

Unit II: Valuation Models

Valuation models are basis or methods used to value any object, business, or asset. Business valuation is require for a number of reasons like purchase and sale, change in ownership, Taxation purpose etc. The valuation is determined based on some techniques or methods, which are call models. There are three models or approaches for valuation,

- I. Asset-based approach / NAV approach
- II. Income-based approach / Discounted cash flow approach
- III. Market-based approach / Relative valuation approach

All these approaches are different and are use in different circumstances base on requirements and information available. It depends on valuer or analyst to select approach for valuation.

I. Asset-based approach

Asset-based valuation is a form of valuation in business that focuses on the value of a company's assets or the fair market value of its total assets after deducting liabilities. Assets are evaluated, and the fair market value is obtained. Additionally, the valuation process should consider economic and functional obsolescence. The asset-based valuation method is sound because there is plenty of flexibility regarding the interpretation when it comes to making a decision on the assets and liabilities to consider in the valuation. An asset-based approach is a type of business valuation that focuses on the net asset value of a company. The net asset value is identified by subtracting total liabilities from total assets. There can be some room for interpretation in terms of deciding which of the company's assets and liabilities to include in the valuation and how to measure the worth of each.

In its most basic form, the asset-based value is equivalent to the company's book value or shareholders' equity. The calculation is generated by subtracting liabilities from assets.

Oftentimes, the value of assets minus liabilities can be different from the values reported on the balance sheet due to timing and other factors. Asset-based valuations can provide latitude for using market values rather than balance sheet values. Analysts may also include certain intangible assets in asset-based valuations that may or may not be on the balance sheet.

Asset-based Valuation Methods

1. Asset Accumulation Valuation

The asset accumulation method bears a striking superficial similarity to the widely known balance sheet. In the asset accumulation method, all the assets and liabilities of a business are compiled, and a value is assigned to each one. The value of an entity is the difference between the value of its assets and liabilities.

2. Excess Earnings Valuation

On the other hand, the excess earnings approach is a combination of the income and assets valuation methods. Other than evaluating a company's tangible assets and liabilities, the method can also be used to work out a business's goodwill.

To determine goodwill, the earnings of a business are treated like input, and then a connection is drawn to the income method. As a result, the excess earnings method is highly preferred when valuing strong businesses with substantial goodwill.

The liquidation value: Which is sum of estimated sale value of assets owned by company.

Replacement Cost: the current cost of replacing all assets of a company.

While there are several methods that can be used to value a business, asset-based valuation is often preferred because of its applicability in instances where a business is suffering from challenges relating to liquidity.

The asset-based method is highly favourable for core niches like the real estate sector. However, it comes with its own disadvantages, such as the fact that it's quite complex, especially for those with little experience.

Advantages of Asset-based approach

1. It is the most realistic method of valuation, where valuation is based on accounting records or on book value of the assets. It is the most commonly accepted method of valuation.
2. Valuation is found to be more accurate and correct, as it is based on value of assets recorded in the books. Accurate Input will give accurate output.
3. It shows true earning of the concern, i.e. real value.
4. This method is based on fundamental analysis i.e. based on records.
5. It requires very simple calculation and less time-consuming method.

6. This method does not require Future projections related to Cash flow and earnings.

Disadvantages:

1. The valuation is affected by market, it is difficult to value individual asset as it may vary significantly depending on market situation.
2. Applying fair value accounting, companies revalue the current value of certain assets and liabilities even in volatile market conditions, potentially creating large swings in the value of those assets and liabilities.
3. This method does not consider Future Profitably and expectations of the business.
4. Many a times it become difficult to value Intangible assets like Patents, IPR's etc.

II. Income-based approach/ Discounted Cash Flow approach (DCF)

In Finance, discounted cash flow (DCF) analysis is a method of valuing project, company, or asset using the concept of Time value of Money. All the Future Cash flows are estimated and discounted by using Cost of Capital or Discount rate to give their Present Value (PV).

This is based on the concept of Present value, where the value of any asset is present value of expected future cash flows that the asset generates. This requires

- i) Estimated life of asset
- ii) Estimated Future Cash Flow from asset
- iii) Discount rate to apply to apply to this cash flow to get present value.

DCF analysis attempts to figure out the value of an investment today, based on projections of how much money it will generate in the future. This applies to both financial investments for investors and for business owners looking to make changes to their businesses, such as purchasing new equipment.

