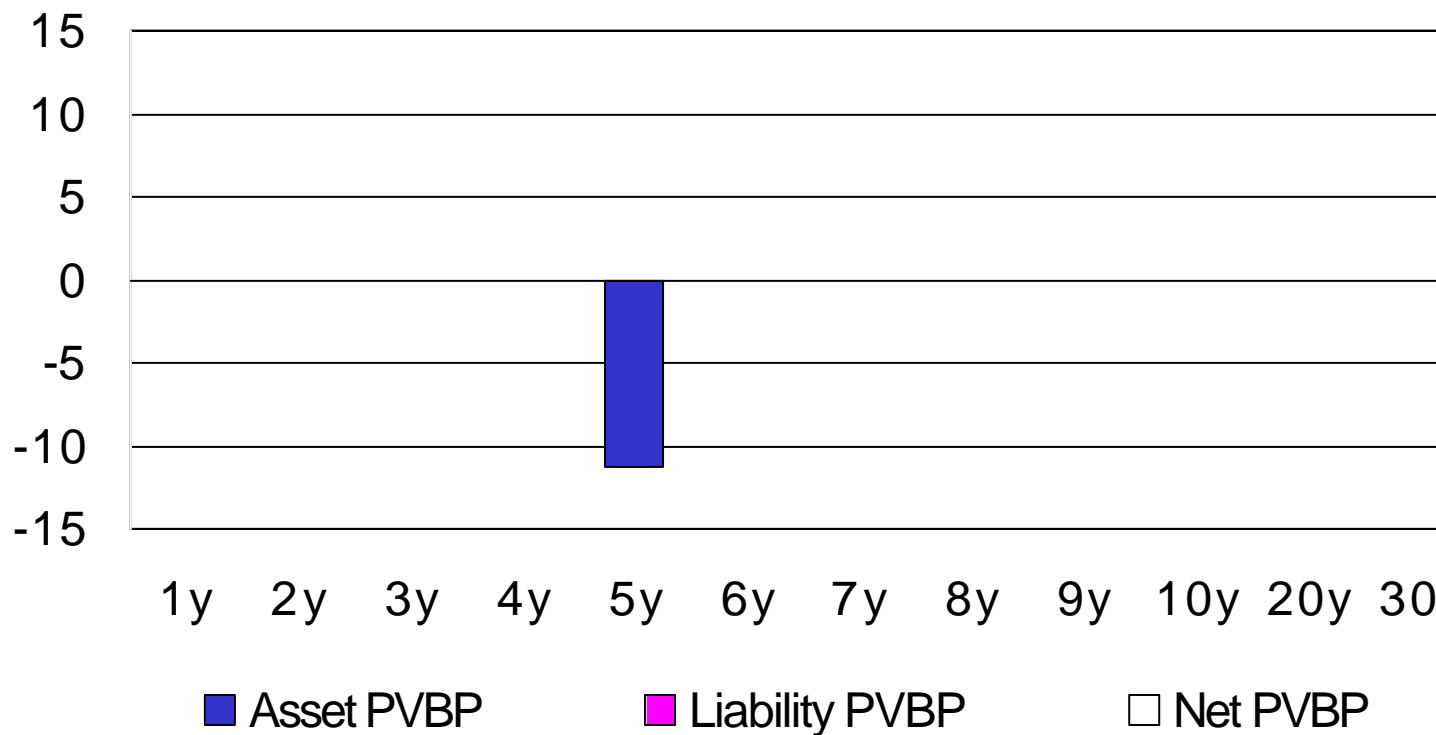
# Gap analysis – Interest rate exposure

- Interest rate exposure on the asset side
  - fixed income securities
  - interest rate derivatives
  
- Interest rate exposure on the liability side
  - discounting of expected cash flows
  - embedded options (early cancellation, inflation, etc)
  
- Analysis of interest rate sensitivity of assets and liabilities
  - duration
  - parallel yield curve shifts
  - key rate duration or PVBP by time bucket (price value of a basis point)



