

# Economic Value Added (EVA) Valuation Tutorial

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# Valuation of a bond 1/3

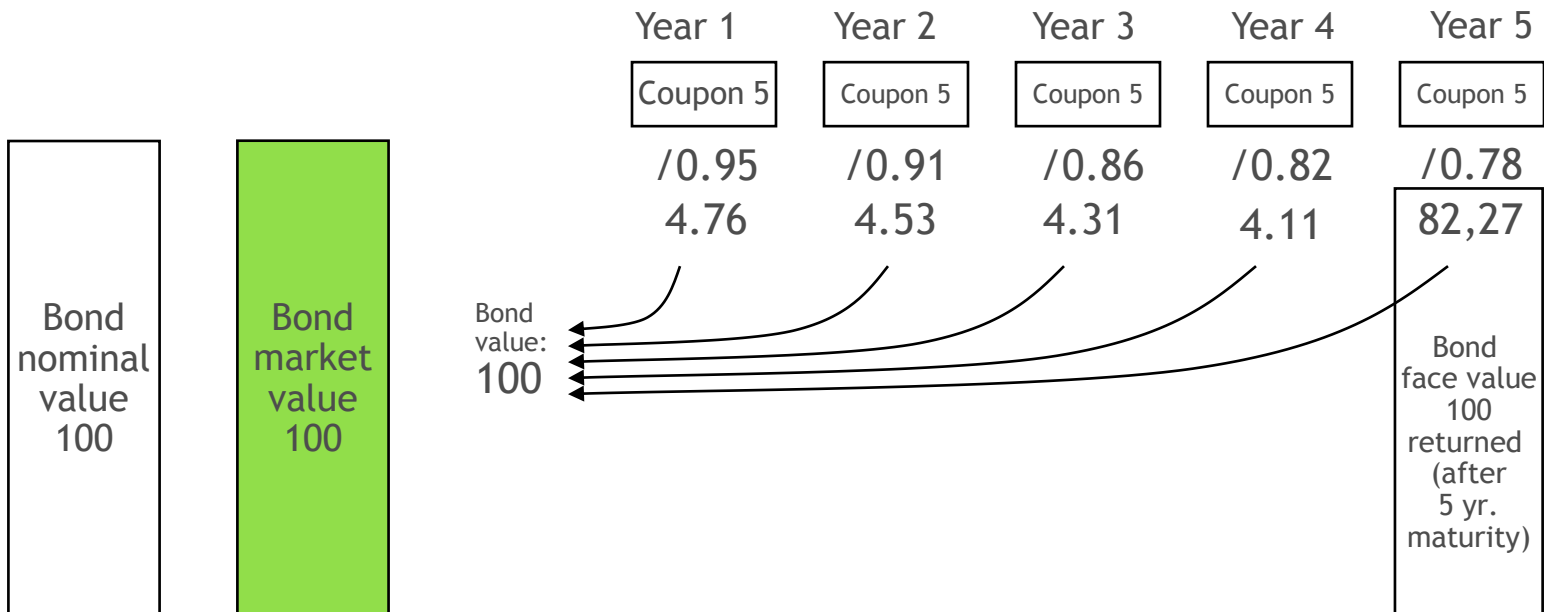
”The price paid for any asset should reflect the cash flows that asset is expected to generate”. E.g. an ordinary government bond, with 5 years to maturity and a 5% coupon rate is valued in a following manner as the market interest rate is 5%:

Interest rate 5%  
 Coupon rate 5%

Discounting: change future values to present values

Bond coupon rate =  
 market interest rate

Discount factor for cash flow occurring next year:  
 $1/(1,05) = 0,95$



# Valuation of a bond 2/3

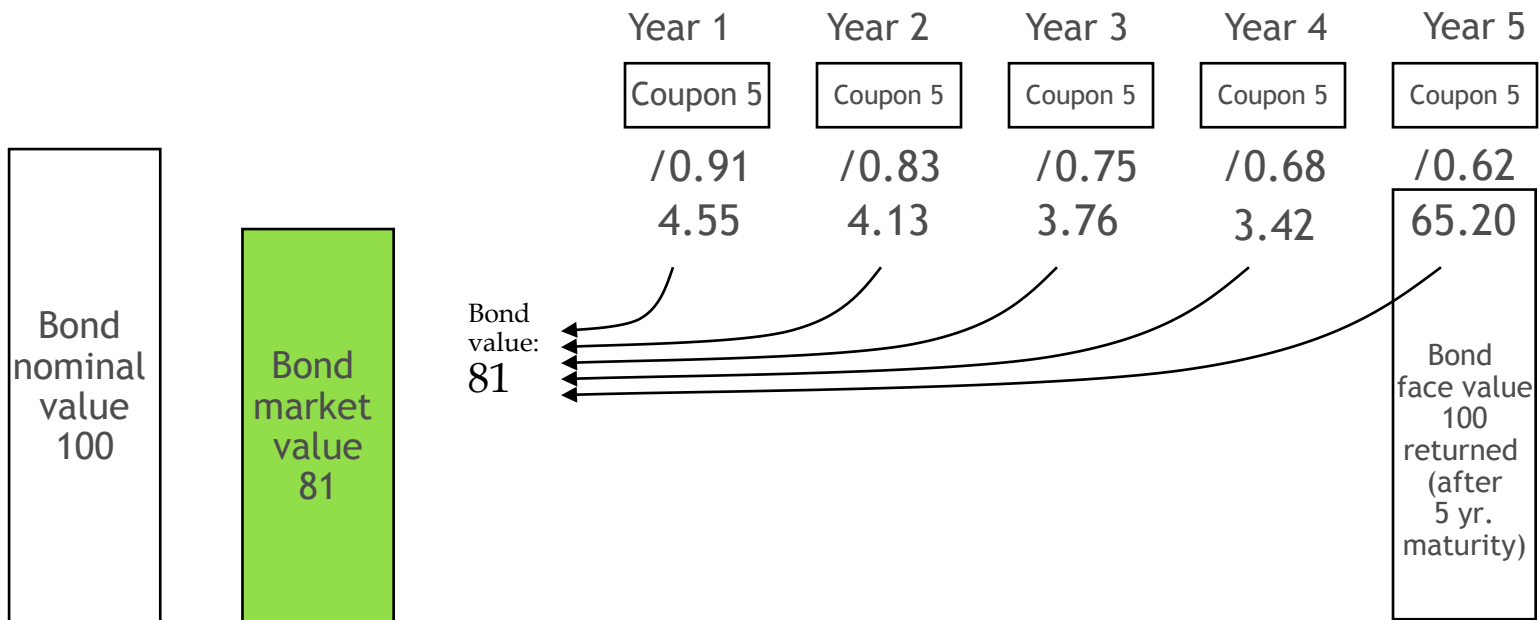
Example of how the bond value changes as interest rate rises from 5% (previous page) to 10%.

Interest rate 10%  
Coupon rate 5%

Bond coupon rate <  
market interest rate

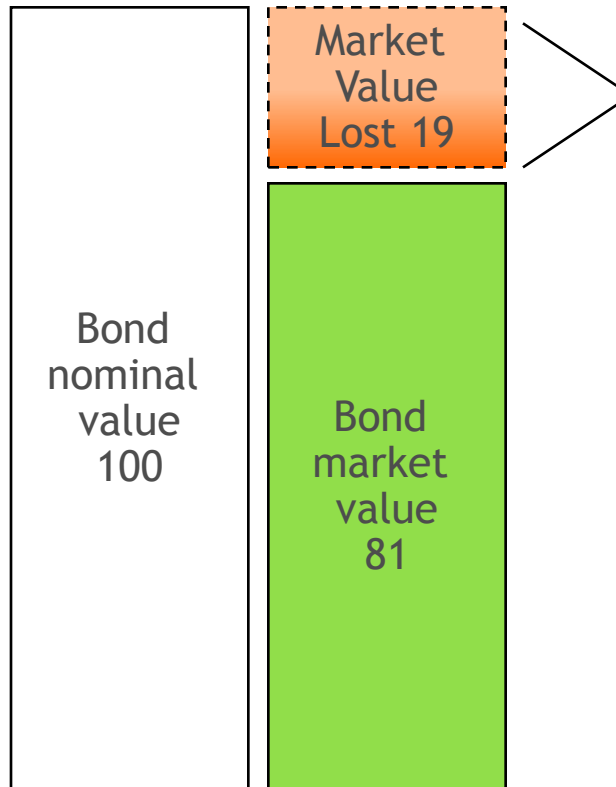
Discounting: change future values to present values

Discount factor for cash flow occurring next year:  
 $1/(1,05) = 0,95$



# Valuation of a bond 3/3 (EVA approach)

Interest rate 10%  
 Coupon rate 5%



Year 1	Year 2	Year 3	Year 4	Year 5
-5	-5	-5	-5	-5
/0.91	/0.83	/0.75	/0.68	/0.62
-4.5	-4.1	-3.8	-3.4	-3.1

The same bond market value can be calculated by focusing on the difference between annual coupon (5) and the capital cost per year (10% x 100 = 10).

