

Swiss Re



Economic Value Management (EVM)

CAA Annual Meeting

December 4, 2008

Mayur Shah



Today's agenda

- **Welcome and introduction**
- **Basic concepts of a Reporting Framework**
- **EVM methodology**
- **Summary**

- **Questions & answers**



Today's agenda

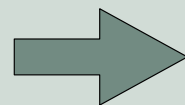
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The need for reserving

- The need for reserving arises because expected future contractual outgo (claims, commissions, expenses) exceeds projected contractual income (premiums).
- In other words, where the pattern of future inflows and outflows are different, it may be necessary to hold back a reserve now to meet future outgo in respect of contracts already on the books.
- Reserving also allows for profit emergence to be spread over the duration of the underlying contracts. (However, Statutory, GAAP and EV/EVM do this differently.)

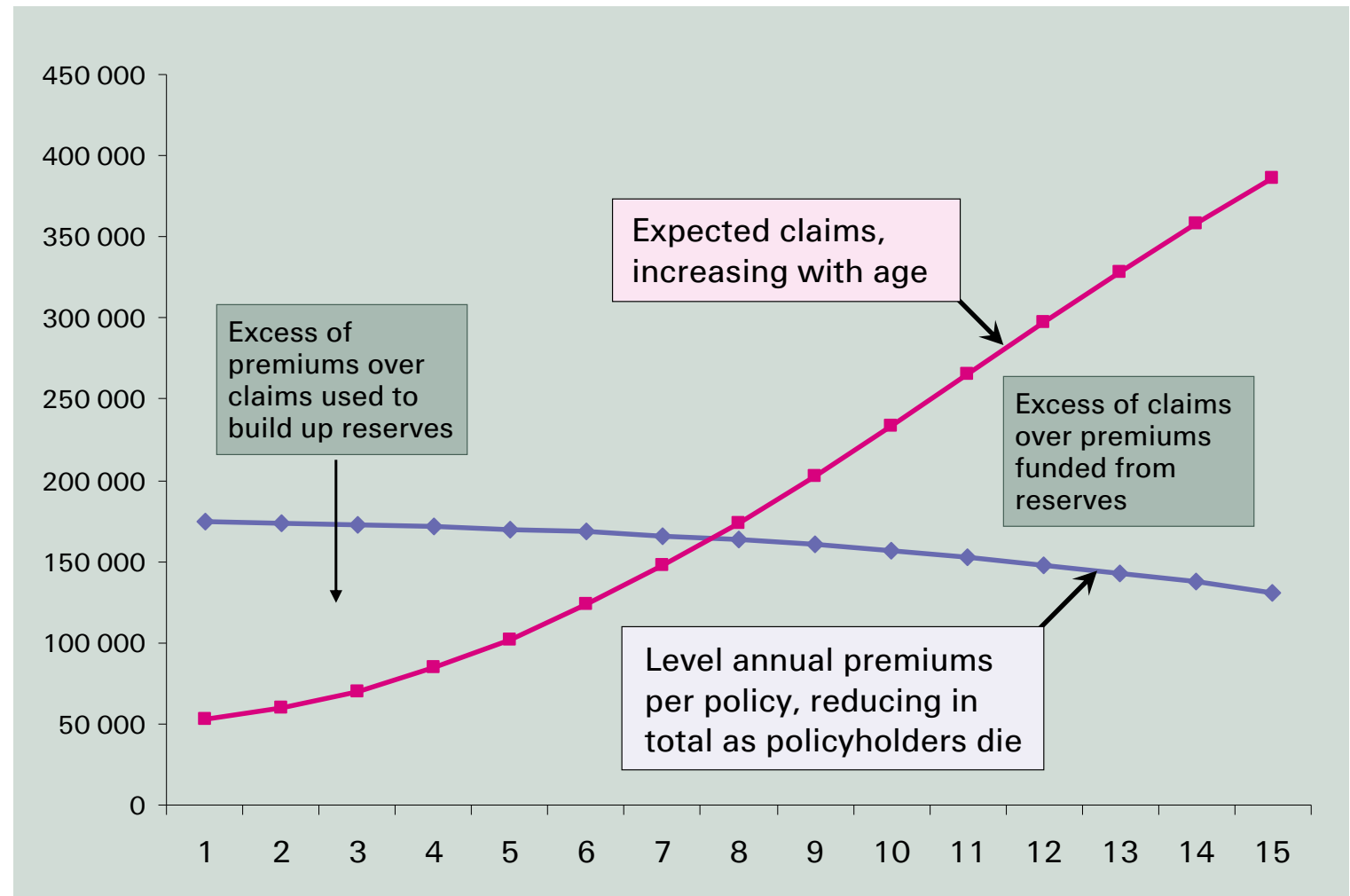


The essence of L&H reserving is probably best illustrated by means of a simple example, which is set out in the next few slides.



Portfolio projection: Cash flows for the 15 year level term policy

Lapses have been ignored. Lapse would reduce both premiums and claims





Reserving in practice: The different frameworks

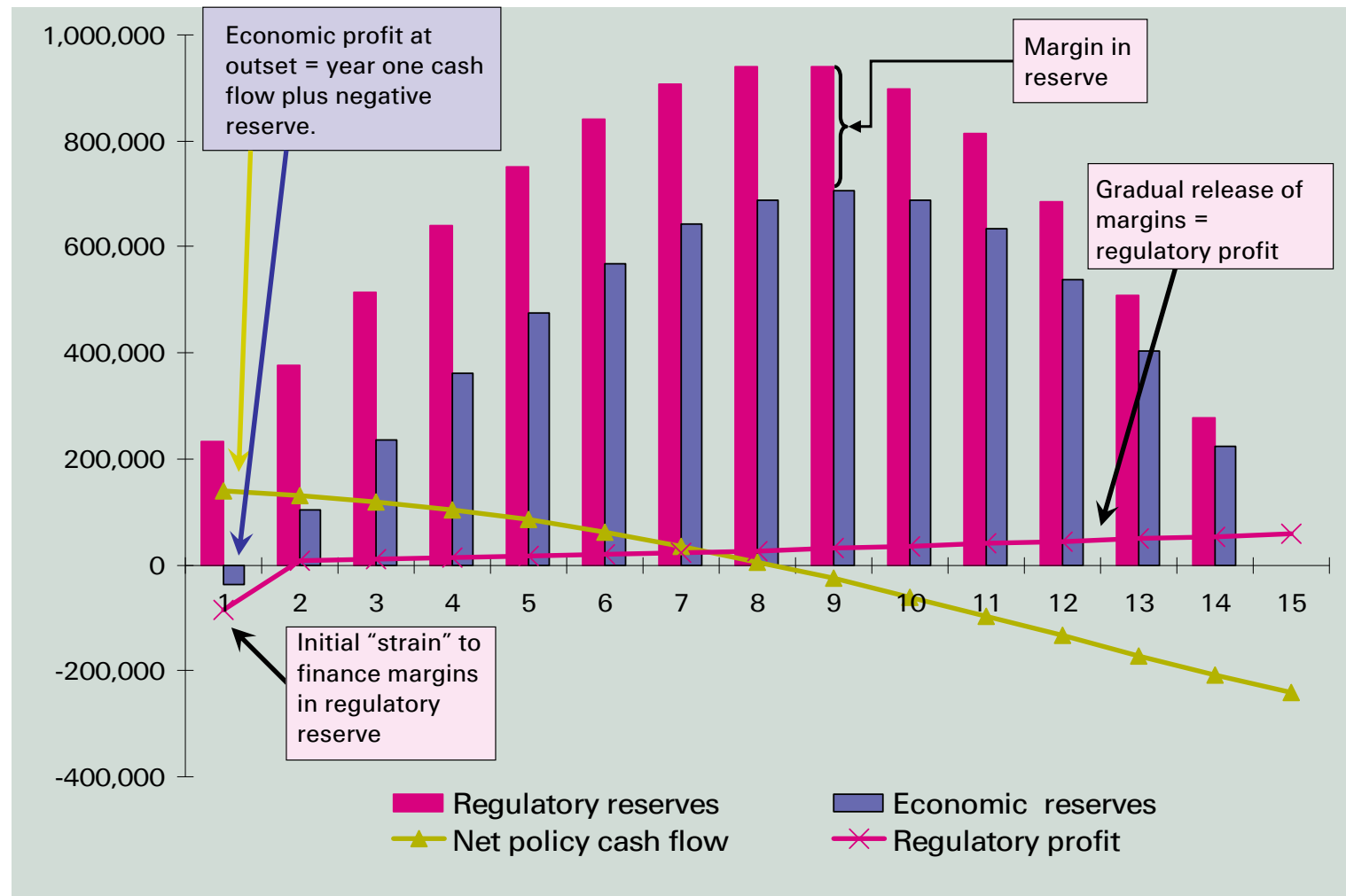
Frameworks		Purpose	Uses	Methodology
Economic	EVM	Economic view (Best Estimate)	<ul style="list-style-type: none"> ■ Product Pricing ■ Performance measurement ■ Analyst information ■ Disposals/acquisitions 	<ul style="list-style-type: none"> ■ Swiss Re EVM methodology ■ European EV principles & guidance (CFO forum)
	Embedded Value (EV)			
Regulatory	Regulatory Returns	Regulatory compliance Dividend paying ability	<ul style="list-style-type: none"> ■ Regulatory reserves ■ License to "play" ■ Regulator is concerned with solvency 	<ul style="list-style-type: none"> ■ Set by local regulators
Accounting	Eg US GAAP or IFRS	Profit recognition	<ul style="list-style-type: none"> ■ Comparable results with competitors for Investors, although there are different GAAP frameworks 	<ul style="list-style-type: none"> ■ Defined by accounting bodies, the Financial Accounting Standards Board in case of US GAAP