# Gap analysis – PVBP by time bucket

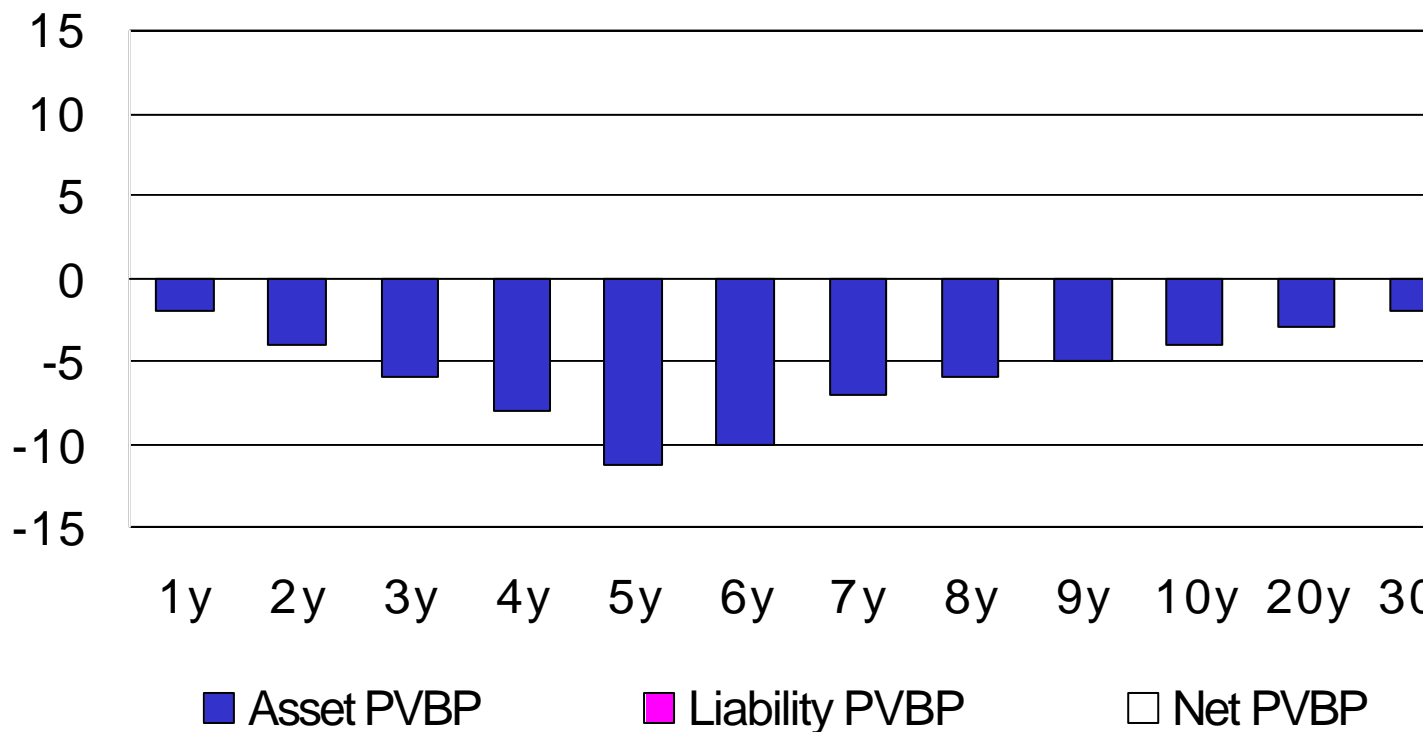
PVBP of a 5 year zero bond with nominal 30'000 ~ -11.2  
(assuming 5% interest rate)





