CHAPTER 13

BUSINESS VALUATION

LEARNING OUTCOMES

After going through the chapter student shall be able to understand

- Conceptual Framework of Valuation
- Approaches/ Methods of Valuation
- Measuring Cost of Equity
- Relative Valuation
- Other Approaches to Value Measurement
- Arriving at Fair Value
- Going concern and Non-Going concern valuation
- Valuation of Distressed Companies
- Valuation of Start ups
- Valuation of Digital Platforms
- Valuation of Professional/ Consultancy Firms
- Impact of ESG on valuation

1. CONCEPTUAL FRAMEWORK OF VALUATION

The syllabus of this paper requires you to have expert knowledge of various techniques of valuation of various securities (e.g. equity shares, preference shares and bonds etc.) as well as of business.

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While we discussed earlier the topic of Valuation of Securities now we shall discuss the topic of 'Valuation of Business' that too in corporate context. Though Corporate Valuation can be carried out for various purpose but here we shall mainly use the same for the Mergers and Acquisitions decisions, the next topic for the discussion.

The basic purpose of any enterprise is to earn profits in order to sustain itself and promote growth. Managements across the world endeavor in this aspect – be it be a sole proprietorship concern or a multinational giant having its foothold across geographies.

Corporate valuation can be traced back to centuries ago when the United East India Company (referred to as 'Dutch East India Company' by the Britishers) was the first corporation to be valued and an IPO was launched. The East India Company too stands as a fine example of a corporatized way of doing world trade, and perhaps the earliest of institutions to focus on wealth maximization, albeit in unethical ways. Today, almost every enterprise that generates a positive cash flow and generates suitable employment opportunities feels the pressing need to 'value' itself – be it for going to the local bank for debt financing, or for assessing an initial public offering.

It is obvious that the more an enterprise grows, the more the number of stakeholders it adds in its progress to growth. Presentation of annual financial statements in the annual body meeting, publishing quarterly results for the street – all these become the staple diet for stakeholders who sow the seeds of capital in the enterprise and in turn, wait for the enterprise to multiply its progressive potencies. In a relative world, this persisting curiosity of the stakeholders to understand the 'true worth' of their enterprise becomes translated to the concept of 'valuation'. Add to it, the market analysts, financial intermediaries, and let's not forget the academicians, and what we have is a handful of valuation approaches that have been painstakingly and meticulously crafted for valuing the correct worth of the enterprise at hand. In a true sense, valuation imbibes both the science and the art of itself per se. As it stands today, valuation has become an inseparable part of strategic financial management.

To elaborate, the need of a proper assessment of an enterprise's value can be typically for:

(a) Information for its internal stakeholders,

(b) Comparison with similar enterprises for understanding management efficiency,

(c) Future public listing of the enterprise,

(d) Strategic planning, for e.g. finding out the value driver of the enterprise, or for a correct deployment of surplus cash,

(e) Ball park price (i.e. an approximate price) for acquisition, etc.

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2. IMPORTANT TERMS ASSOCIATED WITH VALUATION

It's imperative to understand the important terms that we would come across and will be used widely in any valuation model. Some of the terms have indeed evolved over a period of time and continued usage, and now stand on their own as precursor to application of the actual valuation model itself.

2.1 The Concept of PV (Present Value) of cash flows

Needless to state that all students must have referred and understood thoroughly the concept of 'Time Value of Money' at Intermediate Level in the paper of Financial Management. Accordingly, a receipt of ₹ 1,000 twelve months hence would not be the same as of today, because of the concept of Time Value of Money and the discounted value of ₹ 1,000 a year at the rate of 10% shall be ₹ 909 approximately.

2.2 The Concept of IRR (Internal Rate of Return)

Similar to above, this concept has also been discussed in the paper of Financial Management at Intermediate Level. IRR is the discount rate that will equate the present value (NPV) of all cash flows from a particular investment or project to zero. We can also visualize IRR as a discount rate that will get the PVs of cash inflows equal to the investment.

The Decision Rule – the higher the IRR of a project, the more likely it gets selected for further investments.