Reserving in practice: Conservative regulatory reserving compared to economic reserving



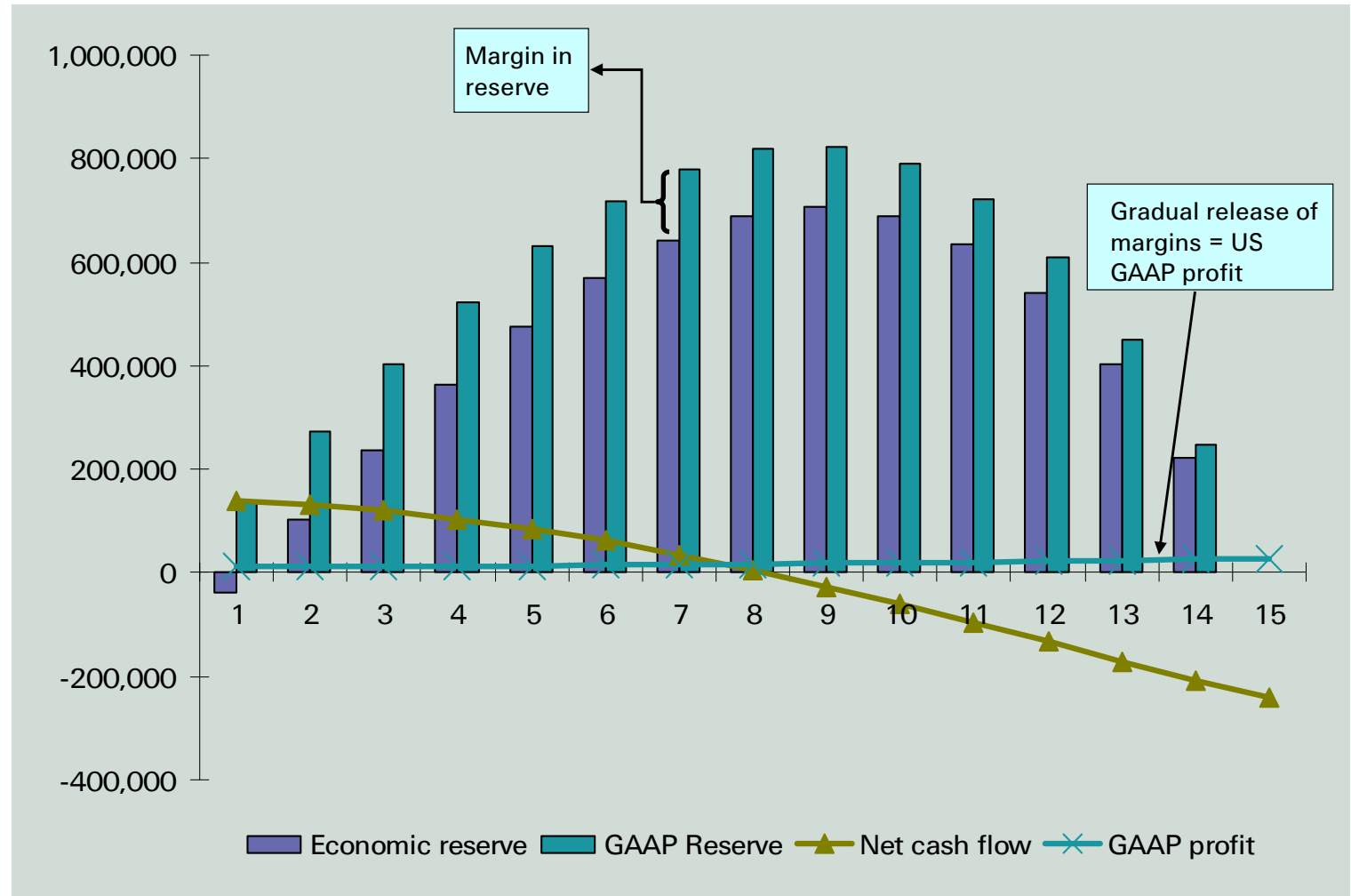
Assumptions:

- Same basic example as before
- 10% profit margin on premiums
- 15% mortality margin in Regulatory reserves





