Swiss Re

Economic Value Management (EVM)

Teach-in

31 March 2008

Swiss Re

Today's agenda

- **Welcome and introduction** Susan Holliday
- **EVM methodology**
- **EVM figures**
- **From Embedded Value to EVM**
- **Summary**
- **Questions & answers**

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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

EVM methodology

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

EVM methodology

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)

The following slides illustrate how these principles apply in EVM ...

Separation of underwriting and investment activities

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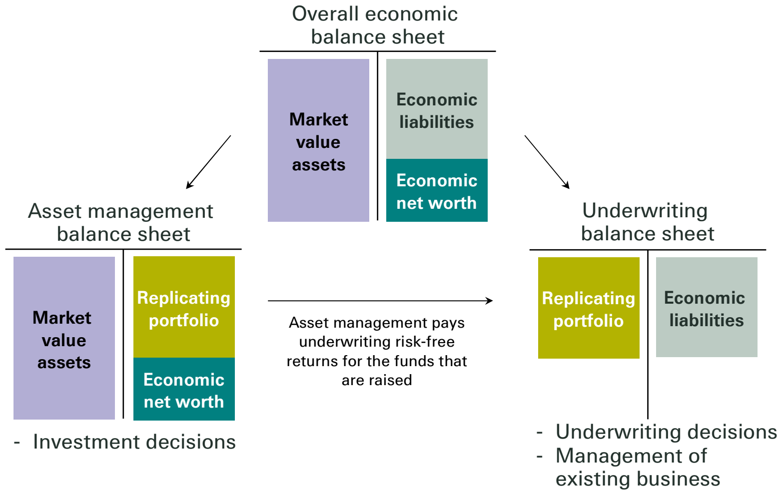
Separation of underwriting and investment activities in line with basic financial economics principles

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



Replicating reinsurance liabilities

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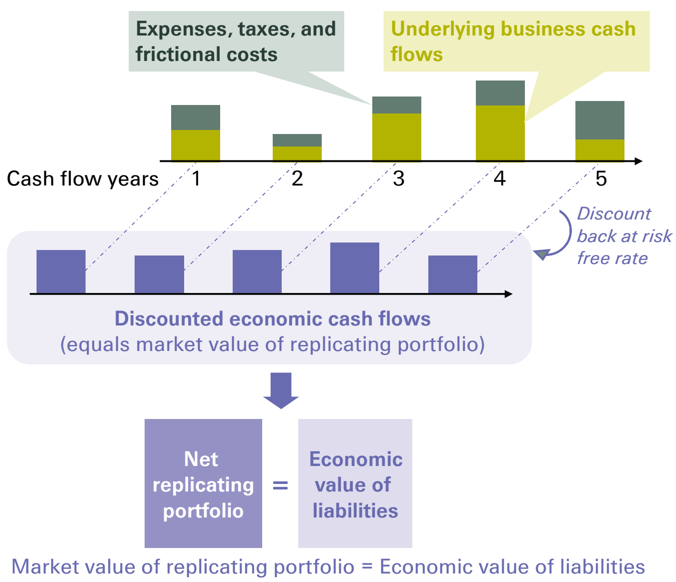
Replicating portfolios

- 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



EVM methodology

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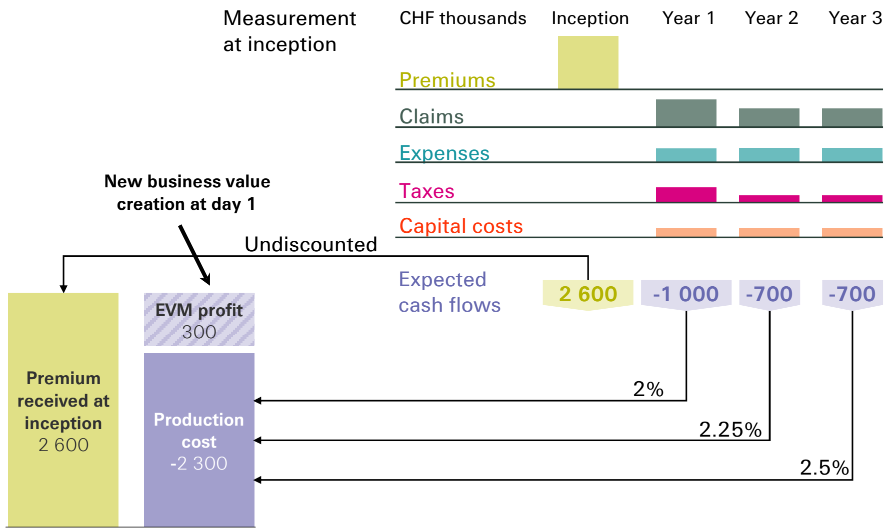
Measurement of underwriting activities