# Gap analysis – PVBP by time bucket

PVBP by time bucket of a bond portfolio with maturities up to 30 years

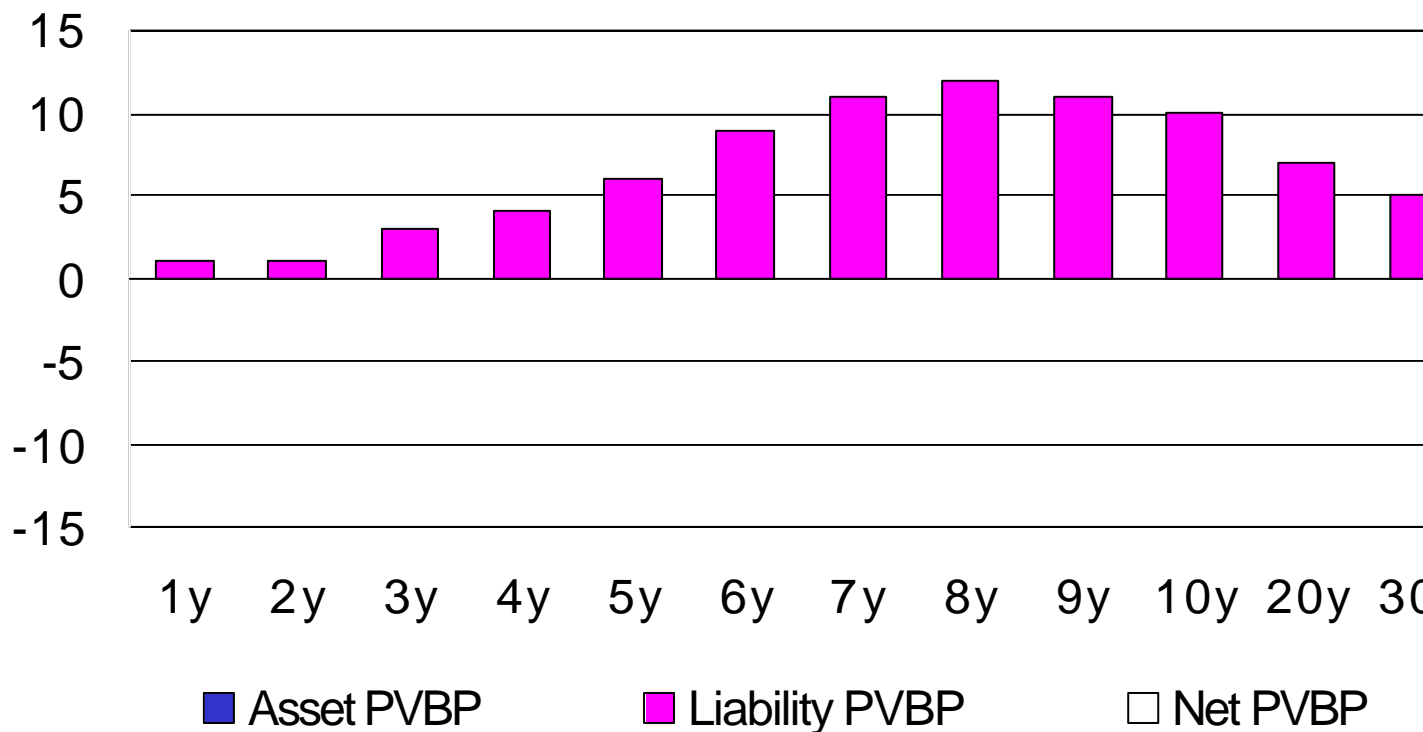






# Gap analysis – PVBP by time bucket

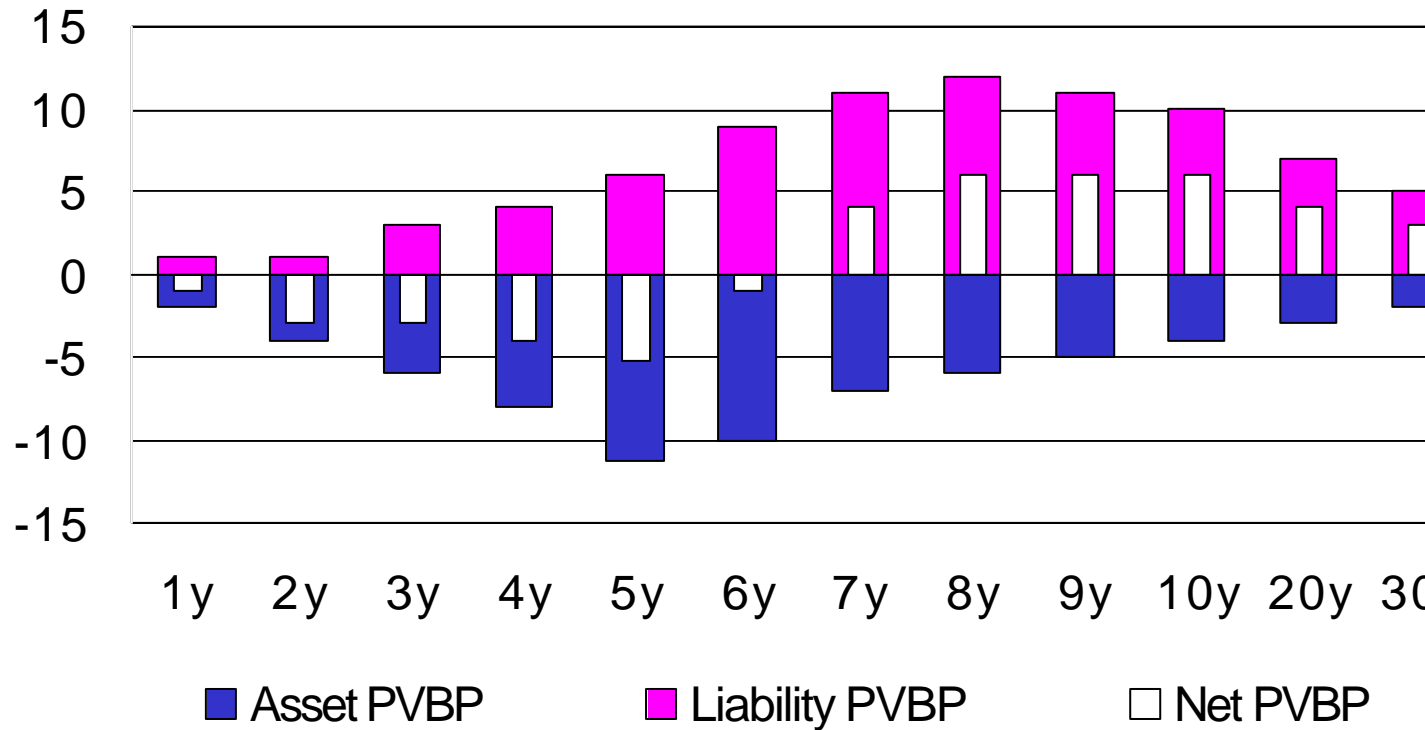
PVBP by time bucket of a replicating portfolio of insurance liabilities with cash flows up to 30 years





# Gap analysis – PVBP by time bucket

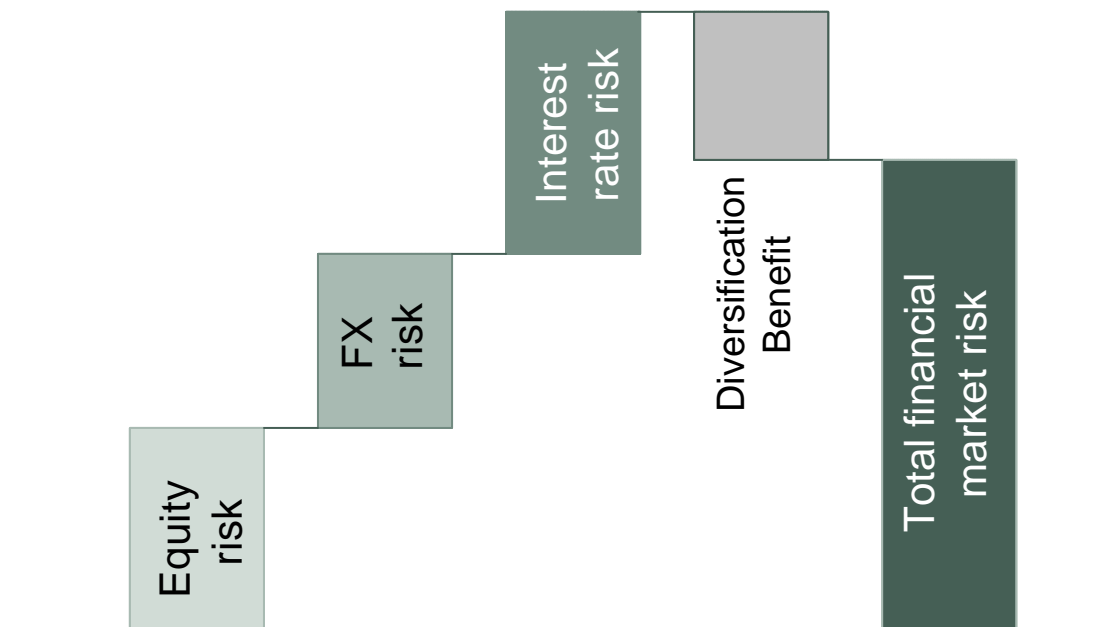
Net PVBP by time bucket





# Financial market risks

- Financial market risk measures the potential economic losses from adverse changes of the underlying financial market risk factors
- This is an essential ingredient for ALM