- Discounted cash flow (DCF) helps determine the value of an investment based on its future cash flows.
- The present value of expected future cash flows is arrive at by using a discount rate to calculate the discounted cash flow (DCF).
- If the discounted cash flow (DCF) is above the current cost of the investment, the opportunity could result in positive returns.

- Companies typically use the weighted average cost of capital for the discount rate, as it takes into consideration the rate of return expected by shareholders.

Discounted Cash Flow (DCF) valuation is one of the fundamental models in value investing. Using a DCF is one of the best ways to calculate the intrinsic value of a company. Using a DCF is a method that analysts use throughout finance, and some think that using this type of valuation is far too complicated for them.

Advantages:

- i) DCF technique is superior to other methods since it considers the earnings of project over its entire economic life and considers time value of money.
- ii) This method is more objective, as their conclusions are not influenced by subjective decisions.
- iii) DCF method gives more weightage to unit of money, at its present value.
- iv) It helps in comparing projects having different economic life and different time of cash flow.
- v) It is the most realistic method of valuation as it considers real time value of money.
- vi) It is simple, less time-consuming method of valuation.

Disadvantages:

Discounted cash flow valuations are one pricing system that investment professionals use to determine the value of stocks. Proponents of this valuation method argue that you can get an accurate picture of a firm's true value only if you estimate its current and future cash flow. Other people argue that this valuation method has many disadvantages that include the fact that the estimates are based on projections and predictions rather than tangible data.

- i) DCF does not work where firm is having negative earnings; in such case it becomes difficult to estimate future cash flow, since there is strong possibility of insolvency and failure.
- ii) DCF is not applicable in case of cyclical firm, as it is very difficult to predict the timing and duration of economic situation.

- iii) DCF reflects value of asset utilised but if firm is having any unutilised or underutilised asset in such case value will not reflect, as those assets do not produce cash flow.
- iv) When firm is in process of restructuring, where it change its capital structure at that time it buys and sales many assets and each of these changes makes difficult to estimates cash flows.
- v) The measurement of Discount rate in private firm is problem, as its securities are not traded, this is not possible.
- vi) DCF is totally based on assumptions and forecasting, even a small adjustment can cause DCF valuation to vary widely.

III. Market based approach/ Relative valuation approach.

It is the valuation model where, it compares firm's valuation with that of competitors to determine the firm's financial worth. It is an alternative to absolute value model, which try to determine a company's intrinsic value or worth based on estimated future free cash flows discounted to their present value. It is also known as Market based approach where valuation is done by comparing the price of an asset to the market value of similar assets.

Regardless of the type of asset being valued, the market approach studies recent sales of similar assets, making adjustments for the differences between them. For example, when appraising real estate, adjustments might be made for factors such as the square footage of the unit, the age and location of the building, and its amenities. Market approach to business valuation involves attributing a value to a business based on the value assigned by the market forces in comparable situations. The comparable situation could be either a prior transaction involving the same business, a market quote of listed securities of a comparable public company and/or an ownership transfer transaction involving a comparable (public or private) company.

One of the method of market approach consists in finding a group of similar companies, calculating trading multiples for them and, on their basis, making a valuation of the company we are investigating. Companies that will be used to quote our company should:

- be in the same industry,
- be of similar size,
- perform similar activities,
- use similar technologies,
- have a similar level of debt, etc.

The steps we should take when using the multiples method are as follows:

1. finding a group of companies similar to the company being valued (at least 3, but not too much, because the companies will not be too similar to each other),
2. selection of indicators (at least 2, there is no model indicating which multiples should be used, but most often P/E and EV / EBITDA are used),
3. selection of the period from which the financial data originates (the comparative method is a static valuation, i.e. the financial data used for the valuation come from previous years, usually from 12 months), however, recently you can see an attempt to increase the dynamics of this method by using forecasted financial data for 2-3 years),
4. determination of weights for particular multiples,
5. determination of the premium or discount of the company being valued in relation to a selected group of companies (making adjustments due to liquidity and control),
6. company (stock) valuation.

Advantages:

1. This approach is quite straightforward, and there is no need for any complicated calculations. With the help of simple calculation, this approach can be carried out.
2. While using the market approach, the data used is quite real and public.
3. In addition, the market approach is not at all dependent on subjective forecasts.
4. Business financial reporting data are readily available.

Disadvantages

- It is difficult to identify transactions or companies that are comparable. There is usually a lack of a sufficient number of comparable companies or transactions.
- It is less flexible compared to other methods.