Reserving in practice: US GAAP compared to economic

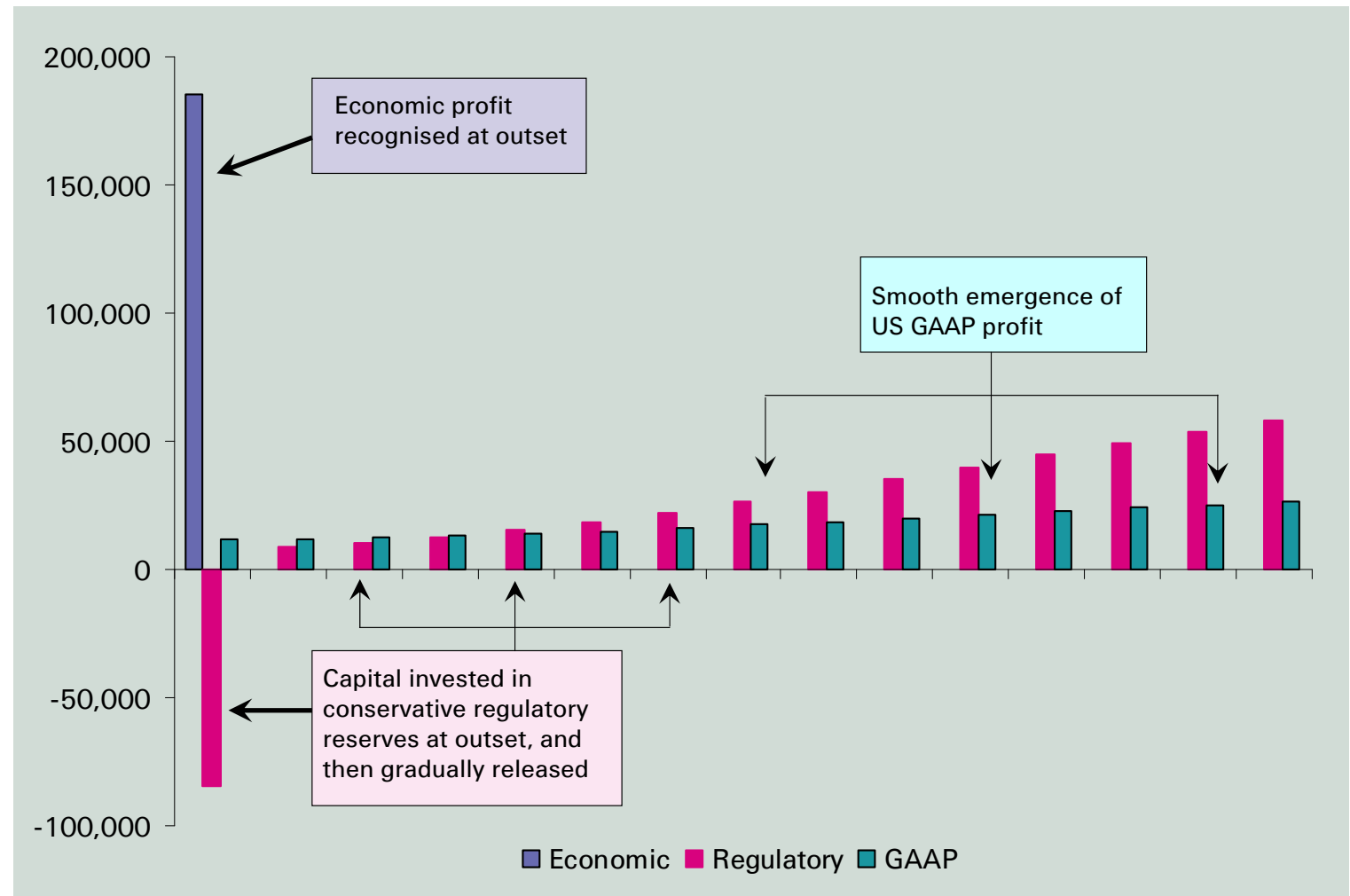




Comparison of profit recognition under all three views

The present value of profits is the same under all frameworks; the timing of emergence differs

Note that the economic profits exclude returns/earnings for risk





Development of Embedded Value

- Embedded Value (EV) is an estimate of the current value of a (re)insurer's life operations, excluding future new business
- European Embedded Value (EEV) was developed by the CFO Forum, an industry group in Europe, to address issues with traditional EV. It set up principles to follow in 2004
- Market Consistent Embedded Value (MCEV) is a subgroup within EEV. Developed by the CFO Forum with a standard drafted in June 2008, it has 17 key principles and is market based



Economic Value Management (EVM)

- An economic measurement framework developed internally at Swiss Re
- Been in use internally for about 5 years, with increasing dominance over other measurement frameworks (GAAP/Stat/EV)
- Very similar to MCEV as published by some other groups
- Applied consistently Group wide: Life, P&C and Asset management
- Excludes future new business, separates new business from inforce



Typical questions requiring a consistent economic framework

- **Performance measurement/ target setting**
 - Does a given business activity create or destroy value?
 - How can meaningful targets be set for each LoB?
- **Capital allocation/ capital budgeting**
 - Where should capacity be increased and where reduced?
 - What is the impact of an acquisition on the company's value?
- **Capital market/ external communication**
 - How can strategic decisions be effectively and clearly communicated to investors, rating agencies and analysts?
- **Operational/strategic management**
 - How can economic decision making enhance value creation?
 - How can products be priced in line with value creation?



Economic Value Management (EVM)

- Uses best estimate cash flows
- Values “asset based” replicating cash flows that most closely resemble the insurance cash flows, from a shareholder’s perspective
- Financial Options and Guarantees: market consistent (stochastic projection assumptions, market implied volatilities)
- Frictional capital costs (agency risk, liquidity risk, risk of financial distress) are taken into account
- “Double tax” and asset management costs are booked separately
- Entity specific assumptions used for expenses and diversification of capital



Economic valuation - back to basics

- **In order to produce insurance covers, insurers**

- pool a large number of sufficiently independent risks, making future aggregate claims more predictable
- use financial markets to bridge the gap between today's premiums and tomorrow's claims
- hold economic risk capital to absorb negative deviations from expectations

➤ This production process needs to be considered when determining the economic value of liabilities



EVM results are meant to respond to three basic questions:

Are our underwriting activities creating economic value on a stand-alone basis?

Are our investment activities creating economic value after risk adjustments?

Can we assess different underwriting and investment opportunities on a like for like basis?



EVM profit is the common measure of economic value creation that guides steering decisions



To answer these three questions,
the EVM framework...

Splits performance of fund raising activities (underwriting) and fund investment activities (asset management)

Recognises all profits on new business at inception, changes in estimates as they occur, and excludes future new business

Values assets and liabilities on a market consistent basis

Reflects best estimates

Measures performance after capital costs (i.e. cost to shareholders of taking risk)



Economic steering at Swiss Re

- ➔ **Economic Value Management (EVM)** is Swiss Re's integrated economic measurement and steering framework used for planning, pricing, reserving and managing the business



Consistency throughout the performance cycle:

- ➔ Target setting/planning/pricing/reserving
- ➔ Capital allocation/capital budgeting
- ➔ Performance measurement/compensation



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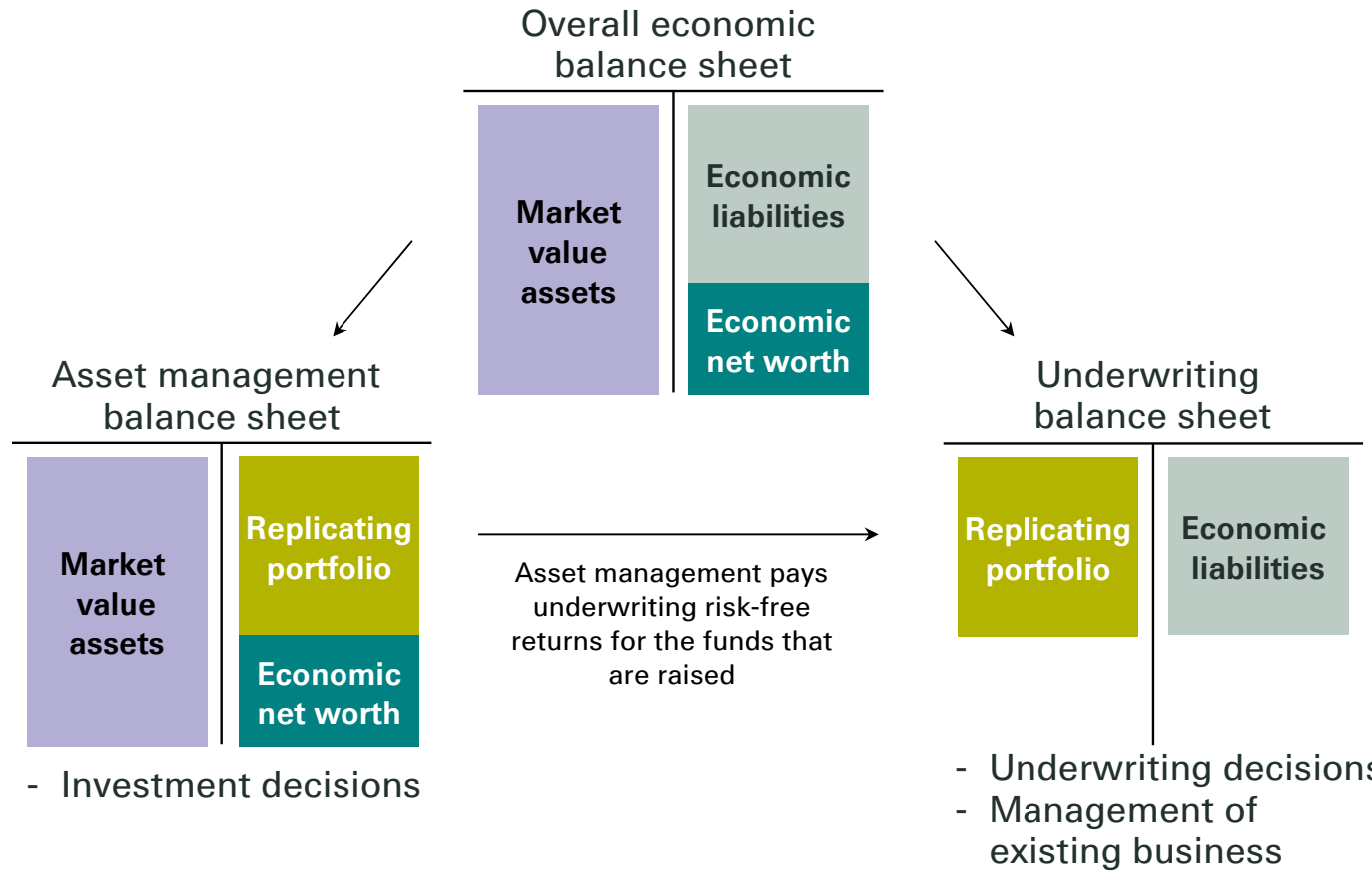
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Separation of underwriting and investment activities