2.3 ROI (Return on investment)

Simply put, ROI is the return over the investment made in an entity from a stakeholder's point of view.

A simple example would be where the stakeholder has sold shares valued at 1400, invested initially at 1000; the ROI would be the return divided by the investment cost, which would be (1400-1000)/1000 = 40% in this case. You would have noted that the 40% is the return on cash investment for this standalone transaction, primarily signifying the absolute rate of return on liquidating his holdings. But if the stakeholder sells his shares that was held by him from the past several years, he would try to calculate the ROI by taking into account the time value of money. This would imply that the ROI gets 'adjusted' over the period of his holdings. So, if a stakeholder had worth 1000 of shares at the beginning of the year and he makes an additional investment of 200 during the year, and his investment is valued at 2000 at the end of the year, his ROI would be calculated as returns divided by the average investment held during the year. His returns would be (2000-1200 = 800) and the average investment would be [(1000+1200)/2] = 1100 for the year. Accordingly, his ROI will be 800/1100 = 72%. The average cost of investments is arrived at to recognize the timing of the investment. In this case, the stakeholder may also calculate the actual days of the additional investment, to arrive at the exact ROI. However, stakeholders who hold multiple investments and portfolios will use the average cost of investments as illustrated above.

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From an entity's point of view, the most significant use of ROI would be to calculate the returns generated by each individual / incremental investment on a project or different projects. Thus, a company that has initiated a couple of projects during the year towards new business lines can implement the ROI concept to calculate the returns on the investment and take further decisions based on the same. Note that ROI is a historical ratio, so naturally the decision can either only be a course corrective action, or channeling further investments into the more successful business line.

By now you will appreciate that essentially, we are viewing ROI as a performance measure ratio in the corporate scenario; which also brings us to an interesting question –how about measuring returns against the total investments, or simply put, the total 'assets' held by the enterprise? After all, it is imperative that all assets are put forth only for the purpose of wealth maximization and fullest returns, right? And that's precisely the concepts seen below.

2.4 Perpetual Growth Rate (Gordon Model)

As discussed in the topic of Cost of Capital at Intermediate Level the Gordon's model assumes a perpetual growth in dividend; thereby potential investor eyeing stable inflows will take the latest Dividend payout and factor it with his expected rate of return.

This model is not widely used by potential investors because of following reasons:

(i) there are more parameters which need to be factored in, and

(ii) dividends rarely grow perpetually at a steady rate.

However, this model is the darling of academicians as it can neatly fit into a 'constant rate' model for deliberation purposes.

2.5 The term 'TV' (Terminal Value)

Terminal' refers to the 'end' of something – in the valuation world, to 'terminate' would be to exit out of a particular investment or line of business. So, when an investor decides to pull out and book profits, he would not only be expecting a fair value of the value created, but also would definitely look to the 'horizon' and evaluate the future cash flows, to incorporate them into his 'selling price'. Hence, Terminal Value (TV) is also referred to as the 'Horizon Value' that the investor forecasts for valuing his investment at the exit point. Mostly TV is estimated using a perpetual growth model as per the Gordon model. We will see the practical usage of TV in the various questions/ illustrations during the study of this Paper.

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3. APPROACHES/ METHODS OF VALUATION

As mentioned earlier one of the purposes of the valuation is Mergers and Acquisitions as the carrying out valuation of target company becomes important to gauge out the price to be offered to it. The target company can be listed or unlisted. If the target company is unlisted then the price of acquisition shall be at the negotiated price acceptable by both companies. For listed companies stock market value or market capitalization can form the basis of valuation of target company. Though stock market price is a guide to the acquiring company but it does not give an estimate how much the target company is worth as stock price will also depend on Market Efficiency.

Further in some cases even small portion of total shares is quoted and hence market price represents a marginal portion of overall capital. This calls for further analysis of valuation of target company.

As mentioned earlier the valuation of securities especially valuation of equity shares has been covered in chapter on Security Valuation in this chapter we shall focus on methods of valuation other than discussed in the chapter on Security Valuation.

