

Valuation

Valuation is the process of estimating the potential market value of a financial asset.

Pre-valuation considerations

Type of buyer: Strategic vs. Financial buyer

- Strategic buyer is interested in earning from the operations of the company whereas financial buyers want to earn return on investment by reselling the company.
- In general, strategic buyers will be ready to pay higher premiums than financial buyers.

Transactional context: Friendly vs. Hostile takeover

- In hostile takeovers management does not endorse the proposed transaction and the offer to shareholders is often unsolicited. In case of friendly mergers, parties involved reach a mutual agreement on selling price and structure of the transaction.
- Generally, premium paid is on higher side in case of hostile takeovers.

Market conditions

In bullish market conditions merger activities are in full swing, which cause premiums in-built in the valuation to reach an all time high as compared to in down (bearish) market conditions.

Valuation approaches:

Asset based approach: This approach is based on the principle that the value of the company is equal to the sum of its parts.

However, this approach is suitable only under certain circumstances, for example, when company is going into liquidation because most of the assets are recorded at their acquisition values which may not reflect their earning potential.

Income based approaches:

These approaches calculate value of the company based on its future earning capacity.

The following methods of valuation fall under this category:

- Discounted cash flow method (DCF)
- Capitalization of earnings method
- Adjusted present value method (APV)

Market based approaches:

Under these approaches a company is valued by making comparison between the company under study to its “peer group”. The methods that fall under this approach are:

- Public comparable analysis
- Acquisition multiple analysis

Parameters used in valuation:

Equity value is the value of the equity i.e shareholders of the company.

Different measures of equity value are:

Book Value: is the value of the equity shareholders claim as recorded in the financial statements.

Market value: is the value of the equity shareholders calculated at the prevailing market price.

Intrinsic value: is the “forward looking” measure of the equity shareholders claim calculated by considering the future income generating capacity of the company.

Enterprise value represents the value of equity along with debt and other sources of capital.

Enterprise value = Equity value + Net debt + Preferred stock + Minority interest

Net Debt = Debt – Cash and cash equivalents

Debt includes all interest bearing liabilities on the balance sheet.

Enterprise value is also referred to as Firm value or Total capitalization.

Cash flows: there are two main types of cash flows:

Unlevered free cash flows (UFCF) or Free Cash Flows for the Firm (FCFF): these are the cash flows generated by operation of the company.

UFCF = EBIT (1-t) + Depreciation – Capital expenditure ± Δ Working capital

EBITDA (earnings before interest, taxes, depreciation and amortization) is a close approximate for operating cash flows (FCFF/ UFCF) of the company.

Free cash flow for equity (FCFE) is the cash flow available to the equity shareholders.

FCFE = UFCF – I(1-t) – Principal repaid + New debt – Preferred dividend

Weighted average cost of capital is the discount rate appropriate to the riskiness of the operating results of the company.

Discounted cash flow method:

Value of equity can be calculated in two ways:

- Value the company and then subtract non-equity financial claims from that value.
- Calculate cash flows for equity, discount them at cost of equity.

Steps in the Enterprise DCF model

- Value the company's operations by discounting FCFF at WACC

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- Value non-operating assets and add it the value of operating assets to arrive at value of the firm (Enterprise Value)
- Subtract non- equity claims (debt, preferred share capital, minority claim) from this value to calculate Equity value.

DCF Equations:

$$EnterpriseValue = \sum_{t=1}^n \frac{FCFF_t}{(1 + WACC)^t} + \frac{T.V}{(1 + WACC)^n}$$

FCFF	= Free cash flow to the firm or Unlevered free cash flows (UFCF)
WACC	= Weighted average cost of capital
T.V.	= Terminal value
n	= number of years in forecasting period

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DCF Analysis Work Sheet

	20X1	20X2	20X3	20X4	20X5
EBIT					
Less: Taxes					
After Tax EBIT					
Plus: Depreciation & Amortization					
Less: Capital Expenditure					
Less: Changes in Working Capital					
Unlevered Free Cash Flows					
Discounted at WACC					
					Terminal Value
Enterprise Value	Sum of Discounted values of FCF + Terminal Value				

Forecast period is the period over which cash flows can be forecasted with reasonable certainty.

Beyond “forecast period”, terminal value calculates the present value of the cash flows of the company.

Terminal value at the end of nth year can be calculated using the following formula:

$$T.V_n = \frac{FCFF_{(n+1)}}{(WACC - g)}$$

Where, g is the growth rate at which firm’s cash flows are assumed to grow indefinitely.

Note: There should be consistency between the numerator and denominator while applying DCF model. When enterprise value is calculated, FCFF should be discounted by WACC; for calculating Equity value, FCFE should be discounted at cost of equity.