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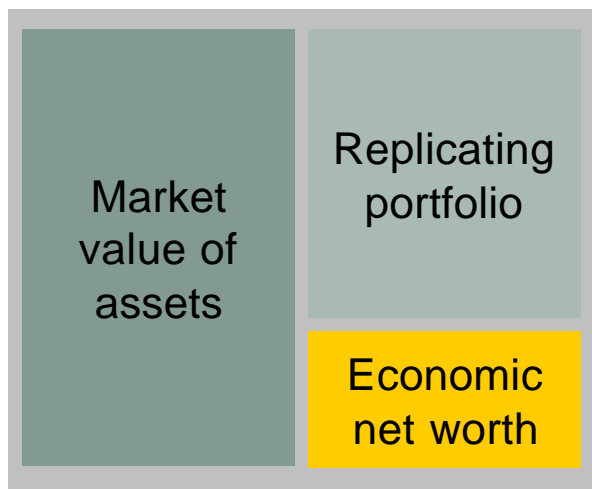
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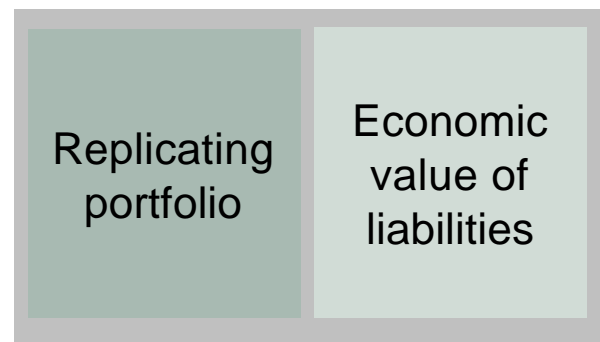
# Step 1

## Replicating portfolio

- Separation of insurance operations and investment operations
- Separation of financial market risks and insurance risks



Leveraged investment fund



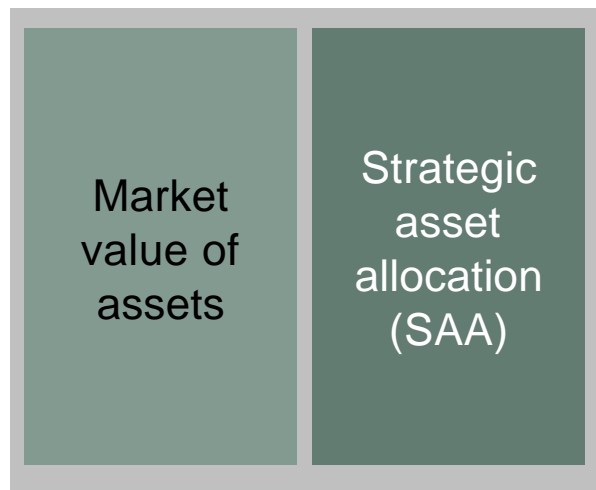
Insurance operations



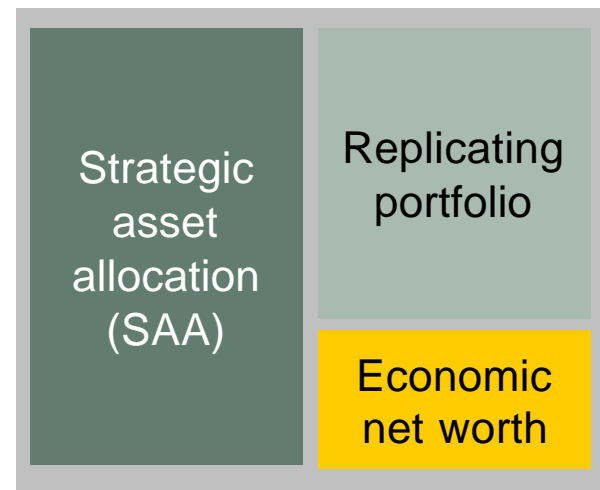
# Step 2

## Strategic asset allocation

- Separation of strategic risks and non-strategic risks



Non-strategic risks



Strategic risks



# SAA objectives

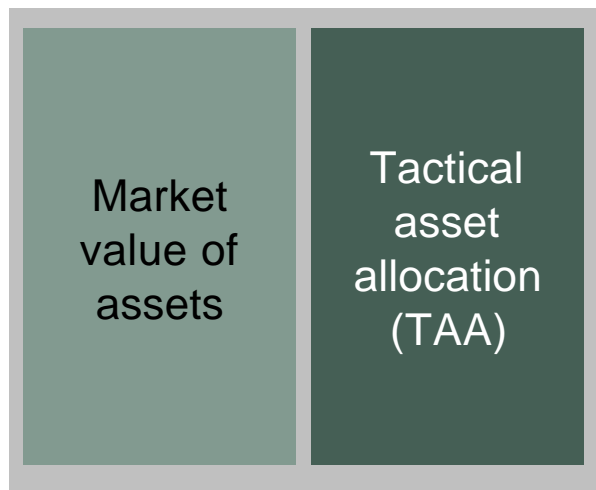
- The SAA defines the strategic risks relative to the replicating portfolio
- The SAA is the benchmark for the asset management operation
- SAA has a long term perspective
- Exposure and/or risk limits must be set in order to control the strategic as well as the non-strategic risks
- The SAA defines the risk appetite
- The SAA is an important capacity and risk steering tool