Broadly there are three approaches to value an enterprise:

(a) Assets Based Valuation Model

(b) Earning Based Models

(c) Cash Flow Based Models

In addition to the above there are some other methods. First let's see above three methods in detail as below:

3.1 Asset Based Approach

Being a straight forward method, the value of shares of target company is computed in terms of net assets acquired. This method of valuation is not based on income generation rather than on income generating assets.

This method is least important in case of IT companies where 'hard' assets make little importance as these companies' assets are intellectual property rights and human resources.

This approach further can be classified into following three methods:

3.1.1 Net Asset Value

The most simplest method also called 'Book Value' Method computes the value of the shares of the company as follows:

Net Fixed Asset = Fixed Assets + Net Current Assets – Long Term Debt

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Though this method has the advantage of being simplest as it uses historical costs which are easily available, but it has little relevance as Balance Sheet is not a valuation device. Therefore, this method offers a lower limit to value the shares of target company.

Further this method ignores the current asset valuation even for intangible assets such as Brand, Intellectual Property Rights etc.

3.1.2 Net Realizable Value

Also called Liquidation Value or Adjusted Book Value it can be defined as realizable value of all assets after deduction of liquidation expenses and paying off liabilities. Though in some case liquidation expenses can be ignored if business of target company is acquired as a going concern.

Despite appearing to be a simple method the calculation of net realizable value may not be so simple as being an off-market purchase it is likely that buyer may offer lowest prices.

This method is not so popular as it involves total break up of the target company. This method is generally useful where the acquirer is interested in selling one part of business and integrate remaining part of the business with the existing operations.

In the below example we see that the realizable values are different as compared to the book values:

		Book Values		Net Realizable Values
Long Term Debt				
(Term Loan from ZB Bank)		10,000		10,000
Current Liabilities		10,000		10,000
Total Liabilities (A)		20,000		20,000
Non-Current Assets (B)				
PPE	50,000		40,000	
Licenses	10,000	60,000	30,000	70,000
Current Assets (C)				
Sundry Debtors	50,000		45,000	
			10,000	
Cash	10,000	60,000	55,000	
Net Assets (B) + (C) – (A)		**1,00,000**		**1,05,000**

Thus, total net realizable assets of the net book value of ₹ 1,00,000 in the above example would ₹ 105,000 and if there are 5000 equity shares then the value of per share will be ₹ 21.

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3.1.3 Replaceable Value

This method involves valuation as per determination of the cost of group of assets and liabilities of equivalent company in the open market. This method has an advantage over Book Value as it takes into consideration proper valuation and generally it is slightly higher than Net Realizable Value as quick asset disposal is not encouraged. And due to this reason many author believes that it is the maximum price that an acquirer would pay for the equivalent business. However, this approach also suffers from limitation that hard assets are taken into consideration still loyalty of the staff cannot be taken into consideration.

Conclusions: The asset-based approach can depict the enterprise's net worth fairly correctly using the fundamental principle of 'going concern'. However, it suffers from a major drawback – It fails to consider the ability of the enterprise to generate future revenues and how the market dynamics will affect the future operations and cash flow.

3.2 Income based Approach

This approach looks to overcome the drawbacks of using the asset-backed valuation approach by referring to the earning potential. This method is more suitable when acquiring company is intending to continue business of target company for foreseen future without selling or liquidating assets of the same. Accordingly, if any additional earning is there due to acquisition the same should also be considered in valuation. Basically, PE Ratio also called Earning Yield is used in this approach. Though there is another version of the same called Capitalization Rate.

Now let us discuss valuation by these two versions one by one.

3.2.1 PE Ratio or Earning Yield Multiplier

This method is generally used for valuing listed companies whose PE Ratios are available. This approach has one benefit that it takes into account the expected growth rate of the company as well as market expectations.

The price or value of equity share can be calculated using the following equation:

Price Per Share = EPS x PE Ratio

Though mainly this method is followed for listed companies but PE Ratio of equivalent companies or the industry can be used to value the shares of the unlisted companies. This method serves as minimum acceptable price to the shareholders of the target company. It involves following steps:

(i) Choosing PE Ratio of equivalent quoted company.