- The method raises questions on how much data is available and how good the data is.
- Insufficient market evidence in some industries.
- Requires careful data selection, analysis and consistent data reporting standards.

FREE CASH FLOW (FCF) Valuation

A number of methods exist to value a business. The free cash flow method is one method often used internally or by long-term investors to value a company. This method focuses on the operational cash flow the company generates and its expected growth rate in the future. A company may use its current free cash flow or its expected free cash flow if the firm intends to make operational changes in the near future. Free cash flow is a company's operational cash flows less the cash it needs to fund capital expenditures and net working capital needed to maintain current growth. Since it is typically difficult to estimate capital expenditures well in advance, a company often uses its historical average to estimate this number. In simpler terms, operational cash flows into a company from revenues generated by selling products and flows out to pay product, overhead and selling expenses. The company takes the cash generated to pay for long-term investments in assets that support operations and short-term investments in working capital. What is left over is the free cash flow to the firm. It is called this because this cash is free to pay interest, debt, dividends and equity repurchases.

What is the importance of the free cash flow?

Knowing the company's free cash flow enables management to decide on future ventures that would improve the shareholder value. Additionally, having an abundant FCF indicates that a company is capable of paying their monthly dues. Companies can also use their FCF to expand business operations or pursue other short-term investments.

Compared to earnings per se, free cash flow is more transparent in showing the company's potential to produce cash and profits.

Free cash flow (FCF) represents the cash that a company is able to generate after laying out the money required to maintain or expand its asset base.

It can be calculated as below

EBIT (1-Tax Rate) + Depreciation & Amortization - Change in Net Working Capital - Capital Expenditure

or

Operating cash flow -Capital Expenditures.

In Method 1, it might seem odd to add back depreciation/amortization since it accounts for capital spending. The reasoning behind the adjustment, however, is that free cash flow is meant to measure money being spent/earned right now, not transactions that happened in the past. This makes FCF a useful instrument for identifying growing companies with high up-front costs, which may impact earnings now but have the potential to increase earnings later.

When free cash flow is positive, it indicates the company is generating more cash than is used to run the company and reinvest to grow the business. A negative free cash flow number indicates the company is not able to generate sufficient cash to support the business.

Significance of FCF

- Free cash flow is important because it allows a company to pursue opportunities that enhance shareholder value. Without cash, it's tough to develop new products, make acquisitions, pay dividends and reduce debt.
- Some investors prefer using free cash flow instead of net income to measure a company's financial performance, because free cash flow is more difficult to manipulate than net income.
- It is important to note that negative free cash flow is not bad in itself; on the face of it. If free cash flow is negative, it could be a sign that a company is making large investments. If these investments earn a high return, the strategy has the potential to pay off in the long run.

Limitations of FCF

- By their nature, expenditures for capital assets that will last decades may be infrequent, but costly when they occur. Hence 'Free cash flow', in turn, will be very different from year to year.
- Investors must therefore keep an eye on companies with high levels of FCF to see if these companies are under-reporting capital expenditure and R&D.
- Companies can also temporarily boost FCF by stretching out their payments, tightening payment collection policies and depleting inventories. And hence look for companies generating FCF on sustainable basis.

There are two approaches to valuation using free cash flow. The first involves discounting projected free cash flow to firm (FCFF) at the weighted average cost of the capital (WACC) to find a company's total value (i.e. sum of its equity and debt). The second involves discounting the free cash flow to equity (FCFE) at the cost of equity to find the value of the company's shareholders equity.

Free cash flow is a measurement that eliminates the guesswork that comes from other valuation tools. It is the basic component of the discounted cash flow analysis. Instead of guessing at what the value of a stock may be, the free cash flow tracks how much money that is left over for investors so that a real number can be reported for earnings.

FCFF AND FCFE VALUATION APPROACHES The purpose of this section is to provide a conceptual understanding of free cash flows and the valuation models based on them.

Free Cash Flow Free (FCFF) cash flow to the firm is the cash flow available to the company's suppliers of capital after all operating expenses (including taxes) have been paid and necessary investments in working capital (e.g., inventory) and fixed capital (e.g., equipment) have been made. FCFF is the cash flow from operations minus capital expenditures. A company's suppliers of capital include common stockholders, bondholders, and sometimes, preferred stockholders. The equations analysts use to calculate FCFF depend on the accounting information available.