# Step 3

## Tactical asset allocation

- Separation of short term and longer term asset management views and decisions



Short term view



Longer term view



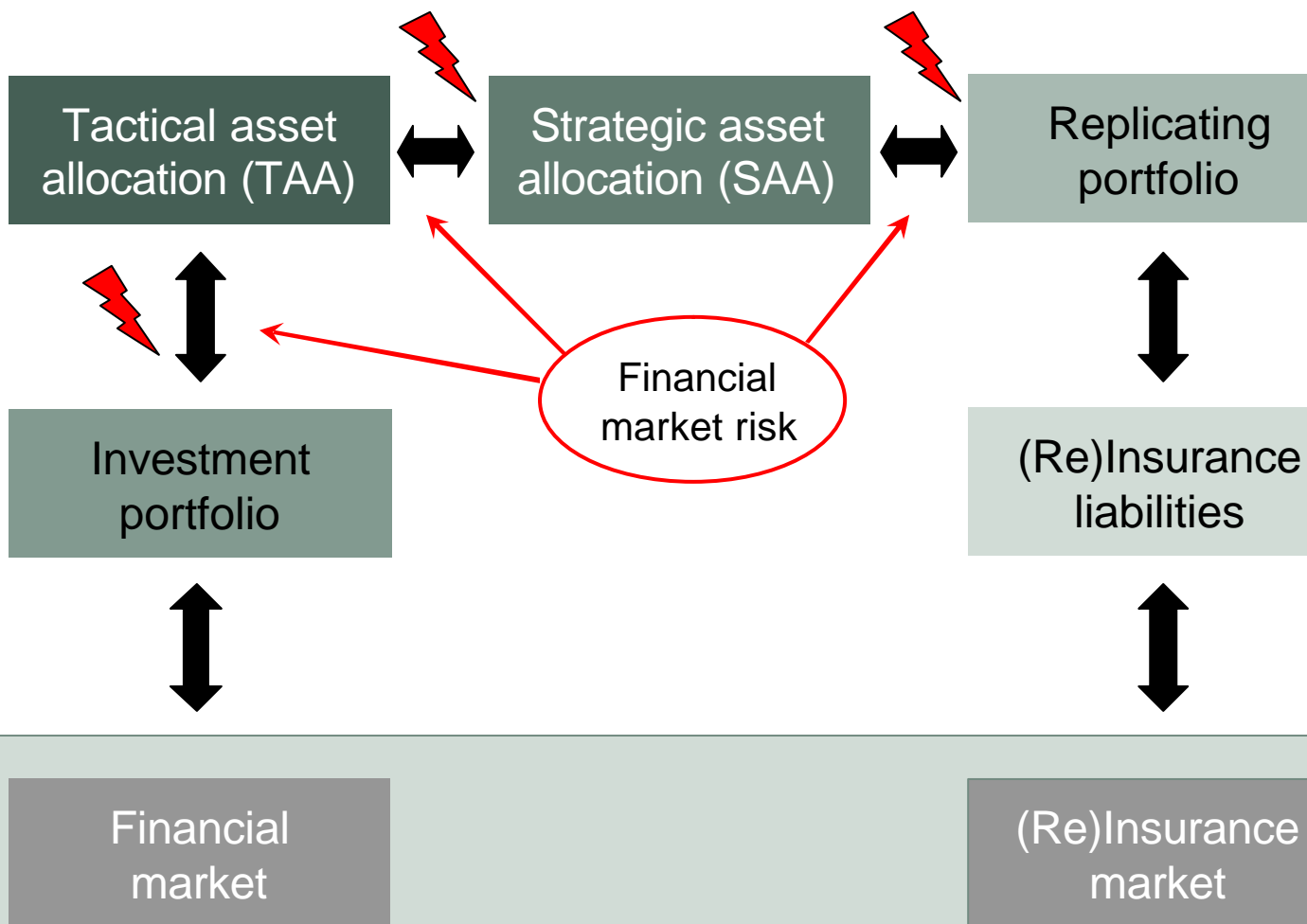


# Purpose of the TAA

- The TAA represents a short term asset management view
- Exposure and/or risk limits must be set in order to control the individual risks
- The TAA can be obtained by means of efficient frontier analysis