Weighted average cost of capital (WACC):

WACC is calculated using the following formula:

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$$WACC = \frac{D}{(D + E)} K_d (1 - T_m) + \frac{E}{D + E} K_e$$

$D / (D + E)$	= Target level of debt to enterprise value
$E / (D + E)$	= Target level of equity to enterprise value
K_d	= Cost of debt
K_e	= Cost of equity
T_m	= Marginal tax rate applicable to the company

The weights should be market value weights instead of book value weights.

If “target” capital structure of the company is known, the weights that company targets should be used for calculating WACC.

Cost of equity: the most popular method for applying cost of equity is CAPM, the equation for which is as follows:

$$E(R_e) = r_f + \beta(r_m - r_f)$$

Note that beta value to be used for calculating cost of equity should be levered beta i.e. firm beta adjusted for capital structure of the company. The formula used for the levering up the beta is

$$\beta_e = \beta_u \left(1 + \frac{D(1 - T)}{E} \right)$$

Capitalization of earnings: The model is simplified version of DCF method of valuing the company. If following assumptions are made, DCF equation will transform in capitalization of earnings

- Earnings of the company are a close approximate for cash flows.
- There is no expected growth in the earnings of the company.

Value of firm under these assumptions will be earnings $[EBIT \cdot (1-t)]$ divided by cost of capital (WACC).

Adjusted present value method: calculates the value of the company in following components:

Enterprise value as if the company was all equity financed

+ PV of debt tax shields and other impacts of debt

- Expected bankruptcy costs

Unlevered value of company

$$V_u = \sum_{t=1}^n \frac{FCFF_t}{(1+k_u)^t} + \frac{T.V}{(1+k_u)^n}$$

FCFF	= Free cash flow available from operations of the company
K_u	= Unlevered cost of equity of capital
T.V	= Terminal value of all equity financed company
n	= number of forecasting years

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Unlevered terminal value of the company. Note that the formula calculates terminal value at the end of nth year and it needs to be further discounted to bring the value at zero period.

$$T.V = \frac{FCFF_{(n+1)}}{(K_u - g)}$$

The unlevered cost of equity can be found out using CAPM equation and putting value of unlevered beta.

$$k_u = r_f + \beta_u (r_m - r_f)$$

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The formula for converting levered beta into unlevered beta is:

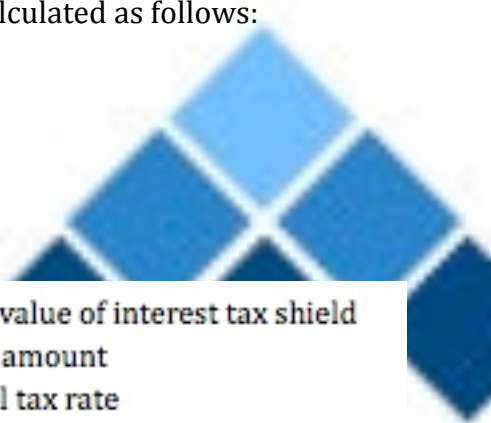
$$\beta_u = \frac{\beta_{levered}}{(1 + \frac{D(1-T)}{E})}$$

Calculating debt impact:

Debt has two impacts:

First one is the **positive impact** and that is the availability of the **debt tax shield**, the present value of which is calculated as follows:

$$V_{TS} = \frac{I * (T_m)}{K_d}$$



V_{TS}	= Present value of interest tax shield
I	= Interest amount
T_m	= Marginal tax rate
K_d	= Cost of debt

The above formula can be transformed and written as

$$V_{TS} = \frac{I * (T_m)}{K_d} = \frac{D * k_d * T_m}{K_d} = D * T_m$$

The second impact of debt has **negative value** and relates to **bankruptcy cost**.

PV of expected bankruptcy costs = Probability of bankruptcy * PV of total bankruptcy costs.

Finally the value of the firm is calculated by combining these components. Thus value of the firm is:

Value_{firm} = Value_{all equity financed firm} + P.V. of Interest tax shield – PV of bankruptcy costs

Multiples method

Public comparable analysis:

This method of valuation is used for calculating the relative value of the company by comparing it to other similar companies.

The value of the target company is calculated by creating a set of key financial ratios and applying them to the characteristics of the company under study.

The multiples used are as follows:

Equity value multiples:

- Price/ EPS
- PE / Earnings growth (PEG Ratio)
- Price / FCFE per share
- Equity Value / Net Income
- Equity Value/ After Tax cash flows
- Equity Value/ Book Value

Enterprise value multiples:

- Enterprise value / Revenues
- Enterprise value / EBITDA
- Enterprise value / EBIT

Acquisition comparable analysis: Under this approach peer group is created on the basis of comparable transaction.

The advantage of this method over Comparable Company Analysis is that the multiples created include the built-in premiums paid to the companies included in the comparable transactions.

