



1FP571

Special seminar – Advanced Corporate Finance



EVROPSKÁ UNIE
Evropské strukturální a investiční fondy
Operační program Výzkum, vývoj a vzdělávání



MINISTERSTVO ŠKOLSTVÍ,
MLÁDEŽE A TĚLOVÝCHOVY



Economic Value Added[®]

In late 1993, trumpeted by the Fortune magazine as “The Real Key to Creating Wealth”, called “today’s hottest financial idea and getting hotter”.

Originally the concept of residual income from 1960, Stern Stewart put a trade mark on the “EVA” acronym and marketed it as a value management concept.

In essence, EVA simply extends the cost of capital imperative to performance appraisal.



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What EVA says is that a company (or its division) creates value for its owners when its operating income exceeds the cost of capital employed.

$$\text{EVA} = \text{NOPAT} - \text{WACC} \times \text{CE}$$

where:

NOPAT = Net Operating Profit After Taxes = EBIT (1–tax rate)

WACC = company's weighted average cost of capital

CE = capital employed by the company or its unit.



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This formula can be simply re-arranged as follows:

$$\begin{aligned}\text{EVA} &= \text{NOPAT} - \text{Capital Charge} = \text{NOPAT} - \text{WACC} \times \text{CE} = (\text{NOPAT}/\text{CE}) \times \text{CE} \\ &\quad - \text{WACC} \times \text{CE} = \text{CE} \times (\text{ROCE} - \text{WACC})\end{aligned}$$

where

ROCE = Return on Capital Employed.

The beauty of this concept is that it tells the management (and everybody outside the company) how much the company creates or destroys in value for its shareholders by using the CE in return for the NOPAT.

By looking at the second re-arrangement, the message is that the economic value added via management's operations equals the amount of employed capital times the net return (after the capital charge is taken into account (gross return minus relative cost of capital))



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Stern Stewart would obviously not be able to draw its considerable consultancy fees simply based on trademarking this trivial and well known formula. Much of its charged expertise rests in its consultancy services related to shareholder value based management, management compensation schemes, presentations of economic results to the shareholder public and, notably, using over 100 undisclosed adjustments to arrive at the original and one only, Stern Stewart registered NOPAT, all the way from the original EBIT.

Nevertheless, the concept is being broadly replicated across the corporate world and adopted by investment banks, portfolio analysts, etc.



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Let us be clear on two things:

- A. EVA and NPV are conceptually the same thing! No value growth out of nothing, the same investment and no extra cost has been brought into play by the EVA concept.

For example, assume the investment of \$100 depreciated to zero over 4 years using straight line method. Adding the depreciation to prospective income after tax and discounting the resulting after tax cash flow at 10 per cent yields both the NPV and EVA of \$58.50:



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Year	0	1	2	3	4
Initial investment	-\$100				
Revenue		\$80.00	\$80.00	\$80.00	\$80.00
Cash expenses		13.33	13.33	13.33	13.33
Depreciation		25.00	25.00	25.00	25.00
Income before tax		41.67	41.67	41.67	41.67
Tax@40%		16.67	16.67	16.67	16.67
Income after tax		25.00	25.00	25.00	25.00
Depreciatoin		25.00	25.00	25.00	25.00
After tax CF	-\$100	\$50.00	\$50.00	\$50.00	\$50.00

NPV@10%

\$58.50



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Year	1	2	3	4
Capital employed (CE)	-\$100	\$75	\$50	\$25
WACC	0.10	0.10	0.10	0.10
WACC x CE	10.00	7.50	5.00	2.50
EBIT (1-t)	25.00	25.00	25.00	25.00
WACC x CE	10.00	7.50	5.00	2.50
EVA	\$15.00	\$17.50	\$20.00	\$22.50

EVA discounted @10% \$58.50



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B) EVA's main appeal is not in its superiority to ROI as a measure of business performance, nor NPV.

However, the key is presentation. It promises to integrate three crucial management functions:

- capital budgeting
- performance appraisal, and
- incentive compensation.