A standard replication example (I/III)

Example

EVM calculation for a simple fire risk XL contract at inception

Recognises all profits on new business at inception



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Slide 9

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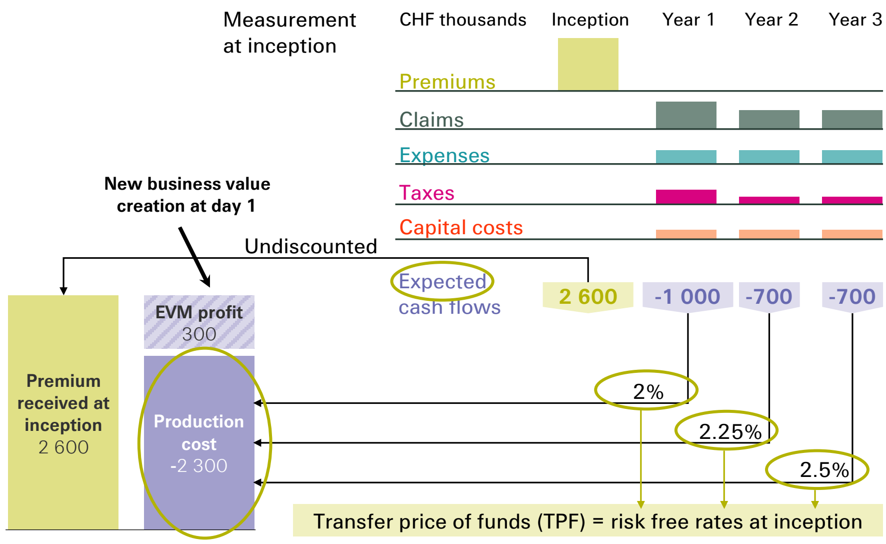
Measurement of underwriting activities

A standard replication example (II/III)

Example

EVM calculation for a simple fire risk XL contract at inception

Measurement is based on market prices and best estimates



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Slide 10

EVM methodology

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Measurement of underwriting activities

A standard replication example (III/III)

Example

EVM calculation for a simple fire risk XL contract at inception

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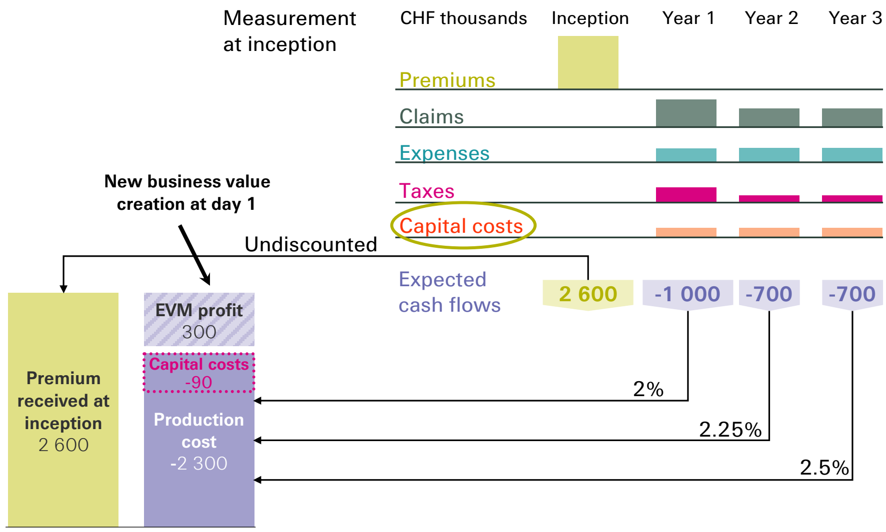
Measures performance after capital costs (includes a projection of capital costs)