As we discount these differences: (5 - 10 = -5 each year) to the present, we see how much the market value will be below (or above) capital invested i.e. bond nominal value.

# Analogy between bond and company valuation

- In principle, the valuation of a bond and valuation of a company are the same:
  - You discount the future cash-flows into the present, sum them up and thus get the bond/company value
  - OR: you calculate how much the bond/company earns above or below its opportunity cost (cost of capital), discount these values to the present and add this to or subtract this from the book value
- The following pages will demonstrate how to use the latter method in theory and in practice in company valuation
- The difference between company's return and its capital costs is called Economic Value Added, EVA which is often called also Residual Income or Economic Profit

# Cost of capital

- The cost of capital of a company is the average cost of equity and debt
- The cost of debt should be defined as the (long term) risk free rate + company premium, e.g. 5% + 0,5% = 5,5%
- Cost of equity -> average return on similar risky investment
  - Cost of Equity: (long term) risk free rate + beta x equity risk premium =>
  - 5% + 1,3 x 6% = 12,8%
- Cost of capital (with target solvency) :  $(45\% * 12,8\%) + (55\% * 5,5\%)^1 \approx 9\%$

<sup>1</sup>Tax-schild of debt not included here

Assets		Liabilities			
WACC 9,0%	<b>Fixed assets</b>		<b>Equity</b>	} Cost 12,8%	
	Land	90	Share capital		200
	Real estate	110	Retained earnings		250
	Machinery	220	<hr/>		} Cost 5,5%
	<b>Working capital</b>		<b>Debt</b>		
	Inventories	310	long-term	250	
	Sales recievables	220	short-term	200	
	Cash and bank	50	other	100	
	Total assets	1000	Total liabilities	1000	

# Calculating EVA

## Income Statement

Net sales
- Variable costs
- Fixed costs
Gross profit
- Depreciation
Operating profit
- fixed assets x WACC
- Materials x WACC
- Finished goods x WACC
- Sales receivab. x WACC
+ Accounts payabl. x WACC
- Taxes
EVA

## Assets

Land
Buildings
Machinery and equip.
Material
WIP-inventory
Finished goods
Sales receivables
Cash and bank
Total assets

## Liabilities

Share capital
Retained earnings
Excess depreciation
Long-term debt
Short-term debt
Advances received
Accounts payable
Deferred items
Total liabilities

In a nutshell:

$$\text{EVA} = \text{Net Operating profit after taxes} - \text{Total cost of capital, or}$$

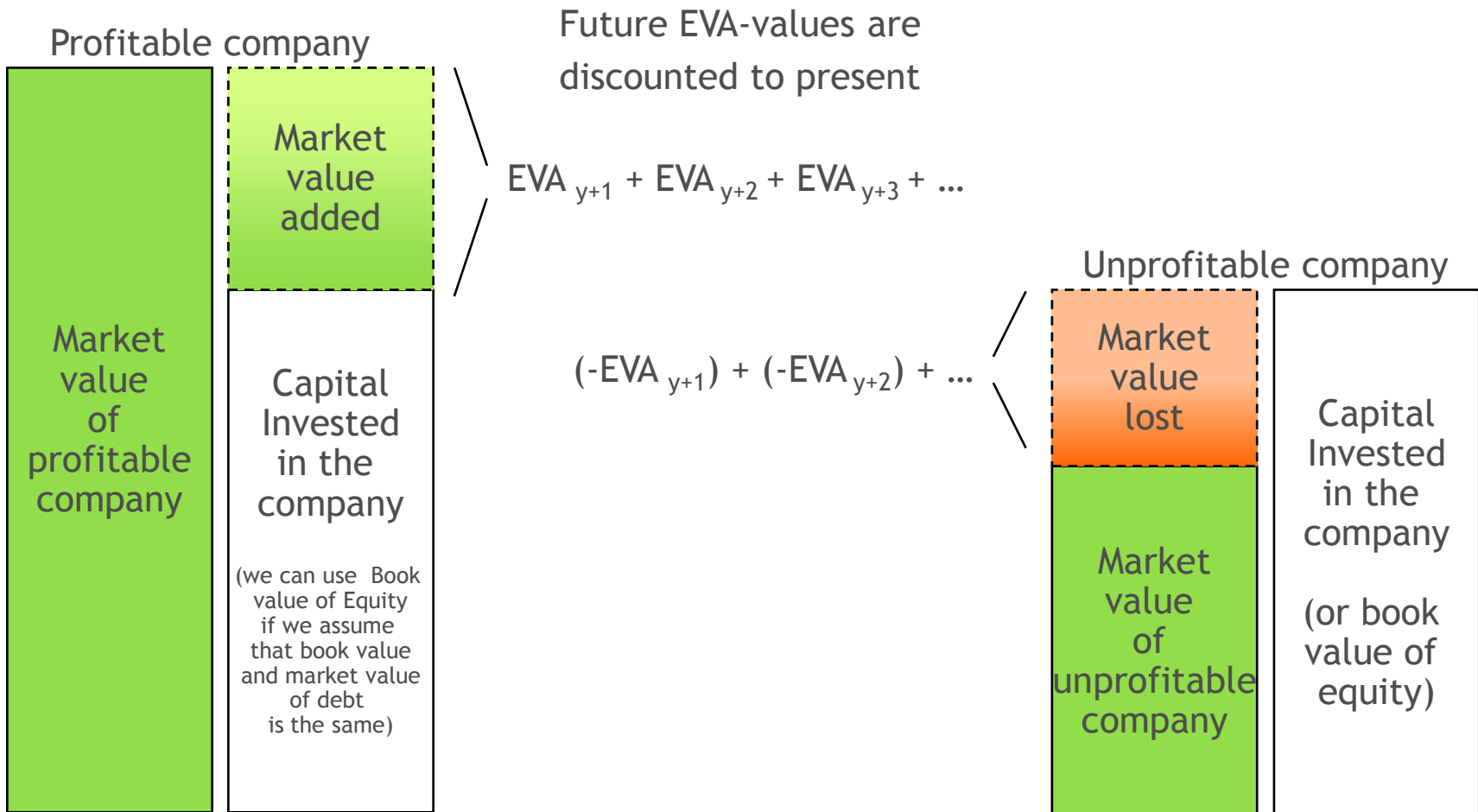
$$\text{EVA} = \text{NOPAT} - \text{WACC \%} * \text{Total Capital}$$