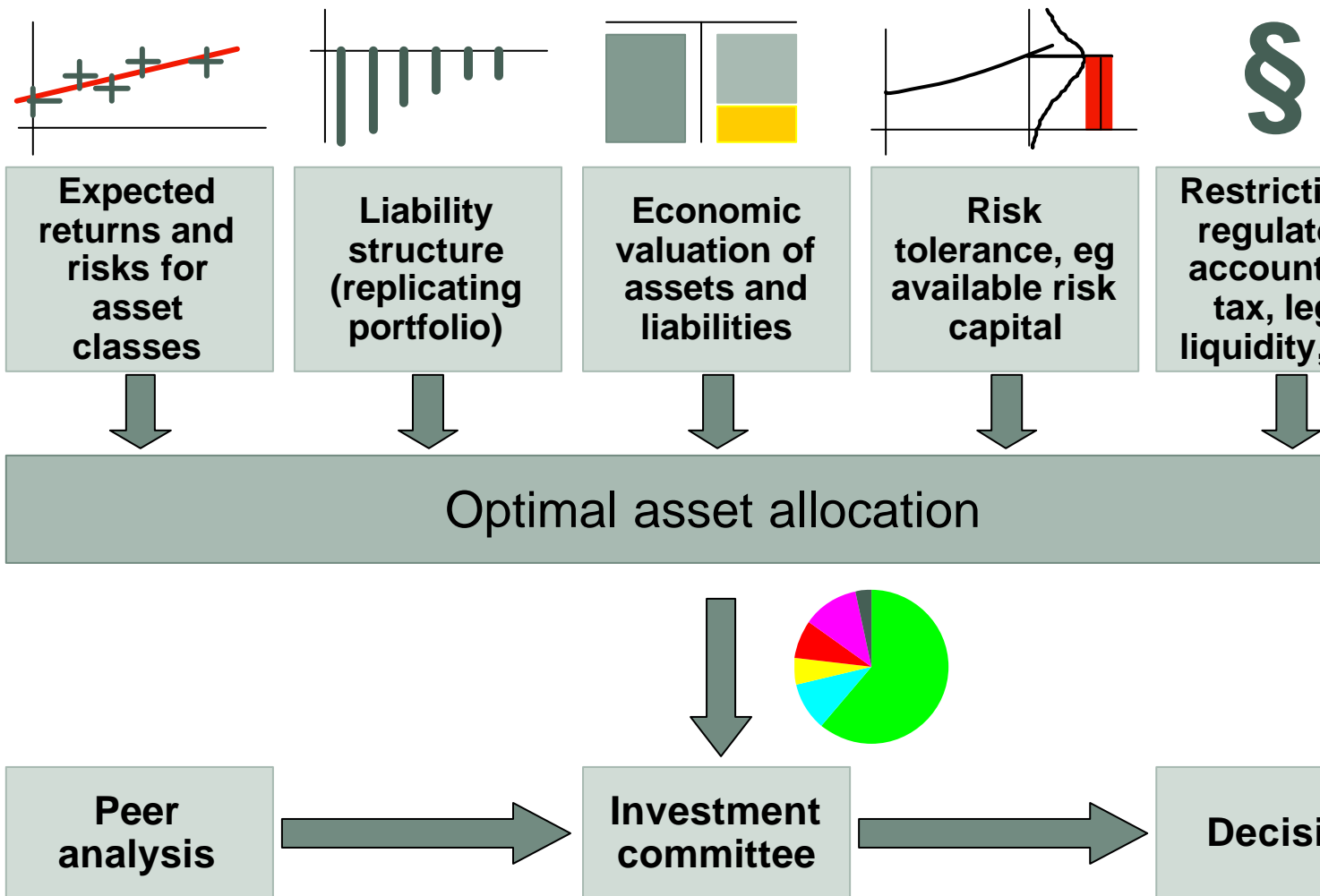


# ALM decomposition



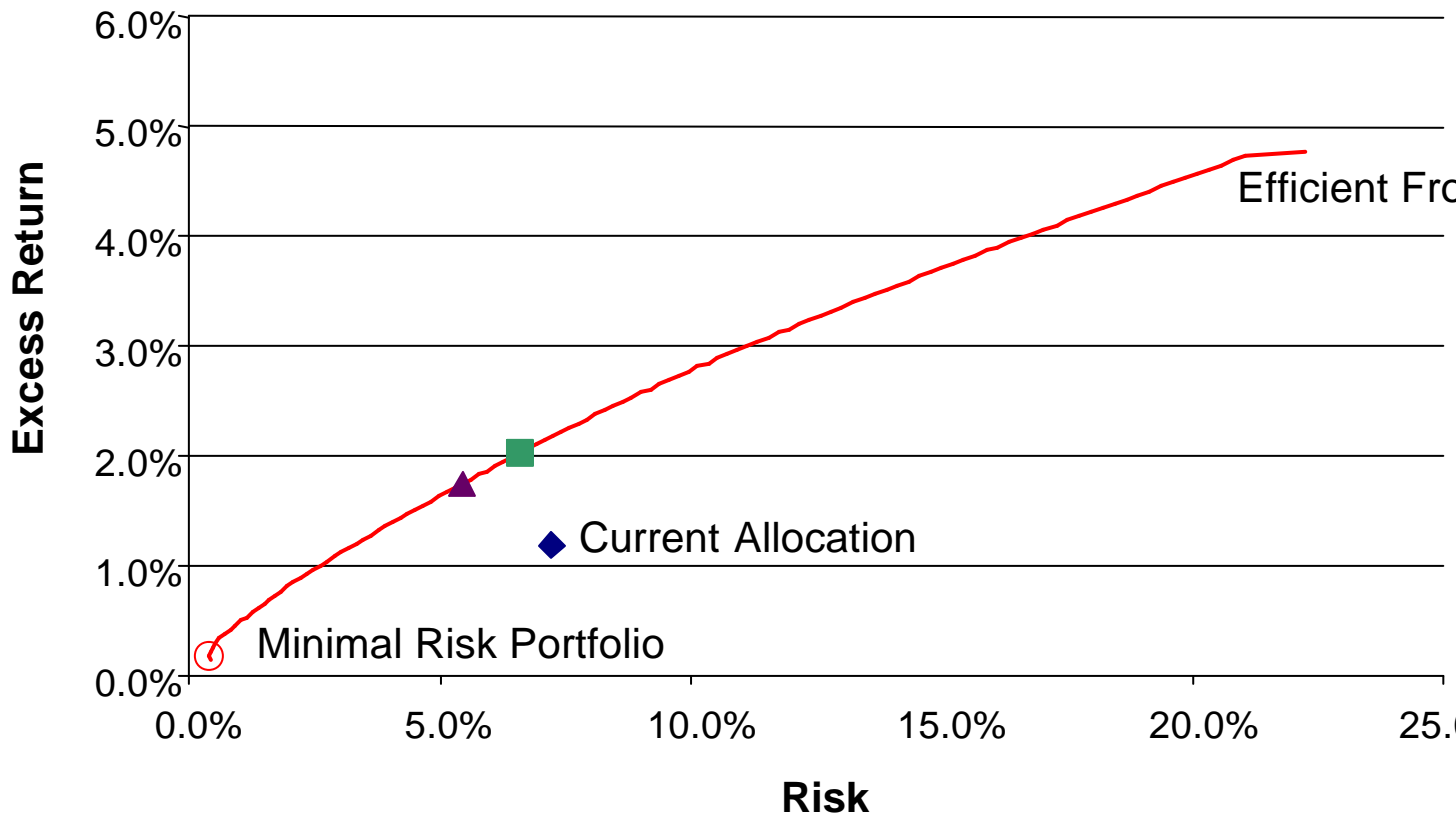


# Optimal asset allocation





# Efficient frontier analysis

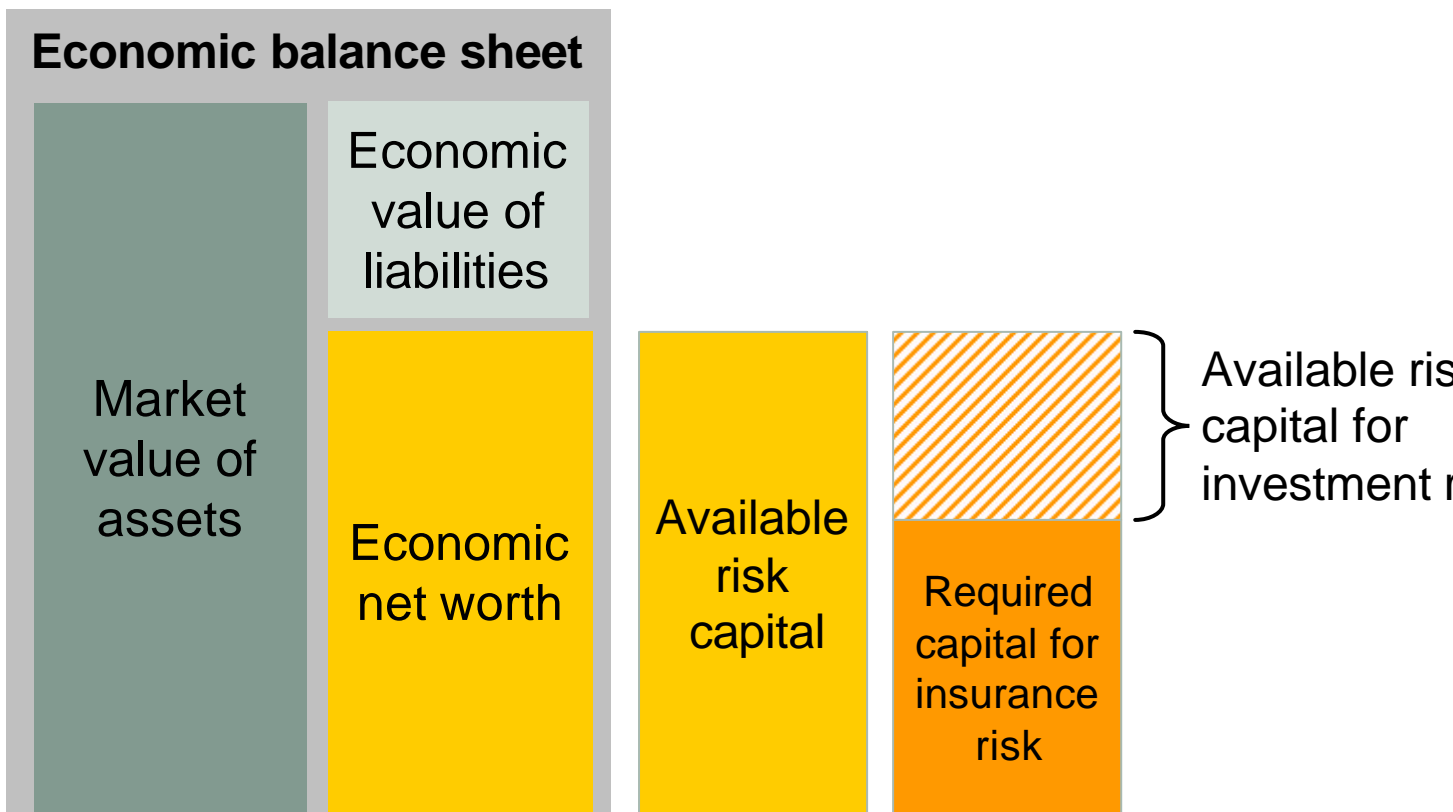


- ◆ Current Allocation
- 99% Confidence
- ▲ 99.5% Confidence



# Risk tolerance for investment risks

- Available risk capacity for investment risk dependent on risk capital used for underwriting activities





# ALM principles

- Transparent process
- Systematic approach
- Segregation of duties
- Informed investment decisions
- Optimized risk return profile
- Reduced complexity through decomposition