(ii) Making adjustment downward for additional risk due to non listing of shares.

(iii) Determination of future maintainable EPS.

(iv) Multiply same EPS with adjusted PE Ratio.

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3.2.2 Capitalisation of Earning

In this method the value of business is calculated by capitalization of company's expected annual maintainable profit using appropriate required rate of return or yield or discounting rate.

Annual expected maintainable profit can be calculated using weighted average of previous years' profits after adjusting synergy benefits or economy of scales in the same profit.

The capitalization rate depends on many factors. The capitalization rate can be approximated as follows:

$$\text{Required Earning Yield} = \frac{\text{EPS}}{\text{Share Price}}$$

Or

$$\text{Reciprocal of PE Ratio} = \frac{1}{\text{PE Ratio}}$$

Using this method valuation of the company can be computed as follows:

$$\text{Capitalized Earning Value} = \frac{\text{Expected Annual Maintainable Profit}}{\text{Capitalization Rate or Required Earning Yield}}$$

Though the main advantage of using this method is that it is forward looking approach however the disadvantages are estimation of expected future profit and difference in treatment of extra ordinary and exceptional items.

3.3 Cash flow based approach

As opposed to the asset based and income based approaches, the cash flow approach takes into account the quantum of free cash that is available in future periods, and discounting the same appropriately to match to the flow's risk. Variant of this approach in context of equity has been discussed earlier in the chapter of Security Valuation.

Simply speaking, if the present value arrived post application of the discount rate is more than the current cost of investment, the valuation of the enterprise is attractive to both stakeholders as well as externally interested parties (like stock analysts). It attempts to overcome the problem of over-reliance on historical data as seen in both the previous methods. There are essentially five steps in performing DCF based valuation:

(a) Arriving at the 'Free Cash Flows'

(b) Forecasting of future cash flows (also called projected future cash flows)

(c) Determining the discount rate based on the cost of capital

(d) Finding out the Terminal Value (TV) of the enterprise

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(e) Finding out the present values of both the free cash flows and the TV, and interpretation of the results.

Let's take an example, with assumed figures, to understand how the DCF method works:

Step a:

	INR ('000s)	
Computation of free cash flows	**2016-17**	**Remarks**
EAT (Earning After Taxes)	600	
Less: One time incomes	(200)	One time events to be eliminated
Add: One time expenses	100	One time events to be eliminated
Add: Depreciation	100	Depreciation is a book entry
Free Cash Flow	**600**	

Step b:

Assumptions to arrive at Adjusted Free Cash Flow as below:

Free Cash Flow estimated to grow @ 5% p.a.

Suitable assumptions to be made for changes in WC and investments in FA

	Projected (in INR '000s)		
	2017-18	**2018-19**	**2019-20**
Free Cash Flow (5 % increment Y-o-Y)	600.00	630.00	661.50
Less: Changes in Working Capital Cycle	(50.00)	(30.00)	10.00
Less: Investment in Fixed assets	(50.00)	(50.00)	(20.00)
Adjusted Free Cash Flow	**500.00**	**550.00**	**651.50**

Step c:

	Discounted Cash Flows (in INR '000s)		
	2017-18	**2018-19**	**2019-20**
WACC (assumed)	8%	8%	8%
PVF	0.926	0.857	0.794
Present Value of Cash flow	**463.00**	**471.35**	**517.29**

Step d:

Terminal Value: The perpetual growth that will be achieved after year 3 onwards is assumed @ 3%

Therefore, TV = (CF at Year 3 * growth rate) / (WACC - growth rate) = (517.29*1.03)/(0.08 - 0.03) = **10656.17**

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Step e:

Total DCF of enterprise = 12,107.81 thousands (PV of cash flows arrived in above table plus the TV arrived)

In other words, the value of the enterprise for a potential acquisition is approximately 12108 thousands.

The DCF is indeed a revolutionary model for valuation as FCFs truly represent the intrinsic value of an entity. However, the whole calculation gravitates heavily on the WACC and the TV. In fact in many cases the TV is found to be a significant portion in final value arrived by DCF. This means that the growth rate and underlying assumptions need to be thoroughly validated to deny any room for margin of error of judgment.