Separation of underwriting and investment activities in line with basic financial economics principles

Splits performance of fund raising activities (underwriting) and fund investment activities (asset management)

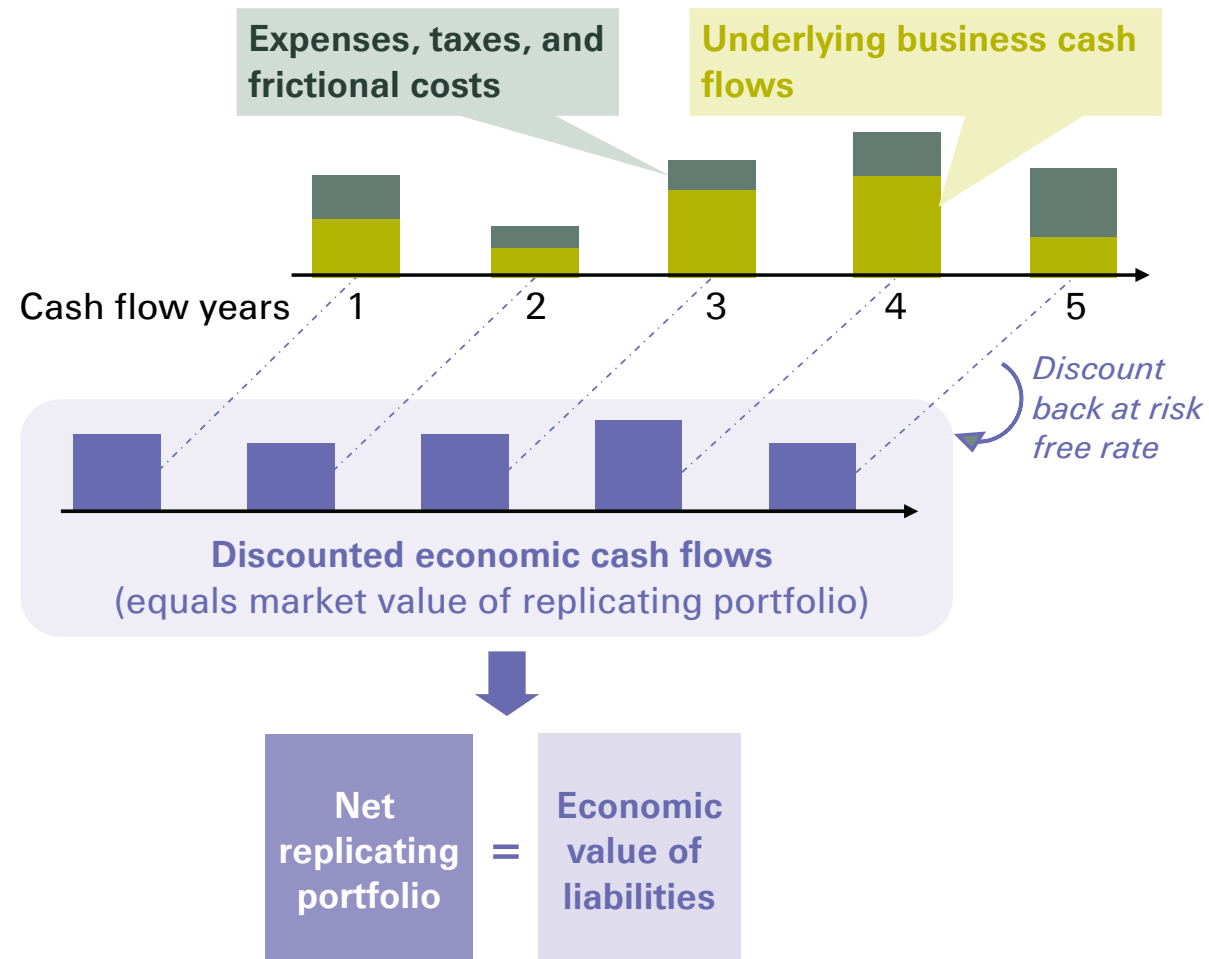




Replicating reinsurance liabilities

Replicating portfolios

- The replicating portfolio provides the cash flows needed to meet expected future payments
- The choice of replicating instruments depends on the financial market risk exposure embedded in the liabilities
- A simple example:
Expected mortality claims payments in 5 years can be replicated by a 5 year zero-coupon bond with the same maturity and payout
 - The market value of the bond today equals the economic value of the expected claims payments



Market value of replicating portfolio = Economic value of liabilities

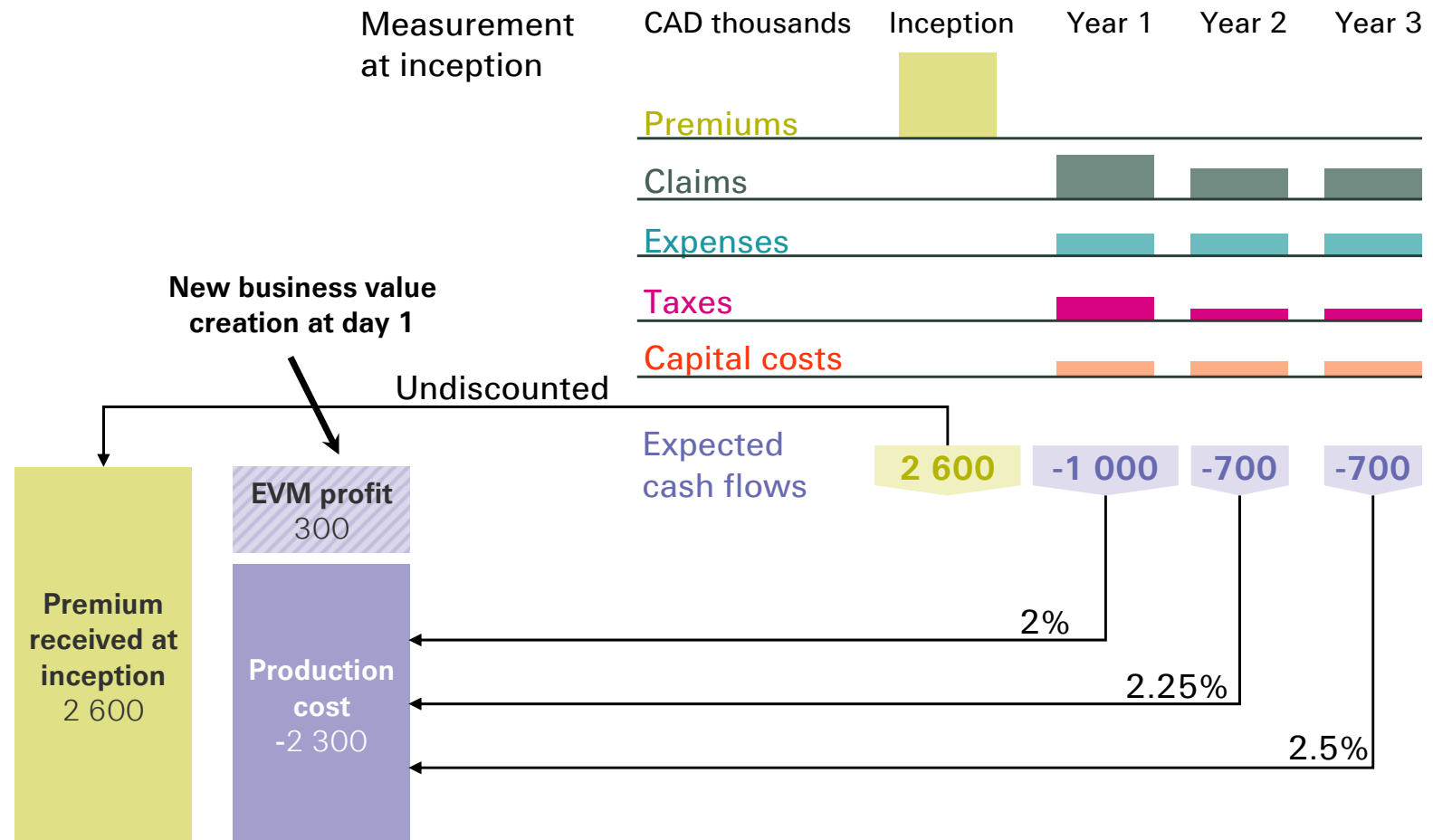


Measurement of underwriting activities

A standard replication example (I/III)