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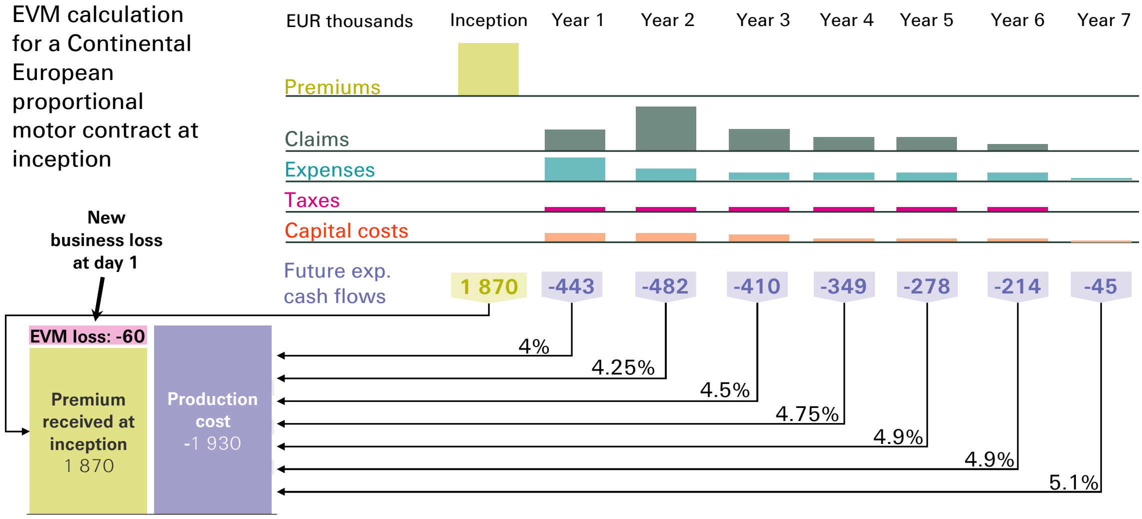
Measurement of underwriting activities

Insufficient premium income

Example

EVM calculation for a Continental European proportional motor contract at inception

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



Slide 12

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Illustration

Did underwriting activities generate economic profit?

CHF thousands		
New business profit after capital costs	**300**	EVM value of new business
PV of premiums	2 600	
PV of claims	-1 840	
PV of commissions	-110	
PV of expenses	-110	
PV of taxes	-150	
PV of capital costs	-90	
Previous business profit after capital costs	**59**	Change in EVM value of previous years business
Change in premiums	60	
Change in claims	20	
Change in commissions	-5	
Change in expenses	-4	
Change in taxes	-8	
Change in capital costs	-4	
Total profit	**359**	
Release of capital costs	100	Release of capital costs and risk-free return on shareholders' funds
Income before capital costs	**459**	

→ EVM profit is defined as total return generated for shareholders after allowing for capital costs. An EVM profit of zero means that all production costs including the cost of capital are covered

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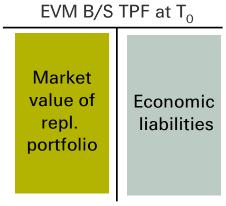
Measurement of underwriting activities

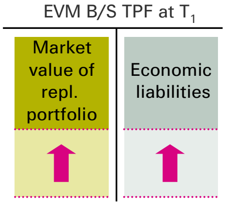
Focus on profit recognition in EVM

EVM B/S TPF at T_0



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

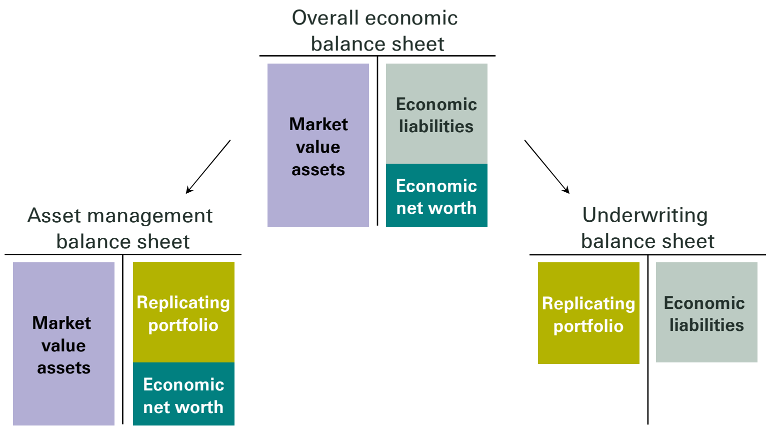
EVM B/S TPF at T_1



- EVM recognises all profits at inception based on the present value of all future expected cash flows
- 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