# EVA valuation of a company

Finance theory:

The value of the company = Book value of equity + the value of expected future EVA



# EVA valuation of Company X 1/2

## WACC parameters

Target Debt ratio	35 %	Cost of Equity	10.1 %
Cost of debt	5.50 %		
Equity Beta	1.2	WACC (without tax shield)	8.5 %
Market Risk Premium	5.50 %	<b>WACC(with tax shield)</b>	<b>8.0 %</b>
Riskfree interest rate	3.50 %		
Tax rate	26 %		

In this case the analyst has estimated NOPAT, total cost of capital, and WACC% for next 6 years and the terminal value of EVA

## Calculating EVA

	Y-1	Y+0	Y+1	Y+2	Y+3	Y+4	Y+5	Y+6	TERM
<b>NOPAT</b>		<b>97.7</b>	<b>113</b>	<b>136</b>	<b>152</b>	<b>173</b>	<b>193</b>	<b>202</b>	...
<b>- Total cost of capital</b>		<b>113.4</b>	<b>129.5</b>	<b>131.1</b>	<b>132.8</b>	<b>133.6</b>	<b>134.4</b>	<b>140.4</b>	...
Total Capital	1419	1 621	1 641	1 662	1 672	1 682	1 757	1 775	...
WACC %		8.0 %	8.0 %	8.0 %	8.0 %	8.0 %	8.0 %	8.0 %	8.0 %
<b>= EVA</b>		<b>-15.7</b>	<b>-16.5</b>	<b>4.9</b>	<b>19.2</b>	<b>39.4</b>	<b>58.6</b>	<b>61.6</b>	<b>1474.6</b>

# EVA valuation of Company X 2/2

Market value of Company A

1 800 Million EUR

18.00 EUR /share

Added Value of 960 mEUR

9.6 EUR /share

Capital invested 800 mEUR

8 EUR /share

## Calculating Present Value of EVA

	Y+0	Y+1	Y+2	Y+3	Y+4	Y+5	Y+6	TERM
EVA	-15.7	-16.5	4.9	19.2	39.4	58.6	61.6	1474.6
Discount Factor	1.00	0.93	0.86	0.79	0.74	0.68	0.63	0.58
Present value of EVA	-15.7	-15.3	4.2	15.3	29.0	39.9	38.9	861.0