Example

Recognises all profits on new business at inception



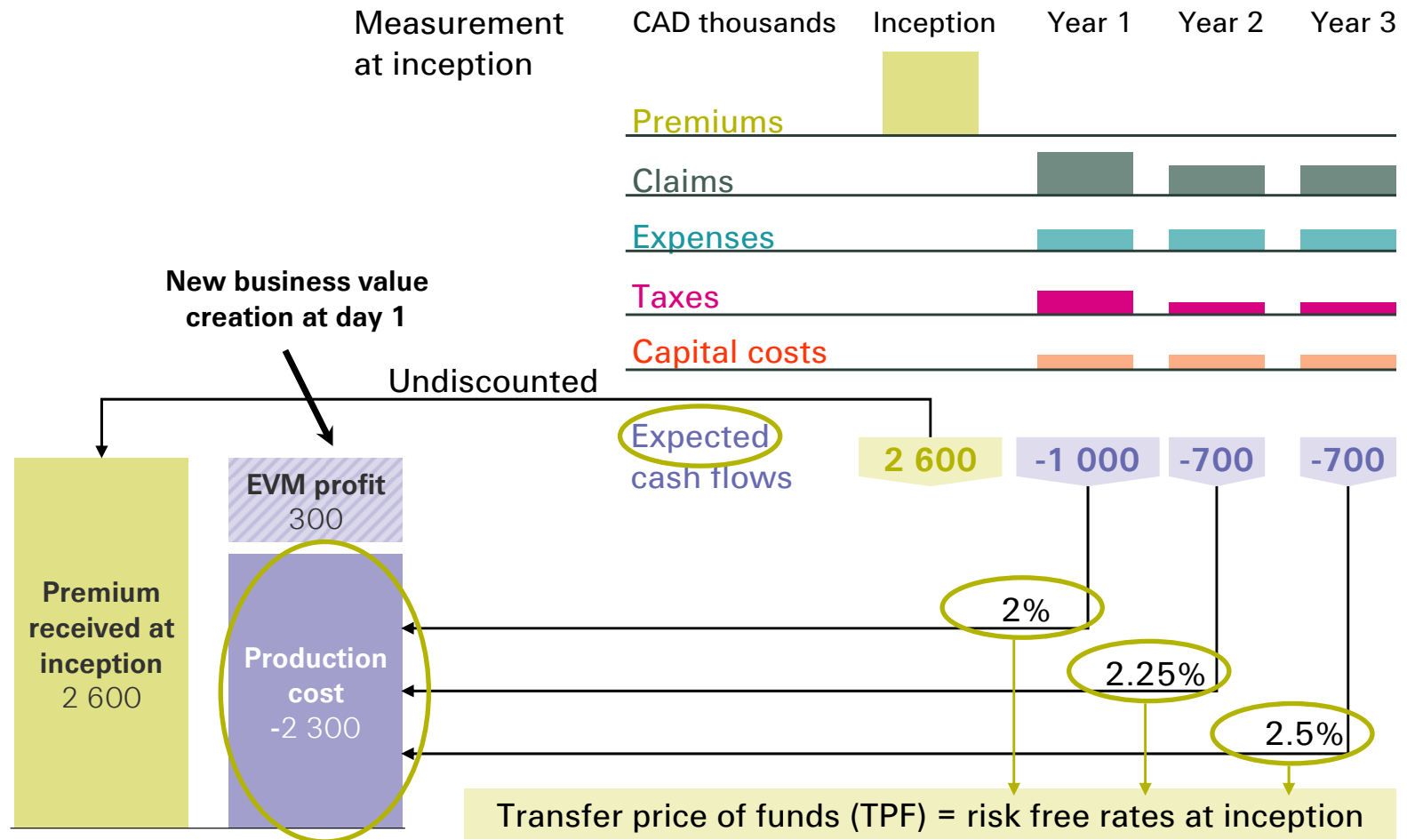


Measurement of underwriting activities

A standard replication example (II/III)

Example

Measurement is based on market prices and best estimates



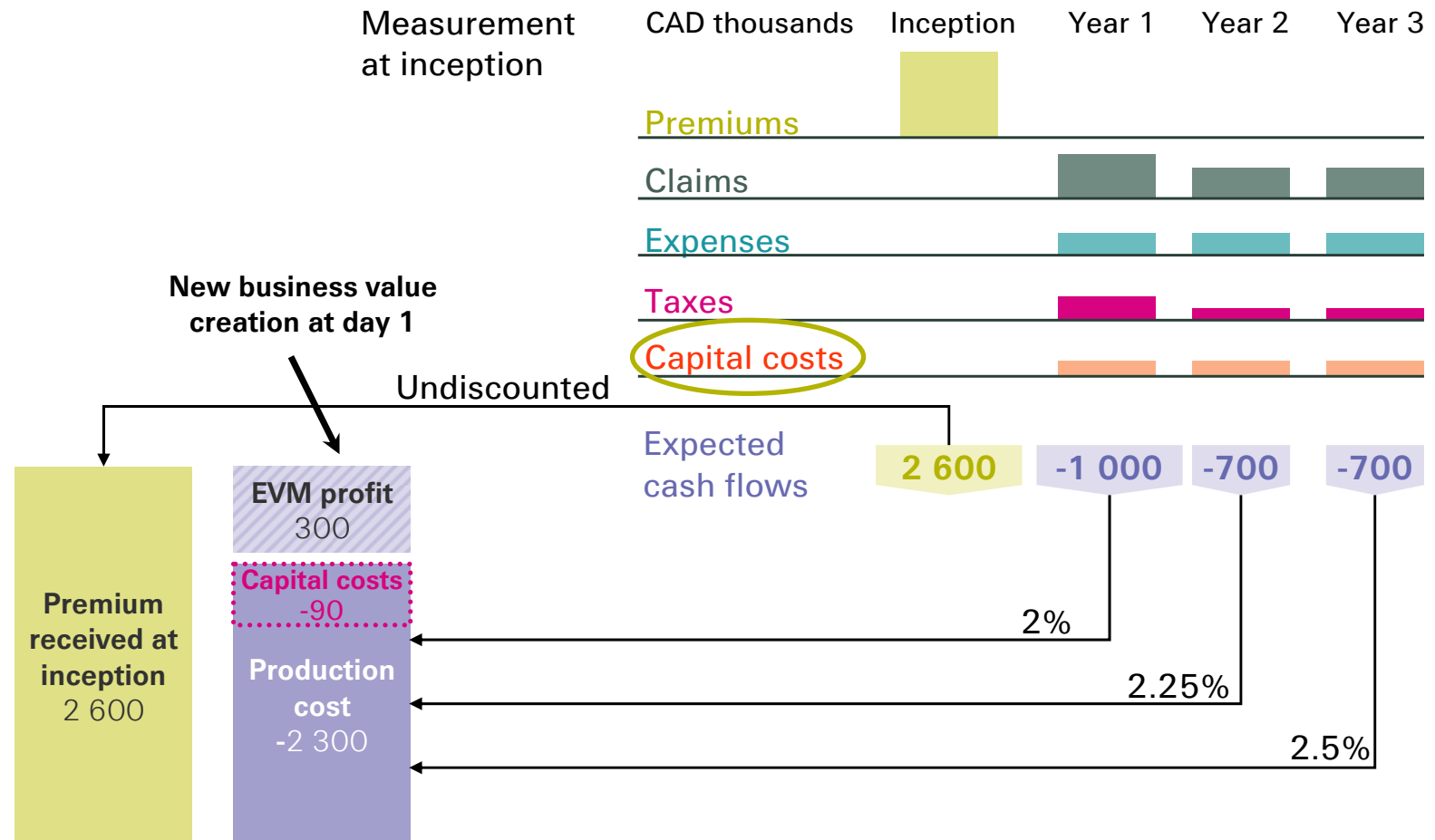


Measurement of underwriting activities

A standard replication example (III/III)

Example

Measures performance after capital costs (includes a projection of capital costs)



