



Discounted Cash Flow

A Key Valuation Method

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Despite being one of the most complex methods of stock valuation, Discounted Cash Flow (DCF) analysis gained wide popularity following the Great Stock Market Crash of 1929. Though DCF calculation has been used in some form or other since ancient times, it was formally expressed in modern economic terms for the first time by Mr Irving Fisher in his book "The Theory of Interest" in 1930.

Discounted Cash Flow method is generally used to estimate the attractiveness of an investment opportunity. Analysts usually discount projected cash flows at Weighted Average Cost of Capital (WACC) to determine the Net Present Value (NPV) of a particular project, using the following formula:

$$DCF = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \dots + \frac{CF_n}{(1+r)^n}$$

CF = Annual Cash Flow

r = Discount Rate (WACC)

Estimated cashflows include all types of inflows and outflows related to the project considered for valuation. Generally it is assumed that the enterprise will run till infinity and hence, cashflows also need to be projected accordingly. However, instead of projecting the cash flows till infinity, a terminal value approach can be used. A simple annuity can be used to estimate the terminal value after certain years.

WACC is the overall required return on the company as a whole and usually, calculated as per Capital Asset Pricing Model (CAPM). It is the average of the costs of company's sources of financing viz. capital and debt, each of which is weighted by its proportionate use in the given situation.

As a thumb rule, if the net present value calculated using DCF analysis is higher than the current cost of the investment, it is believed to be a good opportunity and vice-versa. Given the fact that the Management is well-verse with the business, their guidance about future performance carries substantial weightage while arriving at the enterprise valuation. Since DCF relies upon management projections to calculate the enterprise value, it is considered to be one of the most scientific and reliable methods of valuations.

DCF is regularly used in corporate finance management, real estate development as well as

investment finance wherein future projections are likely to be somewhat more certain.

However, we must understand that there are many complexities and variations while projecting future cashflows as well as determining WACC. As the time lapses, it is even more difficult to have a more realistic estimate of the future cashflows. Sometimes, DCF can be merely a mechanical tool which may not be suitably applied for real-life situation. Further, one need to extremely cautious while using this tool because small changes in input can make huge difference in valuation of the enterprise.

ABC Group - Discounted Cash Flow (Rs in Lakhs)

	FY09A	FY10E	FY11E	FY12E	FY13E
	-	Year 1	Year 2	Year 3	Year 4
Net Sales	115.98	175.76	246.50	386.40	516.50
YoY Increase		52%	40%	57%	34%
EBITDA	15.6	25.8	40.5	94.1	157.2
EBITDA Margins	13.5%	14.7%	16.4%	24.4%	30.4%
Less: Depreciation	-	10.4	14.3	17.9	21.1
EBIT	15.6	15.4	26.2	76.3	136.1
Less: IT on EBIT	5.2	5.1	8.7	25.2	44.9
NOPAT	10.5	10.3	17.6	51.1	91.2

Cash Flow Statement

	Year 1	Year 2	Year 3	Year 4
NOPAT	10.3	17.6	51.1	91.2
Add: Depreciation	10.4	14.3	17.9	21.1
Change in Working Capital	(5.9)	4.4	12.2	13.0
Capex	50.0	50.0	50.0	50.0
Free Cash Flow (A)	(23.4)	(22.5)	6.8	49.3
Terminal Value (B)				586.6
Total (C = A+B)	(23.4)	(22.5)	6.8	635.9
NPV of FCF (D)	(20.1)	(16.6)	4.3	26.7
NPV of Terminal Value (E)				317.9
Enterprise Value (F = D+E)				312.3
Net Debt				28.1
PV of Equity				284.1

Assumptions: WACC - 16.5% Perpetual Growth Rate: 1%

Parameter	Value	Criterion
Risk Free Rate (Rf)	8.0%	Yield on 10 year G-Sec paper
Market Returns (Rm)	17%	Compounded annualised return on BSE Sensex for last 20 years
Beta (B)	1.5	Beta analysis of the comparable companies
Cost of Equity (COE)	22%	= Rf + B*(Rm-Rf)
Cost of Debt (COD)	14.0%	Ability to raise capital from Banks
Tax Rate (t)	33%	Applicable Tax Rate
Target Debt to Capital Employed Ratio (D/CE)	0.4	Target Company Debt Equity Ratio
Weighted Average Cost of Capital (WACC)	16.5%	= COD*(D/CE)*(1-t) + COE*(1-D/CE)