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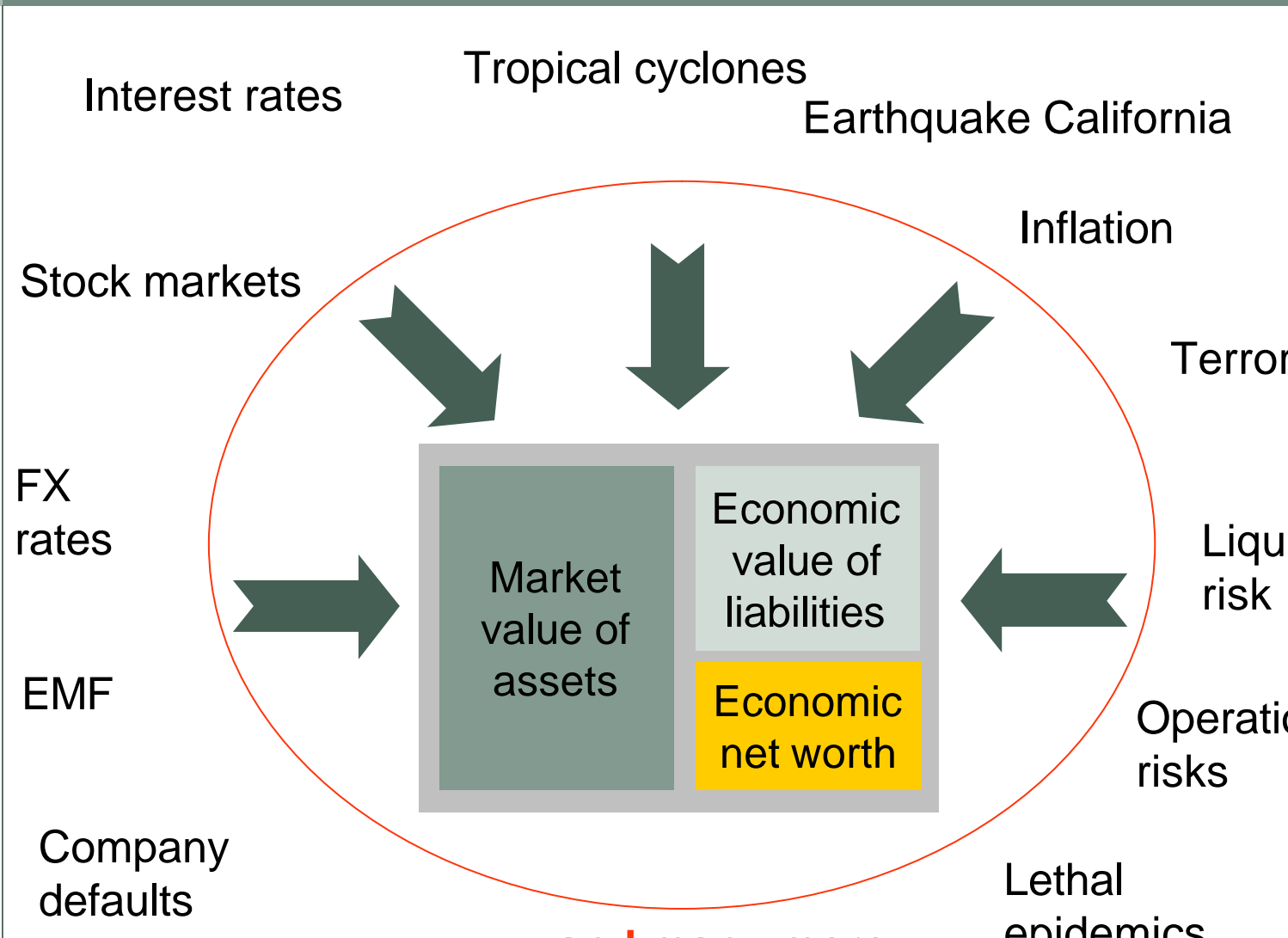
# ALM summary

- ALM must be based on an economic view
- Separation of underwriting and investment activities
- Strategic and tactical asset allocations are part of a transparent and efficient ALM process
- Risk capacity for investment risks depends on underwriting risks
- ALM must be embedded in an integrated enterprise-wide risk management



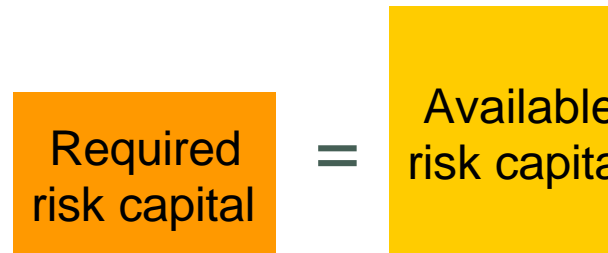
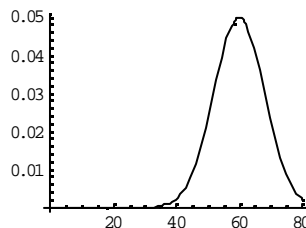
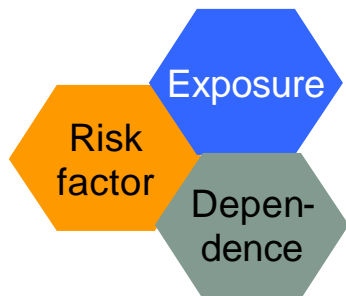


# Risk identification





# Risk quantification





# Risk control



## **Risk Management**

- Risk measurement
- Hedging
- Reinsurance

## **Capital Management**

- Capital adequacy from different views
- Capital structure
- Physical capital allocation

## **Business Management**

- Capacity planning
- Resource planning
- Strategic asset allocation
- Target setting
- Performance measurement



# Summary of enterprise-wide risk management

- Enterprise-wide and integrated risk management deals with all risks the company is either consciously taking or involuntarily facing
- Risk policy, risk management processes and quantitative risk models are building blocks for the implementation of a suitable integrated risk management framework ...
- ... but are only effective if the “human factor” is taken into account. Therefore it is crucial that
  - an enterprise-wide risk and knowledge culture is backed by the Board of Directors, the CEO and the Executive Board and through the support of formal and informal networks



# Strategic and Tactical ALM in an Insurance Company