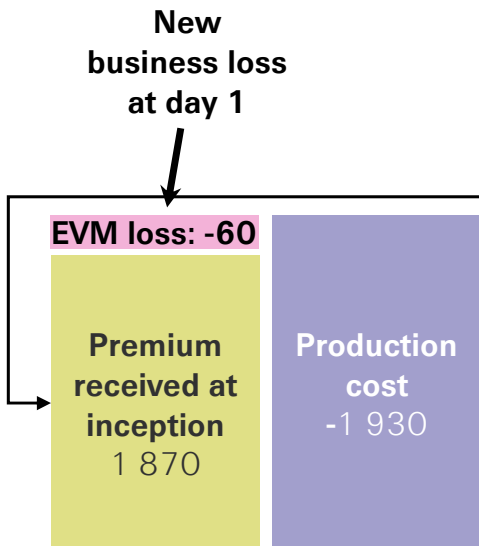
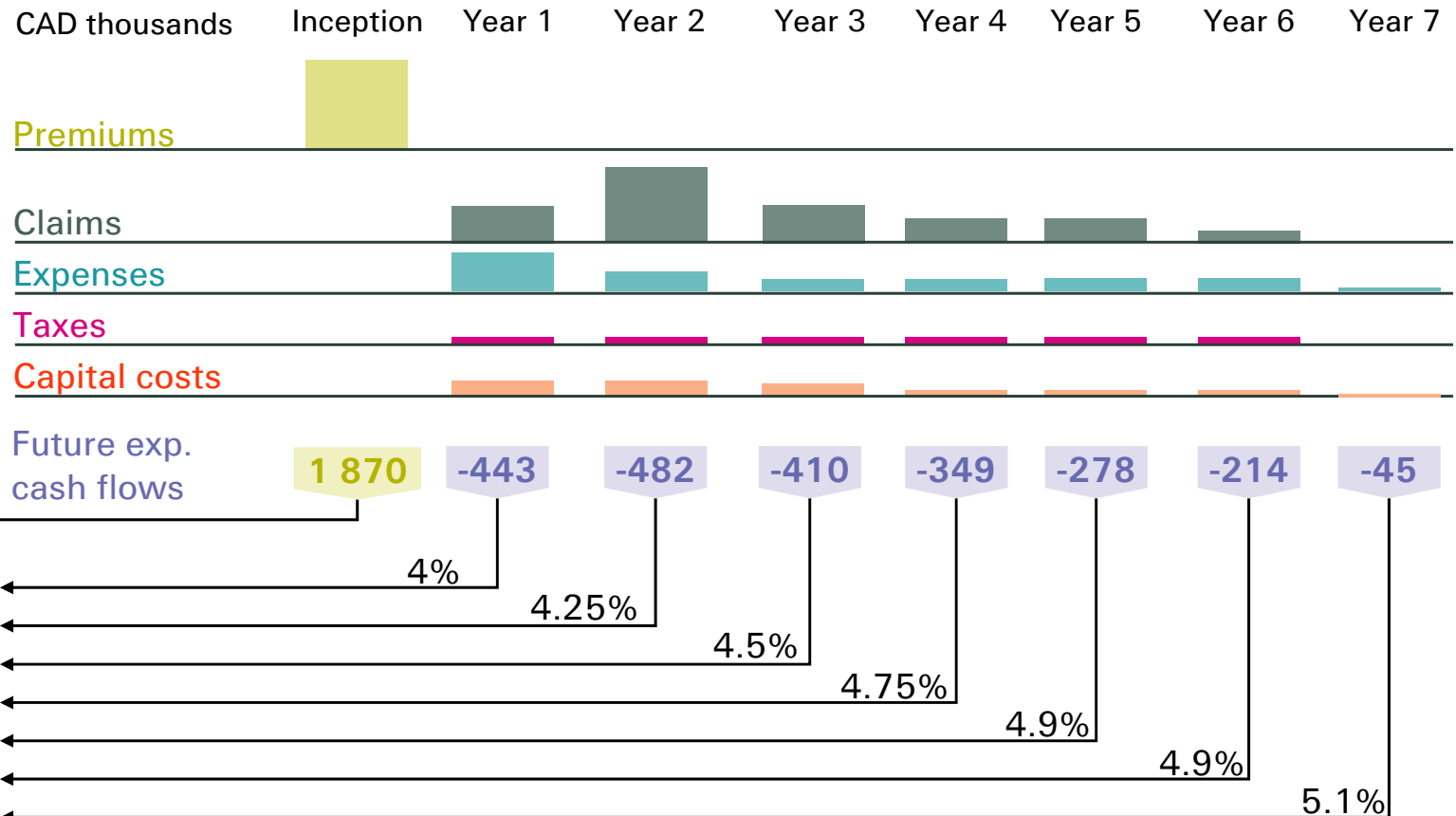


Measurement of underwriting activities

Insufficient premium income

Example

A contract that generates an EVM loss at inception should be declined

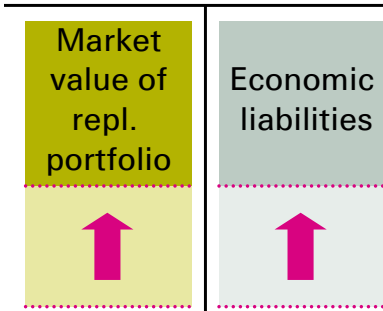




Measurement of underwriting activities

Focus on profit recognition in EVM

EVM B/S TPF T_0 to T_1



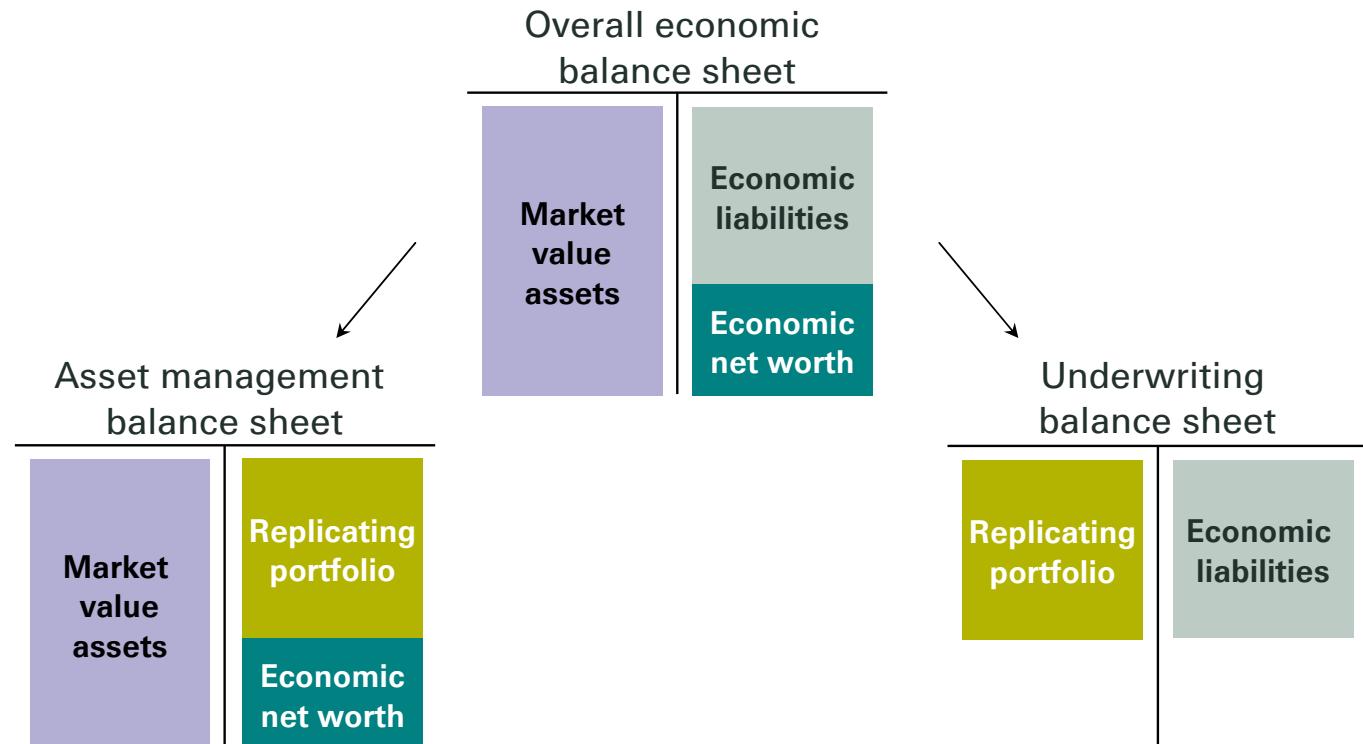
An upward shift of the yield curve has a symmetrical impact on both sides of the underwriting balance sheet:

- EVM recognises all profits at inception based on the present value of all future expected cash flows – therefore, future inforce profits are expected to be zero
- Subsequent experience variances are recognised as previous years development
- EVM previous years results are calculated as the present value of the difference between previous and revised cash flow estimates
- Total EVM profit is the sum of new business and previous years profit
- Changes in interest rates do not affect the **underwriting** result on the in-force book, as the projected cash flows are matched by the risk free replicating portfolio



Investment performance in EVM

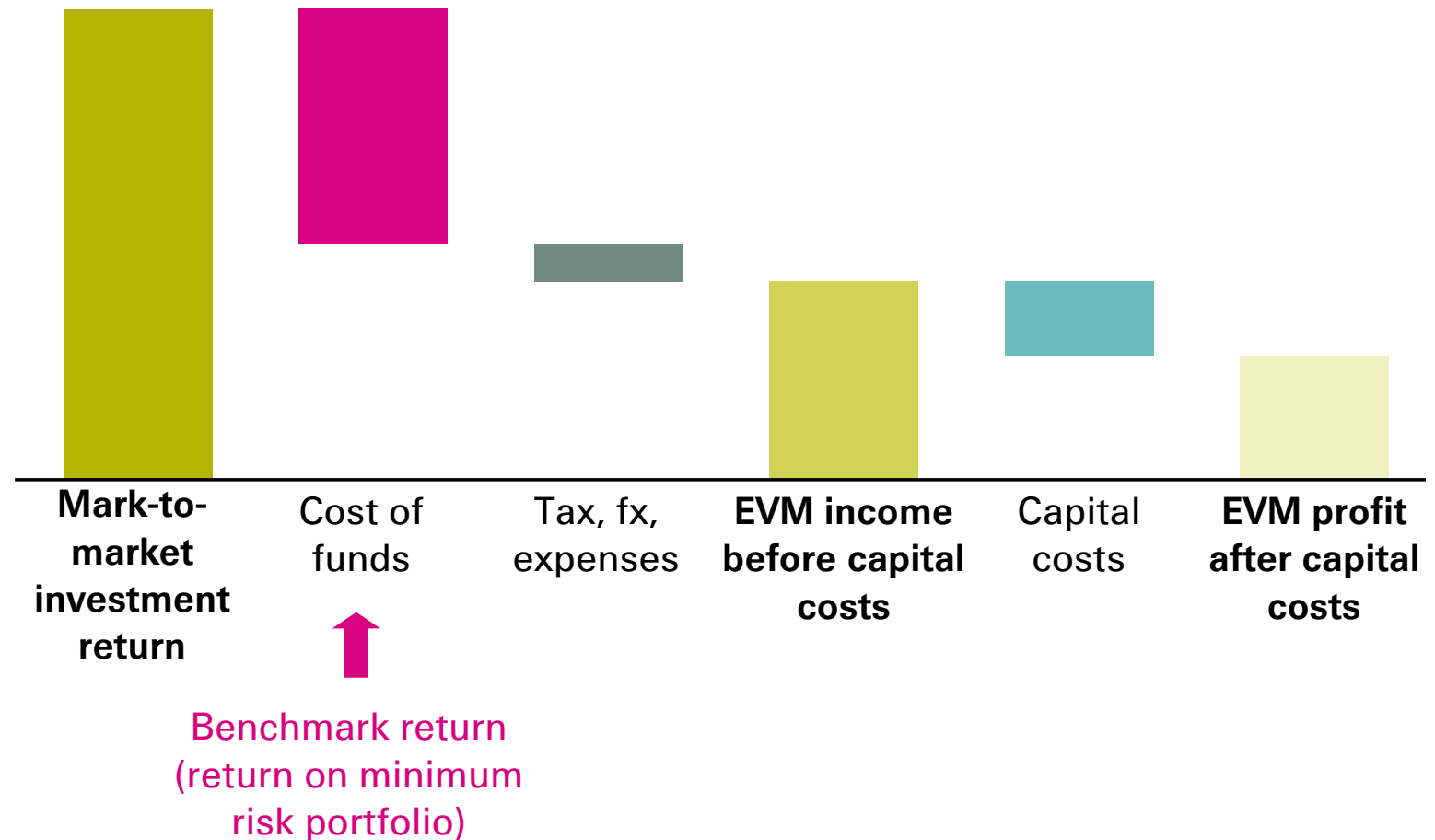
- Interest rates affect EVM investment results only if the actual investment portfolio does not fully match the replicating portfolio and economic net worth
- In case of a full asset liability match, changes in interest rates have symmetrical effects on both sides of the balance sheet
 - no change in economic net worth





Investment activities

Performance calculation in EVM





The role of capital in insurance

Economic Balance Sheet

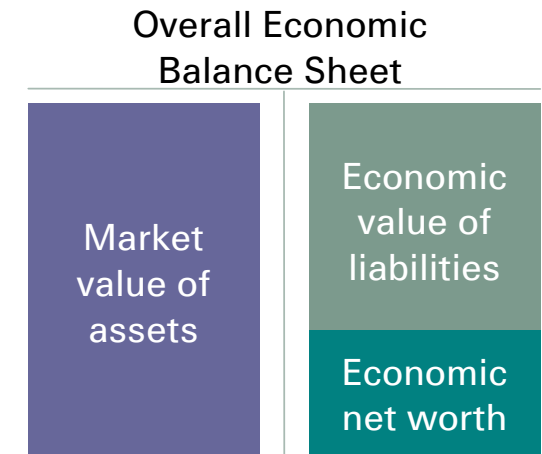


- Shareholders provide risk capital to support insurance business: *Economic Net Worth*
- As compensation they require adequate return on it: *Capital Costs*
- Value is created only when profits are in excess of capital costs
- Thus: capital is a production factor and the capital costs need to be covered

Determining capital costs: the two productive uses of capital in (re-)insurance



- Shareholders provide tangible capital in the form of economic net worth or economic shareholders equity
- This capital is put to productive use through:
 - its investment in financial assets
 - its use as risk capital to cushion unexpected losses from underwriting activities



➤ These two uses need to be benchmarked separately



Determining capital costs: the two benchmarks

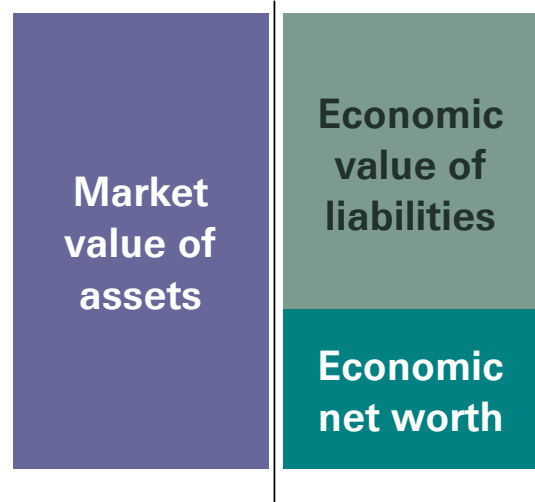
- Large part of return on capital is generated by investments, which needs to be given a benchmark
 - benchmark depends on riskiness of investment strategy and is called base cost of capital
 - it corresponds to the return an investor would get by directly investing in corresponding investments

- Is there any additional return needed?
 - standard finance says “no”, since underwriting risks can be diversified with financial market risk, but
 - Insurance companies operate in a tax/regulatory set-up that make the insurance company a relatively inefficient investment vehicle (‘frictions’)
 - additional return required by shareholders