Together, these functions positively shape management's behavior. The business goal of the EVA-based management is to create EVA. Capital budgeting decisions are made based on discounted EVA and an appropriate cost of capital. Unit EVAs (or their changes) measure business unit's performance and incentive compensations. Stern Stewart & Co. has even in its portfolio a method of distributing managers' bonuses over several periods to discourage single-period decisions.



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Value added .. to whom?

Starting Point: Market Value Added (MVA)

- MVA for All Investors (Debt+Equity)

$$\text{MVA} = \text{Market Value (D+E)} - \text{Invested Capital (D+E)}$$

- MVA for Equityholders (just Equity)

$$\text{MVA} = \text{Market Value (Equity)} - \text{Invested Capital (Equity)}$$

- Qualifications?

Invested Capital is from the past! Market Value is from today!



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Value added .. to whom?

The “value added methodologies” are used to measure the profits (or losses) generated by a firm for a given level of capital investment & the risk of these investments
– Also called residual income or abnormal earnings

Value Added (for all investors ... Debt + Equity):

$$= \text{NOPAT} - \text{CC}$$

NOPAT = Net Operating Profit after Tax

CC = Capital charge = r_{assets} x Value of Assets at start of year

Residual Income for Equityholders:

$$= \text{NI} - \text{CC}$$

NI = Net Income

CC = Capital Charge = r_{equity} x Value of Equity at start of year



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Value added .. to whom?

REMINDER! Valuation ultimately boils down to DCF (or discounted dividends)

Intuition: The value of the firm (or its equity) can be the sum of three components:

- 1) Original Invested Capital
 - starting value of funds originally contributed by investors (equityholders).
- 2) Normal rate of return on Invested Capital
 - determined by the cost of capital ("r").
- 3) Abnormal return on Invested Capital
 - Abnormal earnings (residual income) above normal rate of return.



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Use this idea to express current equity value of the firm as a function of book value of the firms and abnormal earnings:

$$\text{Equity Value}_0 = BV_0 + \Sigma [AE_t / (1+r)^t]$$

where:

BV_t = Book value of equity at beginning of year t

r = Cost of (equity) Capital

AE_t = Expected value of abnormal earnings in year t = Projected earnings in year t minus $r \times BV$ of equity at beginning of year t)



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Step 1: Forecast earnings in each year $t=1, \dots, T$ in the forecast horizon.

Step 2: Estimate “ r ”, the cost of equity capital.

Example using CAPM:

$r = R_f + \beta \times [E(R_M) - R_f]$ where

R_f = “Riskless” return

β = Beta on common stock

$E(R_M) - R_f$ = Expected risk premium on market portfolio



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Step 3: Estimate expected abnormal earnings in each year $t = 1, \dots, T$ in forecast horizon:

$$AE_t = E_t - (r \times BV_{t-1})$$

Step 4: Use “ r ” to estimate the PV of abnormal earnings during the forecast horizon:

$$AE_1 / (1+r)^1 + AE_2 / (1+r)^2 + \dots + AE_T / (1+r)^T$$

Step 5: Estimate the PV of expected abnormal earnings beyond the forecast horizon:

- use perpetuity
- use growing perpetuity



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PERPETUITY METHOD

- Estimate AE in year T+1
- Assume AE constant beyond year T+1

$$\text{PV of AE beyond year T} = [AE_{T+1} / r] / (1+r)^T$$

GROWING PERPETUITY METHOD

- Estimate AE in year T+1
- Assume AE grow beyond year T+1 forever at rate g/year

$$\text{PV of AE beyond year T} = [AE_{T+1} / (r - g)] / (1+r)^T$$



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Step 6: Computer equity value by summing together the parts:

$$\begin{aligned}\text{Equity Value} = & \text{BV of equity at beginning of year 1} \\ & + \text{PV of AE during forecast horizon (Step 4)} \\ & + \text{PV of AE beyond forecast horizon (Step 5)}\end{aligned}$$

In closing:

By their very definition, AE are hard to sustain:

- Positive abnormal earnings: competitors enter
- Negative abnormal earnings: takeover, management fired, restructuring, etc.

Potential problems:

- what if Book Value of Equity (BV) is incorrectly measured?
- why might BV be too low?



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