

5. Valuation Methods: FCFF, FCFE, EVA, BRA, FRA, APV, FEVA, DDM

1.1 Equity and Firm

In general, there are two approaches to valuation: FCFF - *free cash flows to the firm* and FCFE - *free cash flows to equity*.

	FCFF	FCFE
cash flows	operating, investment	operating, investment, financial
discount rate	WACC (weighted average cost of capital)	cost of equity

In capital budgeting or when valuing companies discounting methods are divided to show the value of equity or the value of a firm (equity and debt). When the value of firm is established you can simply deduct the market value of debt to show the value of equity. When you obtain the value of equity you should add the market value of debt to derive the value of a firm. All discounting methods should give the same results. It is also very important to understand that tax shield increases the value of equity and not the value for bondholders. The differences between two general approaches to valuation: FCFF - *free cash flows to the firm* and FCFE - *free cash flows to equity* are shown in the following table:

	FIRM	EQUITY
Cash Flows	FCFF = operating, investment	FCFE = operating, investment, financial
Discounting Rate	weighted average cost of capital, WACC	cost of equity
Continuing value		
<i>income approach</i>	$CV(FCFF_n) = \frac{FCFF_n(1+g)}{R_A - g}$	$CV(FCFE_n) = \frac{FCFE_n(1+g)}{R_E - g}$
<i>book value approach</i>	$CV(FCFF_n) = FA_n + NCA_n = E_n + D_n$	$CV(FCFE_n) = FA_n + NCA_n - D_n = E_n$

where

R_A is the expected rate of return on equity and debt of an levered company (WACC, weighted average cost of capital),

R_E is the expected rate of return on stock of an levered company (levered cost of equity capital),

g is growth rate of the appropriate cash flow,

FA is fixed assets

NCA is net current assets

E is equity

D is debt

n is the horizon of business plan

1.1.1 EVA

EVA for equityholders

$$(1) \quad EVA_E = NI - R_E \times E_P$$

or

$$(2) \quad EVA_E = (ROE - R_E) \times E_P$$

where

NI – net income,

R_E - cost of equity,

E_P – equity at the beginning of period,

ROE - NI/E_P .

EVA for the firm

$$(3) \quad EVA_F = NOI(1-T) - R_A \times (E_P + D_P)$$

or

$$(4) \quad EVA_F = (ROA - R_A) \times (E_P + D_P)$$

where

NOI(1-T)– net operating income after tax,

R_A - weighted average cost of capital,

$(E_P + D_P)$ – equity + debt,

ROA – $NOI(1-T) / (E_P + D_P)$

MVA (market value added)

Market value added (MVA) represents the difference between the market value of equity and net debt and the book value of capital employed. MVA assesses increase in value with regard to capital invested. When debt is the same (market or book value) on both sides of the difference, the MVA is just the difference between the market capitalization and the book value of equity.

1.2 Discounting Methods

There are many discounting methods. All of them give the same results when we use the proper cash flows and the appropriate discounting rate. Fair value cannot be dependent on a model.

1. FCFF - *free cash flows to the firm*, the most traditional method, in which operating and investment cash flows are discounted using WACC,
2. FCFE - *free cash flows to equity*, in which cash flows are discounted using cost of equity,
3. CCFE - *capital cash flows to the firm*, in which capital cash flows (CCFE = FCFE + CFD, CFD-cash flows to debt) are discounted using weighted average cost of capital before tax,
4. CCFE - *capital cash flows to equity*, in which capital cash flows (CCFE = FCFF- CFD, CFD-cash flows to debt) are discounted using adjusted cost of equity before tax,
5. EVA_F - *incremental economic value added to the firm*, in which economic cash flows to the firm are discounted using WACC,
6. EVA_E - *incremental economic value added to equity*, in which economic cash flows to equity are discounted using cost of equity,
7. ECF_F - *economic cash flows to the firm*, in which economic cash flows against initial book value of equity and debt are discounted using WACC,

8. ECF_E - *economic cash flows to equity*, in which economic cash flows against initial book value of equity are discounted using cost of equity,
9. BRA_F - *business risk adjusted free cash flows to the firm*), in which cash flows are discounted using unlevered cost of capital,
10. BRA_E - *business risk adjusted free cash flows to equity*), in which cash flows are discounted using unlevered cost of capital,
11. RFA_F - *risk-free-rate adjusted free cash flows to the firm*, in which cash flows are discounted using risk-free interest rate,
12. RFA_E - *risk-free-rate adjusted free cash flows to equity*), in which cash flows are discounted using risk-free interest rate,
13. APV_F - *adjusted present value*, in which cash flows to the firm are discounted using unlevered cost of capital,
14. APV_E - *adjusted present value*, in which cash flows to equity are discounted using unlevered cost of capital,
15. $FEVA$ - *financial and economic value added*, which decomposes cash flows into various streams, and discounts them with unlevered cost of capital,
16. DDM - *dividend discount models*, in which dividends and cash surpluses are discounted using cost of equity,
17. *decomposition method*, in which operating, investment, tax shield cash and differences between equity cost of capital and external cost of capital flows are discounted using cost of equity.

Despite varying world all 17 discounting methods give the same values of the firm and equity.

Financial and economic value added (FEVA) model was proposed in 2003¹.

According to the FEVA model, there are eight value drivers, three economic and five financial drivers. The economic drivers are as follows:

- 1) capital invested in the company,
- 2) current operating EVA,
- 3) the franchise factor.

The financial drivers are

- 1) the tax shield derived from existing debt,
- 2) the tax shield from growth opportunities,
- 3) the present value of bankruptcy costs,
- 4) the bankruptcy costs from growing opportunities,
- 5) the current market value of debt.

Initial cash or capital invested is equal to the book value of a company net assets.

The current operating EVA is defined as follows

$$(5) \quad V_{EVA_t} = \frac{EVA_t}{R_U} = \frac{(ROA_t - R_U)NA_{t-1}}{R_U} = \frac{\left(\frac{EBIT_t(1-T_t)}{NA_{t-1}} - R_U \right) NA_{t-1}}{R_U} = \frac{EBIT(1-T) - R_U NA_{t-1}}{R_U}$$

where

$ROA_t = \frac{EBIT(1-T)}{NA_{t-1}}$ is the return on capital invested,

NA_{t-1} - net assets financed by capital invested.

¹ Xavier Adserà and Pere Viñolas, FEVA: A Financial and Economic Approach to Valuation, Financial Analysts Journal, AIMR March/April 2003.