

Discounted Cash Flow Valuation

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WIRC of ICAI**

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March 12, 2016

**Regulatory Requirements under
Income Tax Act and FEMA**

Income Tax Act

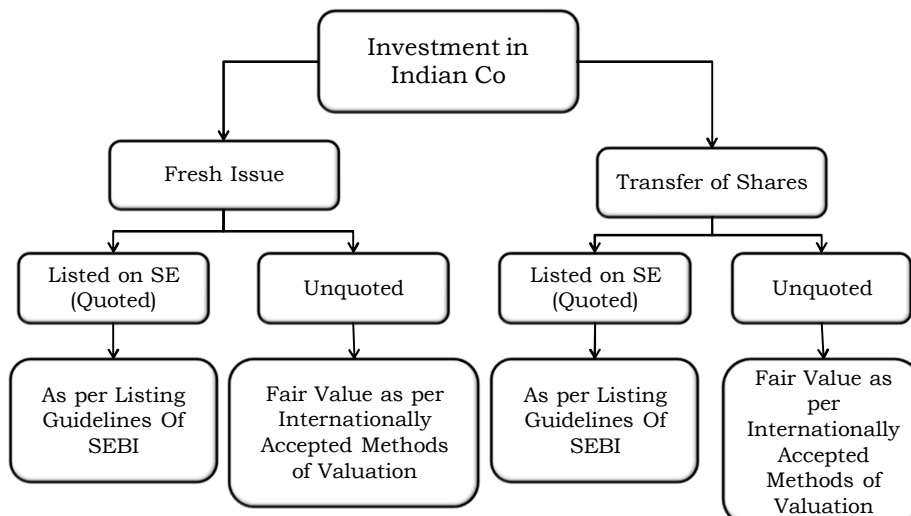
➤ **Sec. 56(2)(vii)**

Where a firm or a private company receives any property, being shares of a private company without consideration or with inadequate consideration (i.e. less than FMV), FMV of such shares to be computed in accordance with **Rule 11UA** (given below)

- **Quoted shares** - lowest price of such shares quoted on any recognized stock exchange on the valuation date
- **Unquoted equity shares** – value as computed under option (a) or (b) below at the option of the assesses
 - a) Net worth of the company after making adjustments as specified in Rule 11UA; or
 - b) FMV as determined by a merchant banker or a chartered accountant as per the *DCF Method*.

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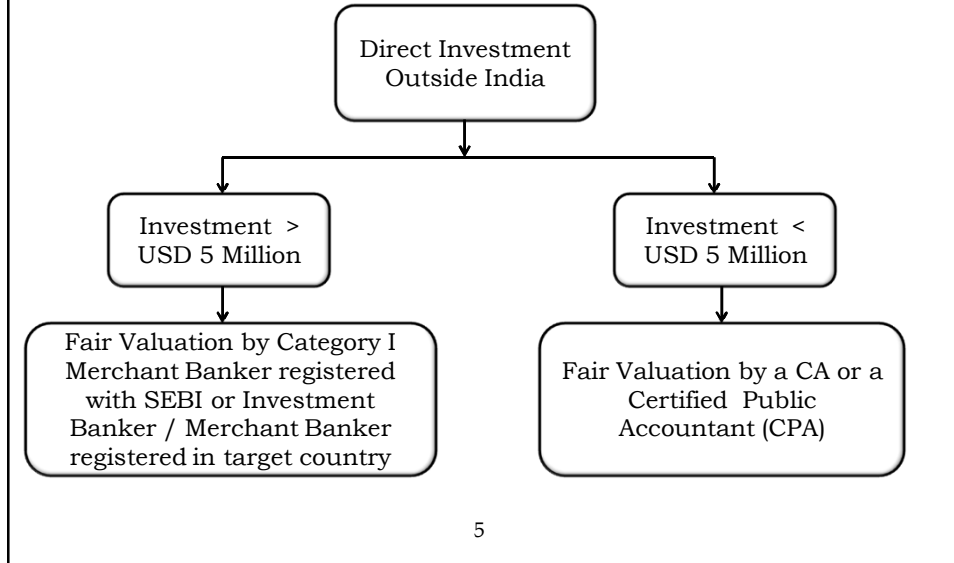
FEMA



Note: Subscription to MOA can be at Par Value. Ref: Circular no.36 dated 26.09.12

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FEMA



Discounted Cash Flow Methodology

Discounted Cash Flow

- Values a business based on the expected cash flows over a given period of time
- Involves determination of discount factor and growth rate for perpetuity
- Value of business is aggregate of discounted value of the cash flows for the explicit period and perpetuity

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Discounted Cash Flow

- Considers Cash Flow and Not Profits
- Cash is King
- Free Cash Flow ('FCF')
 - ◆ FCF to Firm
 - ◆ FCF to Equity

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FCFF Vs. FCFE

- In FCFE, value of equity is obtained by discounting cash flows to equity (cash flows after meeting all expenses, tax, interest and principal payments) at the cost of equity.
- In FCFF, value of firm is obtained by discounting cash flows to firm (cash flows after meeting all operating expenses and taxes, but prior to debt payments) at the weighted average cost of capital.