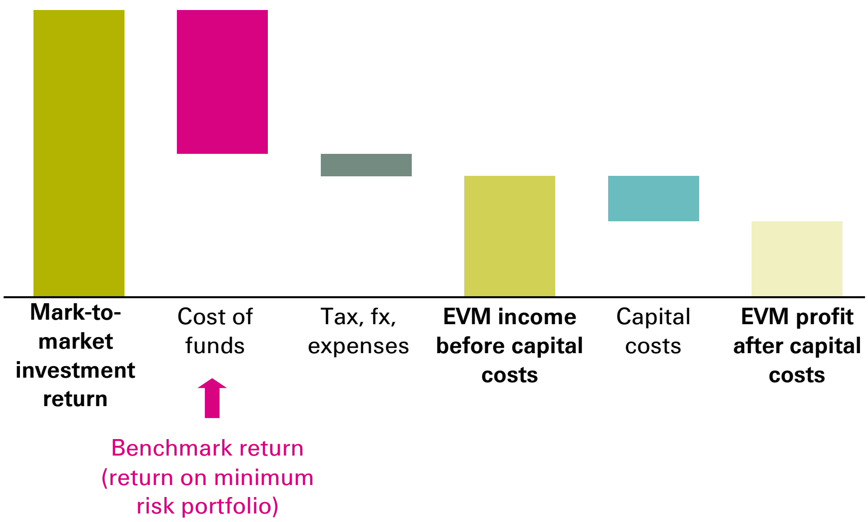
- Interest rates affect EVM investment results only if the actual investment portfolio does not fully match the replicating portfolio and economic net worth
- In case of a full asset liability match, changes in interest rates have symmetrical effects on both sides of the balance sheet
  → no change in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



- The EVM investment result depends on the actual investment mix compared with the benchmark portfolio

Investment activities

Performance calculation in EVM

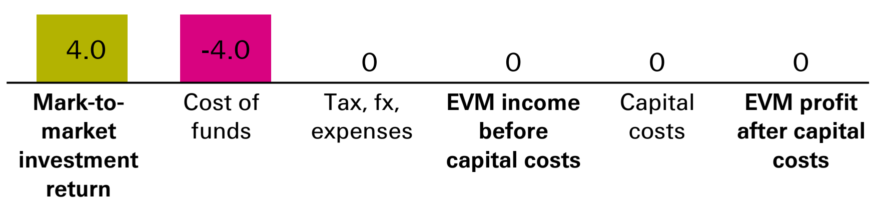


Example 1

Full ALM match and interest rates go down

- Assumption: Actual investment portfolio (consisting of risk-free bonds) matches benchmark in terms of currency structure and duration
- Scenario: Parallel decrease of global interest rates of 100bps
- Balance sheet is largely immunised against changes in interest rates

CHF bn

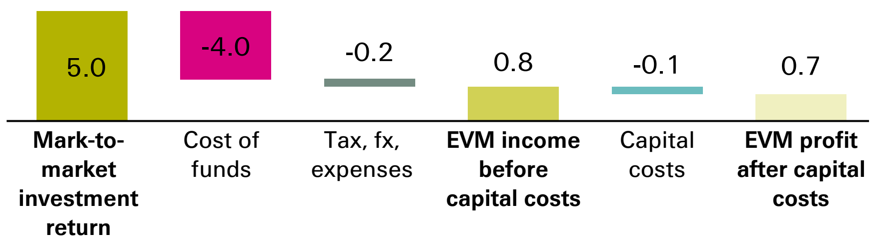


Example 2

Long duration position and interest rates go down

- Assumption: Actual investment portfolio (consisting of risk free bonds) has a longer duration than the benchmark. The balance sheet is exposed to interest rate risk
- Scenario: Parallel decrease of global interest rates of 100bps
- Swiss Re's actual investment portfolio outperforms the benchmark

CHF bn



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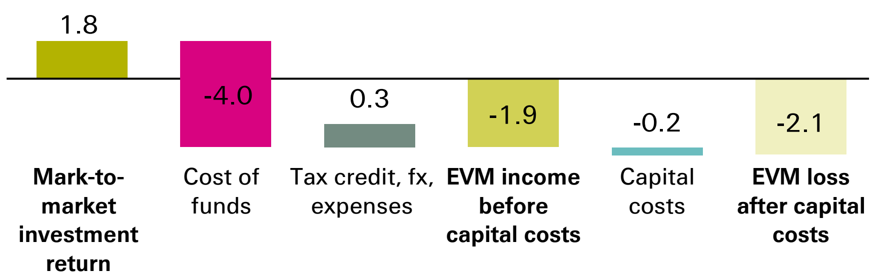
Example 3

Investment in corporate bonds and spreads widen

- Assumption: Actual investment portfolio (consisting US AAA-rated corporate bonds) underperforms the benchmark (credit spreads widen). The balance sheet is exposed to credit risk
- Scenario: Total return of corporate bond portfolio: 1.3%