The economic balance sheet

Economic Balance Sheet



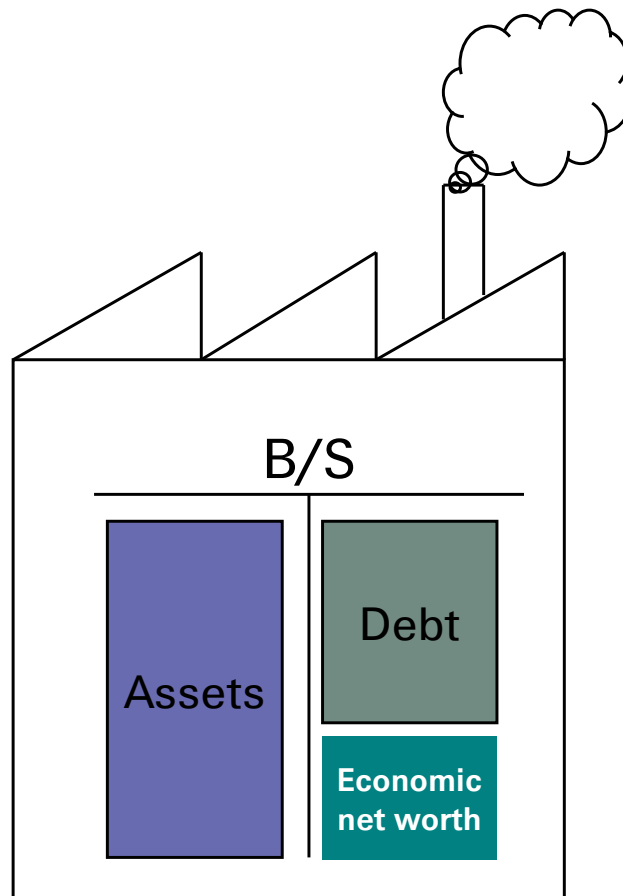
- The balance sheet of an insurance company resembles a leveraged investment fund that raises debt by selling insurance policies instead via capital markets
- Two key distinguishing features:
 - Competitive disadvantage in investing funds
 - Competitive advantage in raising funds



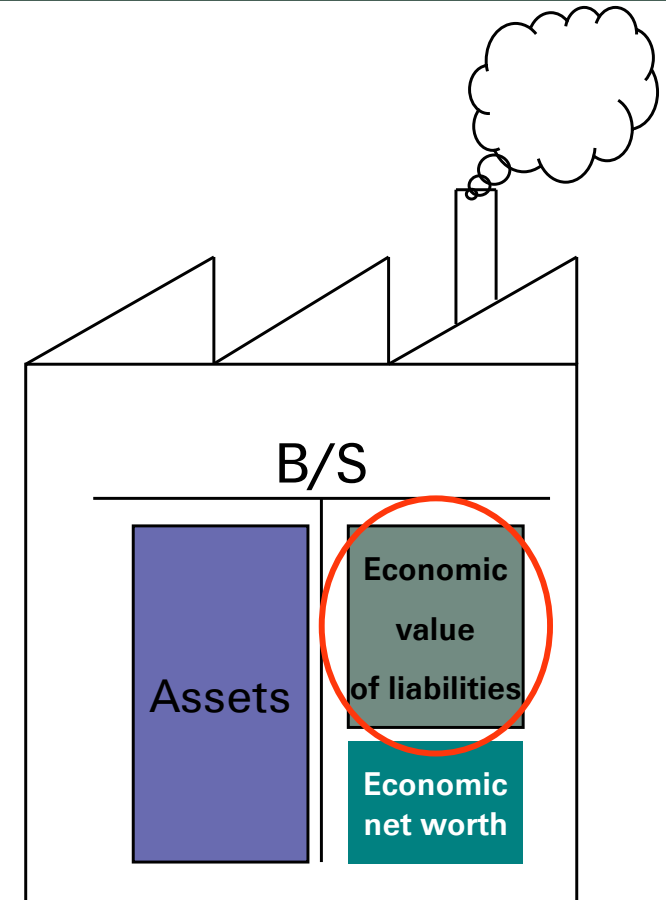
Insurers have the ability to sell insurance products at a price that is higher than the economic value of the insurance products sold = Value proposition of underwriting



Determining capital costs: Two companies



Leveraged investment fund

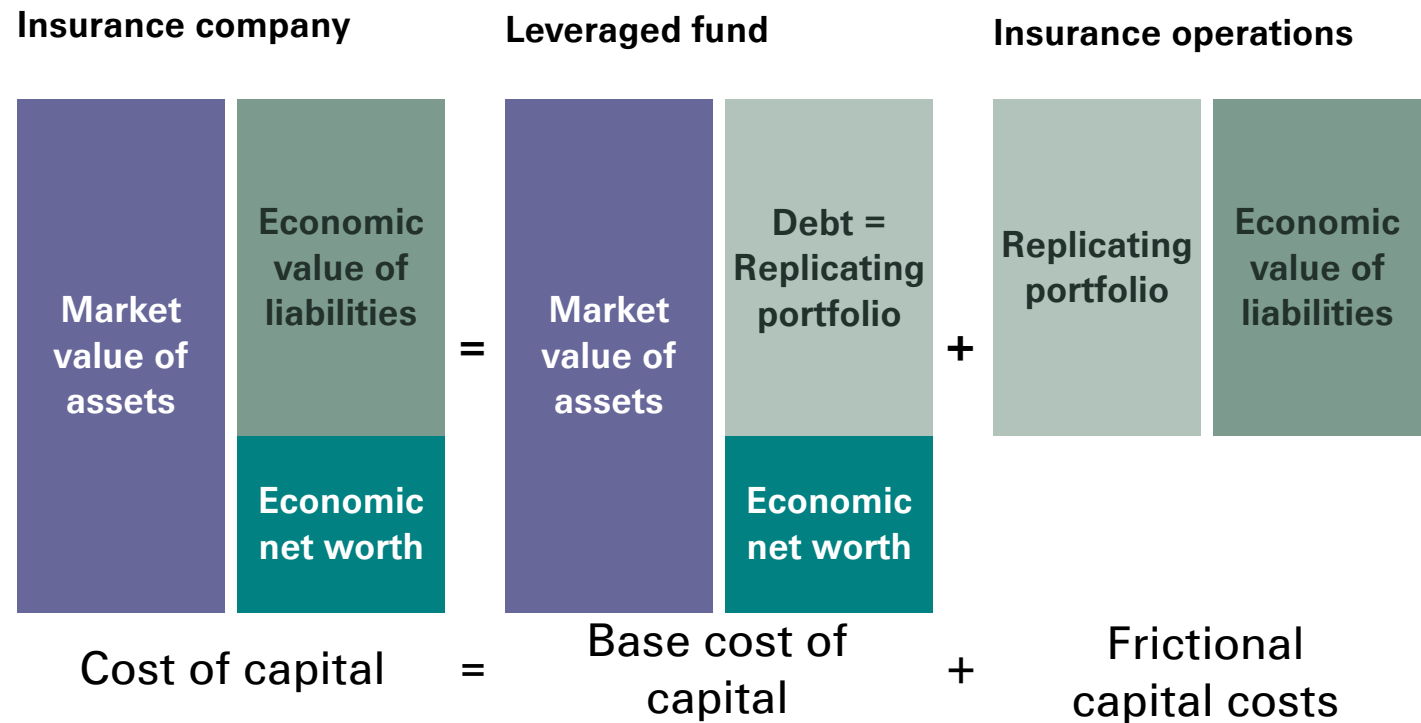


Insurance company



Capital costs determination

- Insurers need to earn more than the base cost of capital
- These additional returns are frictional capital costs and need to be covered by business activities





Allocating cost of capital

- Capital costs are calculated based on a charge on EVM “Economic Capital”
- The following requirements need to be taken into account when allocating cost of capital:
 - Internal required Risk Capital
 - Rating Agency Capital
 - Regulatory required Capital



Capital costs in EVM

EVM capital costs consist of:

1. Risk free return on capital representing shareholders base cost of capital
2. Market risk premium (MRP) representing the shareholders' expected excess returns on market risk exposure, applicable to all business activities that generate systematic market risk
3. Frictional capital costs (FCC) representing shareholders required compensation for agency costs, cost of potential financial distress and regulatory/illiquidity costs

**Total required
return on capital**



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Summary

- EVM is Swiss Re's internal economic framework for performance measurement and steering
- EVM allows comparison of performance across all lines of business
- EVM framework:
 - Splits performance of investment and underwriting activities
 - Recognises all closed book profits at inception
 - Values all assets and liabilities in a market consistent way
 - Reflects current best estimates
 - Measures performance after allowing for capital costs



What's next?





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Questions ?