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DCF - Key Factors

- **Cash Flows**
 - ◆ Projections
 - ◆ Horizon period
 - ◆ Growth rate
 - ◆ Residual value
- **Discounting**
 - ◆ Cost of Equity (' K_e ')
 - ◆ Cost of Debt (' K_d ')
 - ◆ Weighted Average Cost of Capital ('WACC')



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DCF - Projections

Factors to be considered for reviewing projections:

- **Understanding of the Business**
- **Industry / Company Analysis**
- **Dependence on single customer/ market**
- **Dependence on a single supplier & Import dependence**
- **Installed capacity, Projected Volume, Capex Required**
- **Existing policy / legal framework**

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DCF – Projections (Cont..)

Factors to be considered for reviewing projections

- **Lapsing of patents or copyrights**
- **Working capital requirements**
- **Alternate scenarios / Sensitivities**

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DCF – Horizon Period

- **Horizon period and Residual value**
- **Horizon period at least for about 3-5 years**
- **Basic criteria – achieve stage of stable growth**
 - ◆ **If industry is passing through rough phase – horizon period should cover a period till rationalization is reached**
- **For cyclical businesses – cover at least one full business cycle**

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DCF – Growth Rate

- **Growth rate during horizon period**
 - ◆ **Historical data**
 - ◆ **Competitors' growth rate**
 - ◆ **Macro economic factors (GDP growth rate, inflation, etc.)**
 - ◆ **Can also be derived as Reinvestment rate X Return on Invested Capital ('ROIC')**
- **Perpetuity growth rate**
 - ◆ **Ideally should not be more than the expected economic growth rate**

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DCF – Discounting

- **Weighted Average Cost of Capital (WACC)**

$$\text{WACC} = (D/(D+E) \times K_d \times (1 - t)) + (E/(D+E) \times K_e)$$

D = Debt

E = Equity

T = Income tax rate

K_d = Pre-tax cost

K_e = Cost of Equity

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Cost of Equity

- **In CAPM Method, all the market risk is captured in the beta, measured relative to a market portfolio, which atleast in theory should include all traded assets in the market place held in proportion to their market value.**

$$K_e = (R_f + (\beta \times E_{rp}))$$

Where , K_e = Cost of Equity

R_f = Risk free return

E_{rp} = Equity risk premium

β = Beta

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Risk Free Rate

- **Risk Free Rate** : It is the rate where investor knows the expected return with certainty.

For an investment to be risk free, two conditions have to be met :-

- (a) No default risk
- (b) No uncertainty about reinvestment rates

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Risk Premium

- **Risk Premium** : It measures the extra return that would be demanded by investors for shifting their money from a riskless investment to an risk bearing investment

There are 2 ways of estimating risk premium in CAPM.

- ✓ Large investors can be surveyed about their expectations for the future
- ✓ The actual premiums earned over a past period can be obtained from historical data

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Beta

- **Beta** : A measure of the volatility, or systematic risk, of a security or a portfolio in comparison to the market as a whole

In CAPM, the beta of the asset has to be estimated relative to the market portfolio.

There are 3 approaches available for estimating these parameters:

- ✓ **Historic Market Betas**
- ✓ **Fundamental Betas**
- ✓ **Accounting Betas**

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Historical Market Beta

- **Historical Market Betas** : This is the conventional approach for estimating betas.

Beta of an asset = Covariance of asset with market portfolio / Variance of the market Portfolio

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Fundamental Beta

- **Fundamental Beta** : The beta for a firm may be estimated from a regression but it is determined by fundamental decisions that the firm has made on
 - (1) What business to be in
 - (2) How much operating leverage to use in business
 - (3) The degree to which the firm uses financial leverage

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Accounting Beta

- **Accounting Beta** : It estimates the market risk parameters from accounting earnings rather than from traded prices.

Thus, changes in earnings of a division or a firm, on a quarterly or an annual basis, can be regressed against changes in earnings for the market, in the same periods, to arrive at an estimate of a market beta to use in the CAPM

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Unlevered Beta

A type of metric that compares the risk of an unlevered Company to the risk of the market. The unlevered beta is the beta of a company without any debt. Unlevering a beta removes the financial effects from leverage.