Free Cash Flow to Equity (FCFE) is the cash flow available to the company's holders of common equity after all operating expenses, interest, and principal payments have been paid and necessary investments in working and fixed capital have been made. FCFE is the cash flow from operations minus capital expenditures minus payments to (and plus receipts from) debt holders. The way in which free cash flow is related to a company's net income, cash flow from operations, and measures such as EBITDA (earnings before interest, taxes, depreciation, and amortization) is important: The analyst must understand the relationship between a company's reported accounting data and free cash flow in order to forecast free cash flow and its expected growth. Although a company reports cash flow from operations (CFO) on the statement of cash flows, CFO is not free cash flow. Net income and CFO data can be used, however, in

determining a company's free cash flow. The advantage of FCFF and FCFE over other cash flow concepts is that they can be used directly in a DCF framework to value the firm or to value equity. Other cash flow – or earnings - related measures, such as CFO, net income, EBIT, and EBITDA, do not have this property because they either double - count or omit cash flows in some way. For example, EBIT and EBITDA are before - tax measures, and the cash flows available to investors (in the firm or in the equity of the firm) must be after tax. From the stockholders' perspective, EBITDA and similar measures do not account for differing capital structures (the after - tax interest expenses or preferred dividends) or for the funds that bondholders supply to finance investments in operating assets. Moreover, these measures do not account for the reinvestment of cash flows that the company makes in capital assets and working capital to maintain or maximize the long - run value of the firm. Using free cash flow in valuation is more challenging than using dividends because in forecasting free cash flow, the analyst must integrate the cash flows from the company's operations with those from its investing and financing activities. Because FCFF is the after - tax cash flow going to all suppliers of capital to the firm, the value of the firm is estimated by discounting FCFF at the weighted average cost of capital (WACC). An estimate of the value of equity is then found by subtracting the value of debt from the estimated value of the firm. The value of equity can also be estimated directly by discounting FCFE at the required rate of return for equity (because FCFE is the cash flow going to common stockholders, the required rate of return on equity is the appropriate risk - adjusted rate for discounting FCFE). The two free cash flow approaches, indirect and direct, for valuing equity should theoretically yield the same estimates if all inputs reflect identical assumptions. An analyst may prefer to use one approach rather than the other, however, because of the characteristics of the company being valued. For example, if the company's capital structure is relatively stable.

Practical approach to FCFF & FCFE

Sales ₹ 3, 00,000	Cost ₹ 2, 25,000	Depreciation ₹ 60, 000
Tax @ 40%	Change in Net working capital ₹ 3,000	
Interest ₹ 2,000	Change in capital spending	₹ 30, 000
Net borrowing ₹ 7500		

Particulars	₹
Sales	3,00,000
Less : Cost	2,25,000
Less : Depreciation	60,000
NPBT	15,000
Less : Tax @ 40%	6,000
NPAT	9,000
Add : Depreciation	60,000
Less : change in Net working capital	3,000
Less : change capital spending	30,000
FCFF	36,000
Less: Interest (after tax) (2000 – 40%)	1,200
Add: Net Borrowing	7,500
FCFE	42,300

How to calculate Net Present Value

For eg. The Expected Cash Inflow at the end of year is as follow.

Year	1	2	3	4	5
CIF	50,000	35,000	45,000	40,000	40,000

The Cost of Investment is ₹. The cost of capital/WACC is @ 10%

Year	P/V @ 10%	CIF (₹)	Present value of CIF
1	0.909	50,000	45,450
2	0.826	35,000	28,910
3	0.751	45,000	33,795
4	0.683	40,000	27,320
5	0.621	40,000	24,840
Total			1,60,315
Less: Present value of Cash outflow			1,20,000
Net Present Value (NPV)			40,315

Since Net Present Value is **Positive** Project/Investment proposal is accepted.

Examples for practice purpose.

1. Find the present value of the following cash inflow and also state whether the investment is worthwhile if the amount of cash outflow presently is ₹80,000 at a cost of 12%

Year	1	2	3	4	5
CIF	18,000	26,000	34,000	40,000	46,000

2. Find the present value of the following cash flow and also state whether the investment is worthwhile if the amount of cash outflow presently is ₹50,000 at a cost of 11%

Year	1	2	3	4	5
CIF	16,000	22,000	18,000	20,000	20,000

3. A Machine costs ₹3, 00,000 and is expected to produce the following cash inflows.

Year	Cash Inflow (₹)
1	60,000
2	50,000
3	45,000
4	65,000
5	40,000
6	35,000
7	40,000

If Cost of capital is 13% p.a., is it worth buying the machine.