CHF bn



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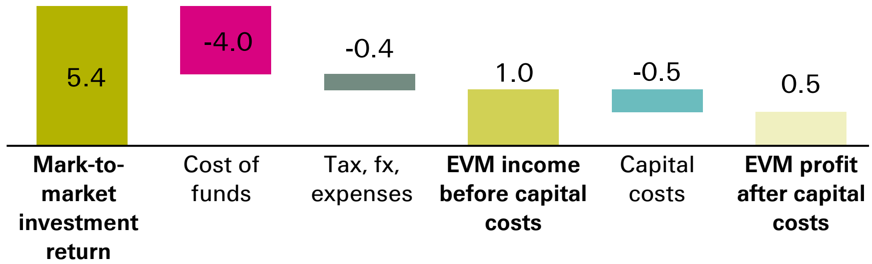
Example 4

Assets partially invested in equities

- Assumption: Actual investment portfolio consists of 8% equities (S&P 500 index) and 92% risk-free bonds. The balance sheet is exposed to equity risk
- Scenario: S&P 500 annual total index return: 15.8%
- Swiss Re's actual investment portfolio outperforms the benchmark

CHF bn



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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

$\Big\}$ **Total required return on capital**

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EVM and market consistent embedded value (MCEV) have significant commonalities

	EV	EVM	MCEV
Market consistent	✘	✔	✔
Separate presentation of assets and liabilities	✘	✔	✘
Explicit charges for capital costs and credit risk	✘	✔	✔
Applicable to all products	✘	✔	✔

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EVM Teach-in
31 March 2008

EVM figures

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EVM 2006 income statement by business unit

CHF m	Property & Casualty	Life & Health	Financial Markets	Group items	Total
Profit					
New business profit	1 695	391	995	-71	3 010
Previous years business profit	137	328	0	225	690
Total profit after capital costs	**1 832**	**719**	**995**	**154**	**3 700**
Release of capital costs	**1 578**	**1 007**	**857**	**99**	**3 541**
Income before capital costs	**3 410**	**1 726**	**1 852**	**253**	**7 241**

- EVM 2006 is unaudited
- The EVM production process is not subject to the same control environment as annual and quarterly US GAAP reporting

EVM figures

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Drivers of 2006 EVM results

- **Property & Casualty**
  - New business profit CHF 1 695m, driven by low natural catastrophe losses and improving pricing, terms and conditions
  - Previous years business profit CHF 137m, reflecting moderate net positive claims development
- **Life & Health**
  - New business profit CHF 391m, driven by GE Life UK transaction and improved margins on traditional
  - Previous years business profit of CHF 328m reflecting positive experience variances and claims projections due to favourable mortality and morbidity developments
- **Financial Markets**
  - Total EVM profit CHF 995m, driven by strong returns in fixed income, equities and alternative investments
- **Group items**
  - Total EVM profit CHF 154m, mainly driven by favourable pension fund performance and improved diversification leading to lower frictional capital costs
- **Insurance Solutions**
  - The Insurance Solutions acquisition was accounted for as a 2006 balance sheet transaction that added CHF 1.9bn to economic net worth

EVM figures

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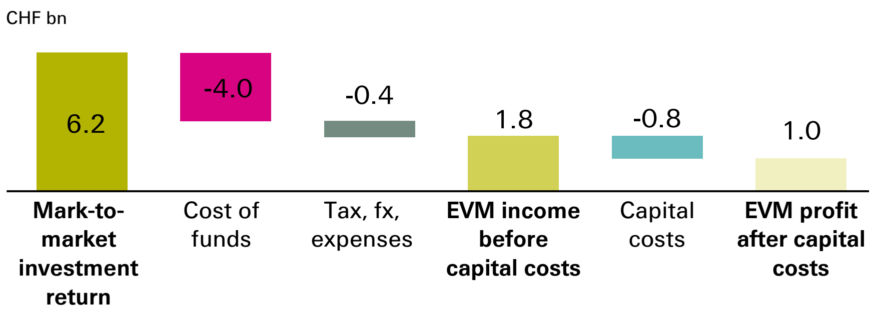
EVM 2006 investment result