The formula to calculate a company's unlevered beta is:

$$B_U = \frac{BL}{[1 + (1 - T_c) \times (D/E)]}$$

Where:

BL is the firm's beta with leverage.

T_c is the corporate tax rate.

D/E is the company's debt/equity ratio.

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Unlevered Cost of Equity

- Unlevered cost of equity : The cost of equity that would result from using an unlevered beta is called the unlevered cost of equity.

Unlevered cost of equity = Risk free rate + Unlevered beta x risk premium

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Cost of Equity (cont..)

- **Gordon Dividend Model:** It relates the value of a stock to its expected dividends in the next time period, and the expected growth of dividends.

$$K_e = \frac{\text{Dividend per share}}{\text{value of stock}} + \text{Growth Rate}$$

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Cost of Debt

- **Cost of Debt :** The cost of debt is the rate at which a firm can borrow money today and will depend on the default risk embedded in the firm.

Default risk can be measured using a bond rating or by looking at financial ratios.

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WACC – Key Issues

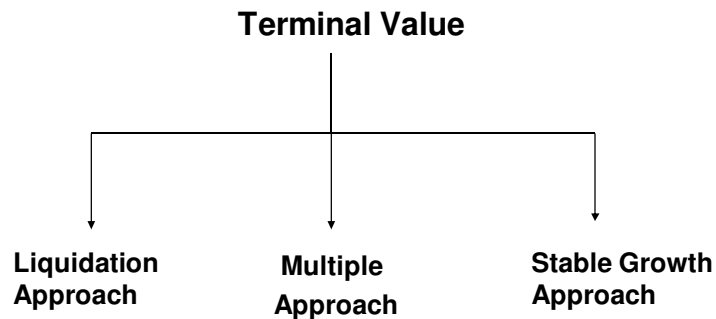
WACC determination – Some key issues

- **Debt : Equity ratio**
- **Cost of Debt – Weighted average**
- **Tax rate based on projections / marginal rate**

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Terminal value

Terminal Value is the residual value of business at the end of projection period used in discounted cash flow method.



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Liquidation Approach

- **In this approach, it is assumed that the firm will cease operations at a point of time in future and sell the assets it has accumulated.**
 - ✓ **Value based on Book value**
 - ✓ **Value based on Earning power of assets**

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Multiple Approach

- **In this approach, the value of firm in a future year is estimated by applying a multiple to the firm's earning or revenue in that year**

For instance, a firm with expected revenues of Rs.6 billion ten years from now will have an estimated terminal value in that year of Rs.12 billion if a value to sales multiple of 2 is used. If valuing equity, we use equity multiples such as price earnings ratios to arrive at the terminal value.

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Stable Growth Approach

- **Stable Growth Model:** It is assumed that firm has a infinite life with constant growth rate.

$$\text{Terminal Value} = \frac{\text{Cash flow } t + 1}{(r - g_{\text{stable}})}$$

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The Final Value

- Under the FCF to the firm approach - the Value is the summation of
 - ◆ PV of the FCF to Firm during the horizon period
 - ◆ PV of the residual value
 - ◆ PV of the tax benefit on the WDV of the assets, 80IA, 10A/10B, VAT, etc. beyond the horizon period
 - ◆ Market value of the investments and other non-operating/ surplus assets (net of tax)/ surplus cash as at the valuation date
 - ◆ Adjustment for contingent liabilities/ assets (net of taxes)

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The Final Value (Cont..)

- **Under this approach, value to the equity shareholder can be derived as value to the firm less value of debts and preference shares.**

- **Value as determined above to be divided by number of equity share outstanding as at the valuation date**

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The Final Value (Cont..)

- **Under the FCF to equity shareholder approach**
 - ◆ **PV of FCF to equity shareholders during the horizon period**

 - ◆ **PV of the residual value**

 - ◆ **All the adjustments mentioned under Value to the Firm approach except adjustment for debt**

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DCF – When to use?

- **Most appropriate for valuing firms**
 - ◆ **Limited life projects**
 - ◆ **Large initial investments and predictable cash flows**
 - ◆ **Regulated business**

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Advantages of DCF

- **It provides more sophisticated and reliable picture of company's value than the accounting approach**
- **Helpful to all stakeholders**
- **Reduces subjectivity to valuation**

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DCF – Disadvantages

- **Projections are highly subjective hence could be inaccurate**
- **Inapplicable where projections cannot be made for the horizon period**
- **Difficulties in measuring risks**

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Limitations of DCF Method

- **DCF may not be the right method in following scenarios**
 - ◆ **Valuation of Holding Companies**
 - ◆ **Valuation of Banks / NBFC's.**
 - ◆ **Start up Companies where business cannot be carried out without infusion of funds from Investors**

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THANK YOU