Sum of discounted EV, 957.2

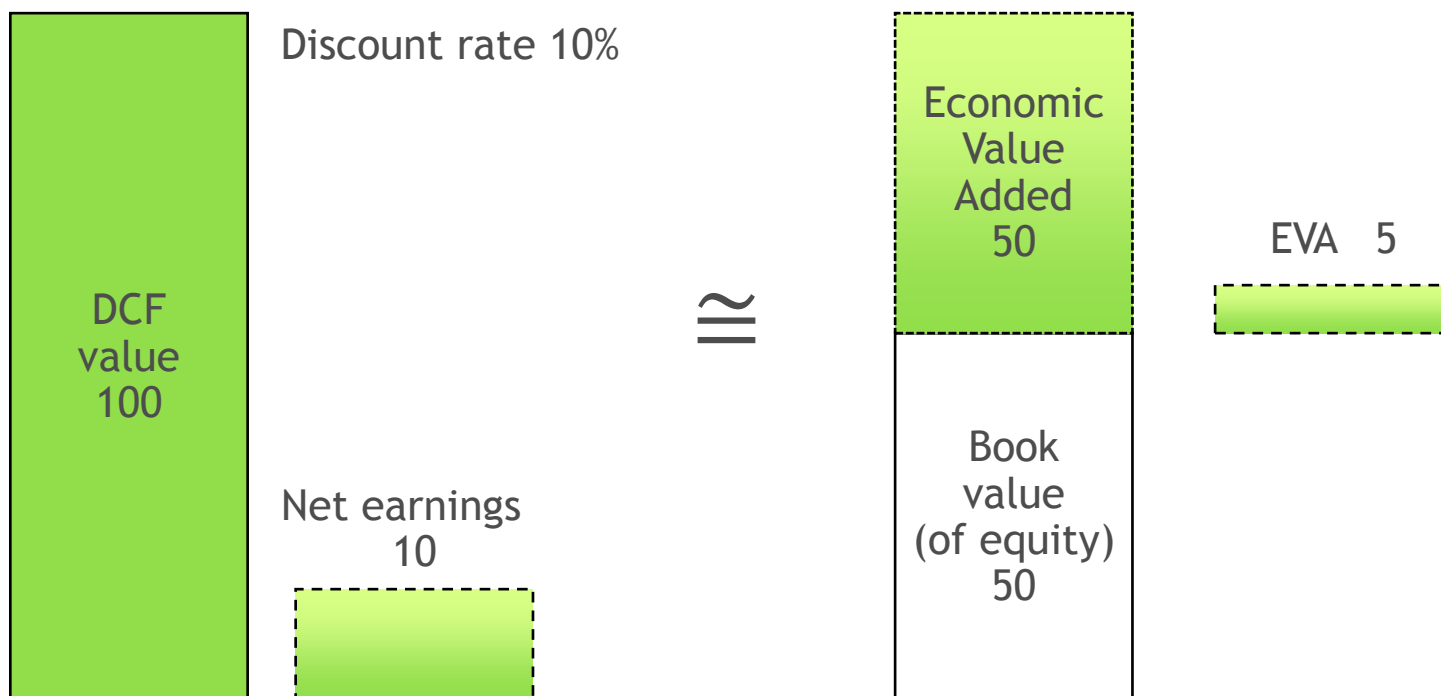
- In this case the analyst has estimated that the company will decrease share holder value for years Y+0 and Y+1. After this the company will add share holder value.
- The company's added value for a shareholder is 9.6 EUR.
- If capital invested + Added value doesn't equal the market value /share, then the share is either overvalued or undervalued
- In this case the market value/share is 18.00 EUR and capital invested + estimated added value = 17.6 EUR => the share is overvalued by 0.40 EUR/share

Here you can find 50 real life examples of EVA valuation and market capitalization

# EVA and DCF-valuation

Two different expressions from the same thing:

- EVA-valuation produces exactly the same valuation (fair value) as DCF
- Actually in EVA valuation the book value of equity is off no meaning: the bigger book value, the bigger capital costs and thus the smaller EVA (what is left and what only has meaning to valuation is cash-flow)
- EVA is only another way (a more illustrative way) to calculate DCF valuation



(To be precise: in DCF-valuation you do not discount Net earnings but cash flow, but here we assume that investments are exactly as big as depreciation and working capital does not change and thus Net Earnings = FCFF)

# EVA and DCF-valuation

- EVA-valuation has theoretically nothing new, but...
  - It is very illustrative, especially with traditional companies with slow growth
  - Easy to calculate straight from the EBIT, even one individual year describes often the situation well, unlike cash-flow of one individual year
  - At its best it forces to take the invested capital into account. Especially the sell-side analysts tend to focus on the income statement and not on the balance sheet. As you calculate the value of the company without the required attention to capital requirements in the long run, you normally overestimate the value of the company...

# Further information

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Thank you!