EVM 2006 investment result of Financial Markets



EVM figures

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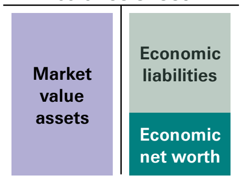
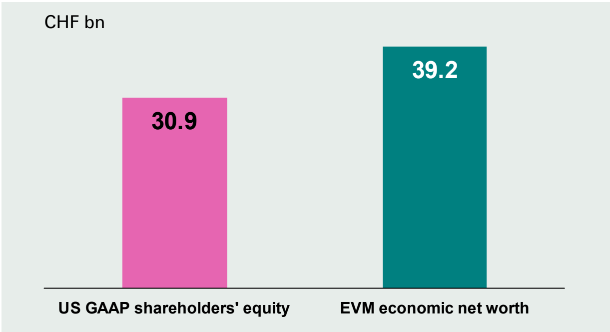
2006 Group economic net worth

Overall economic balance sheet



- Group economic net worth (ENW) is the difference between the market value of assets and the economic value of liabilities
- ENW is the EVM estimate of shareholders' funds
- At 31 December 2006, ENW was CHF 39.2 billion



EVM figures

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EVM 2006 capital by business unit

CHF m	Property & Casualty	Life & Health	Financial Markets	Group items	Total
EVM capital (average)	18 104	12 183	4 381	219	34 887

- EVM capital is the measure of capital that is required to support the business
- EVM capital is projected until the business runs off, and serves as the basis for the allocation of capital costs
- EVM capital takes internal risk, regulatory and rating agency capital requirements into consideration

Figures reflect the new reporting structure introduced for 2007 GAAP reporting

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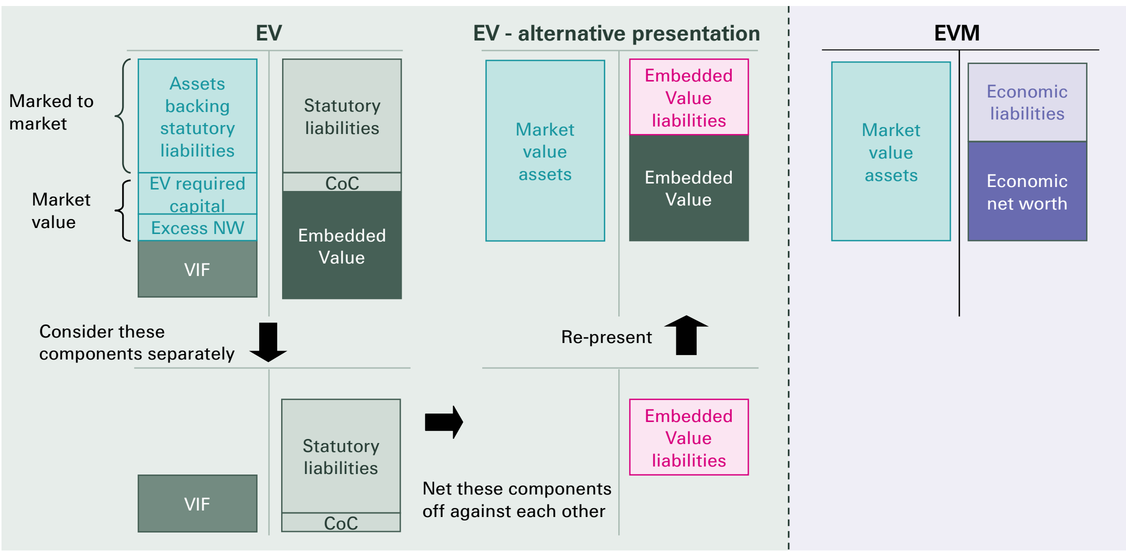
EV to EVM – different presentation & terminology

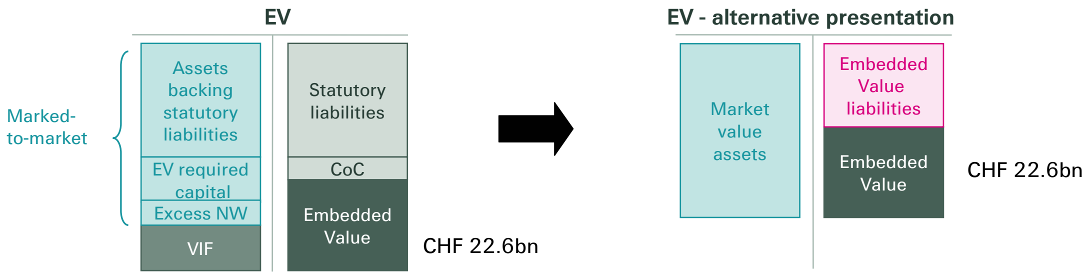


EV to EVM – "Balance Sheet walk" (I/III)

- **Swiss Re's Life & Health portfolio under EV and EVM is compared below** (values as at 31 December 2006)

➡ **Step 1: Re-present EV results in EVM format** (per before)

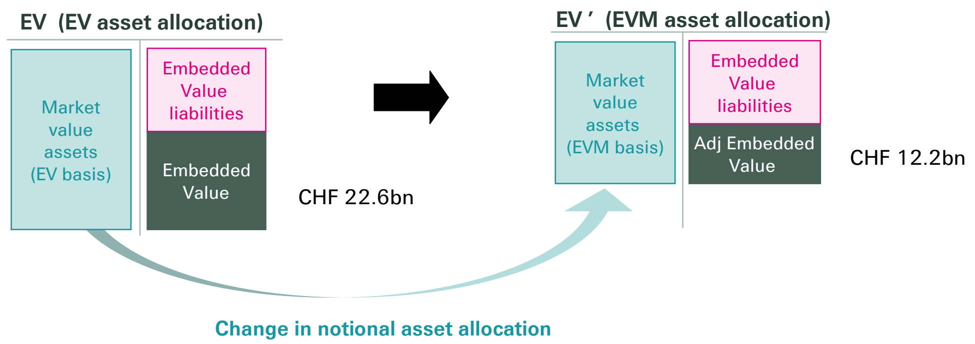
→ No change in value from this step



EV to EVM – "Balance Sheet walk" (II/III)

➡ **Step 2: Adjust assets and capital allocated under EV to be consistent with the allocation of assets and capital to the insurance operation under EVM** (= replicating portfolio + EVM capital)

→ This step only represents a change in notionally allocated assets, i.e. no "real" value created/destroyed in this step



From Embedded Value to EVM

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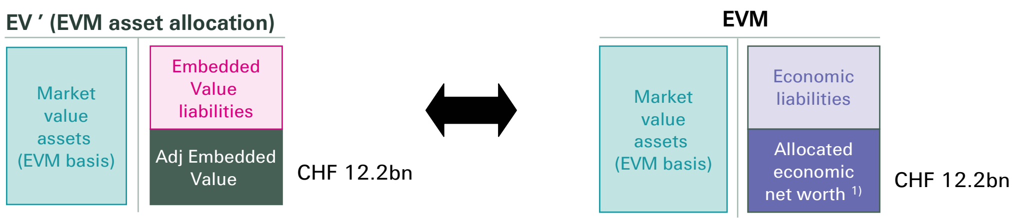
EV to EVM – "Balance Sheet walk" (III/III)

Step 3: Remaining measurement differences reflect the aggregate impact of the different EV & EVM methodologies across the total Life & Health portfolio (as at 31 December 2006)



→ Although the overall adjusted EV and EVM are similar, there may be substantial differences between sublines and territories

1) Equal to L&H EVM capital

From Embedded Value to EVM

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Life & Health EV to EVM – 2006 earnings

New business profit is higher under EV due to projection of investment income on higher yielding assets

2006 (CHF m)	**EV**	**EVM**
New business profit	664	478
Previous business profit		
Operating assumption changes	409	377
Experience variances	-35	-40
Profit after capital costs	**1 038**	**815**
Expected return on in-force	1 116	
Expected return on ANW	336	
Investment variances	-35	
Economic assumption changes	-88	
EVM capital costs		995
Corporate centre expense allocations in EVM but not EV		-84
EV earnings/EVM income before capital costs	**2 367**	**1 726**

→ Main differences are capital allocation, capital costs, and assumed investment returns (details see appendix)

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Summary

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Summary and outlook

- 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 (excludes franchise value)
  - Values all assets and liabilities in a market consistent way
  - Reflects current best estimates
  - Measures performance after allowing for capital costs
- 2006 Group economic net worth CHF 39.2 billion, 2006 EVM income before capital costs CHF 7.2 billion, EVM profit after capital costs CHF 3.7 billion
- 2007 EVM figures will be disclosed with Q1 2008 results on 6 May 2008

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- **Questions & answers** George Quinn/John Baxter

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Appendix

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EVM definition of new business

- General principle

  EVM recognises all expected cash flows from contractual obligations at inception. Deferral and fund methods of accounting are not used. In any calendar year, new business is defined as business with an inception date within the calendar year

- P&C

  Insurance or reinsurance contracts written or renewed within the calendar year are recognised as new business. This also applies to multi-year transactions. Future renewals are not included in the valuation

- Life & Health

  New business includes: new individual business cessions in the year, renewals of existing group schemes, increments to existing group schemes, new group schemes, new blocks of Admin Re business and new cessions in the year on any Admin Re blocks still open to new business, and renewals of business that is subject to active annual renewal

- Financial Markets

  All investment and trading activities are marked-to-market and recognised as new business

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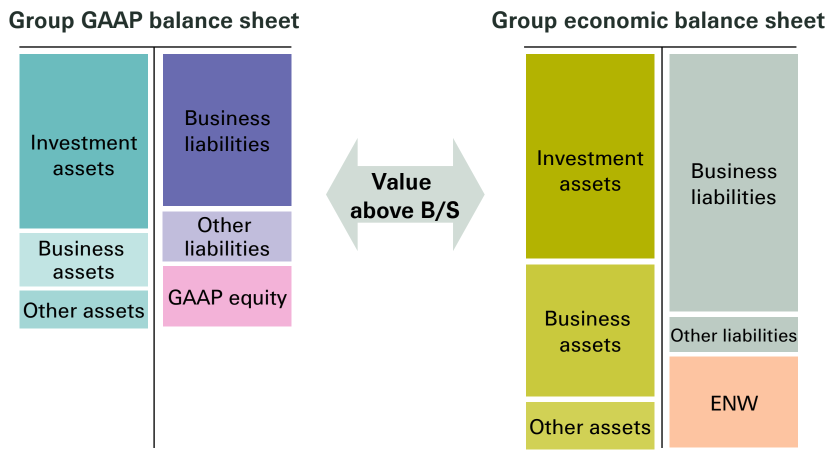
US GAAP vs. economic balance sheet



EVM figures

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EVM discount rates

- The risk-free discount rates that are used to value insurance contracts are called transfer price of funds (TPF) rates
- TPF rates are based on Libor swap spot rates, reported for 25 currencies and 50 years on a monthly basis
- A charge is deducted from Libor swap spot rates for all currencies and durations, to reflect credit risk in Libor swap markets

From Embedded Value to EVM

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EV & EVM

	Balance sheet item	EV	EVM
Assets	Investment assets covering statutory liabilities	Marked-to-market allowance as part of VIF-calculation	Market value
	Investment assets covering net worth	Market value	Market value
	Premiums and fees receivable	Discounted at risk discount rate (RDR)	Discounted at risk free rate
	Retrocession assets	Discounted at RDR (allowance for credit risk implied in RDR)	Discounted at risk free rate, with explicit allowance for counterparty credit risk (CDS spreads)
Liabilities	Claims and benefits payable	Discounted at RDR	Discounted at risk free rate
	Future maintenance expenses	Discounted at RDR	Discounted at risk free rate
	Future tax payments	Discounted at RDR	Discounted at risk free rate
	Options and guarantees	Stochastic models	Stochastic models

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EV & EVM

	Balance sheet item	EV	EVM
Capital cost charges	Financial market risk premiums	Implied in RDR	Explicit market risk premiums reflecting financial market risk
	Risk capital costs	Implied in RDR	Explicit charge of 4% on ENW for frictions related to the cost of financial distress, agency costs and liquidity costs from regulatory requirements
	Costs associated with conservatism in regulatory reserves	PV of spread between RDR and investment yield on assets supporting margins in regulatory reserves	
	Cost of holding additional capital required to meet regulatory/rating agency requirements	PV of spread between RDR and investment yield on assets supporting required capital	
Tax on investment income on capital		Allowed for implicitly	The tax on the investment income on economic net worth is an explicit charge in the EVM profit calculation.
Embedded value (EV) or economic net worth (EVM)	Shareholders funds (Net Worth)	Required capital less Cost of Capital plus valuation differences between regulatory and EV values (VIF) plus surplus capital in L&H entities	Group economic net worth is market value of assets less market value of liabilities and capital cost provisions

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EV & EVM – comparison of terminology used

Key measures	EV	EVM
Return-on-capital	Internal rate of return (IRR)	Economic return on capital (EROC) = EVM net income / economic net worth
Shareholder net worth	Embedded Value (EV)	Economic net worth
Value added by new business	Value added by new business	EVM profit on new business
Value added by inforce business	Operating assumption changes Experience variances	EVM profit on previous years' business

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Corporate calendar & contacts

Corporate calendar

18 April 2008	**144th Ordinary Annual General Meeting** (Zurich)
06 May 2008	**First Quarter 2008 Results and 2007 EVM** (Conf. Call)
05 August 2008	**Second Quarter 2008 Results** (Conference Call)
08 September 2008	**Investors' meeting** (Monte Carlo)
25 September 2008	**Investors' day** (Zurich)
06 November 2008	**Third Quarter 2008 Results** (Conference Call)

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Cautionary note on forward-looking statements