4. MEASURING COST OF EQUITY

4.1 Capital Assets Pricing Model (CAPM)

An alternative way to look at value of an investment or a portfolio is to view returns as a direct benefit of assuming risks. As discussed earlier the CAPM model is represented by the below formula:

$$R = r_f + \beta (r_m - r_f)$$

Where R = expected rate of return

r_f = risk free rate of return

β = Beta value of the stock

R_m = market rate of return

4.2 Arbitrage Pricing Model

It is obvious that the CAPM has gained massive popularity due to its 'intuitive based approach' of classifying risks into 2 buckets – 'a risk free part' and 'the risk part that is relative to the market index'. However, this is also its greatest inherent weakness - the oversimplification of risks.

In the 1970's Mr. Stephen Alan Ross, professor and economist, introduced the concept of 'multiple factors' that can influence the risk component – motley of 'macro-economic factors'. So, the basic idea is to breakdown risks into individual identifiable elements that influence the overall risk in a proportion (called 'factor'), and each factor gets assigned its own beta; and the sum total of all the assets' 'sensitivities' to 'n' factors will give the 'expected rate of return for the asset'.

In a simplistic way, if a particular asset, say a stock, has its major influencers as the 'interest rate fluctuations' and the 'sectoral growth rate', then the stocks' return would be calculated by using the Arbitrage Pricing Theory (APT) in the following manner:

(a) Calculate the risk premium for both these two risk factors (beta for the risk factor 1 – interest rate, and beta of the risk factor 2 – sector growth rate; and,

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(b) Adding the risk free rate of return.

Thus, the formula for APT is represented as –

$$R_f + \beta_1(RP_1) + \beta_2(RP_2) + \ldots \beta_j(RP_n)$$

It is thereby clear that APT strives to model E(R) as 'a linear function of various macro-economic factors' where sensitivity to changes in each factor is represented by a factor-specific beta coefficient. Note that the APT by itself doesn't provide for the macro-economic factors that will be needed to be tested for its sensitivity – however these have to be judicially developed by the financial analysts keeping in mind the economy they are put in.

4.3 Estimating Beta and Valuation of Unlisted Companies

You would have by this time realized the fact that 'information' holds the key to a successful valuation of an enterprise. The above valuation approaches we have seen viz. asset based, earnings based and cash flow based, can be applied freely for publicly traded companies where key information as regards to earnings, assets employed, and board's opinion on future potential and growth areas are readily available. Already, audited financial statements are widely used by financial analysts for various funds and brokerage houses to prepare their 'review scorecards' that will help the investor to decide whether to hold or sell the scripts on the trade bourses.

However, in a developing economy like India, where there are many privately held firms into e-retail, service management, hospitality, and such other sunrise sectors that are holding out a lot of promise and are increasingly getting attention as 'dark horse' by venture capitalists, angel investors etc.; the moot question is how to value these entities in the absence of publicly available information? There are many a time that the directors of these companies do approach CAs for getting a 'valuation' done. The qualified accountant in private companies will also be involved in the valuation process. What needs to be appreciated is that valuation is indeed an onerous task, but if meticulously approached, can yield many advantages.

The biggest challenge in calculation of the 'value' of a privately held enterprise is arriving at the Cost of Capital which in turn depends on Beta for the private firm. We have to keep in mind that most of the publicly listed companies have leveraged capital, whereas the privately owned firms may not have either zero or insignificant amounts of debt. However, the strategic investor looking for stake would always like to grow it further on leveraged funds going forward. In fact, this is precisely the way forward – to raise funds through corporate bonds and debt instruments but as on the valuation date, the fact remains that the beta will have to reflect the 'unleveraged' position, and hence, we would use the 'unlevered beta', as opposed to levered beta.

Further this problem can also be faced in case of even an existing listed company which decides to invest in brand new line of business for it. In such a situation company should not use its WACC to evaluate this project. Instead of that it should assess the WACC for the appropriate risk level. For this the company needs Asset Beta or Ungeared Beta, which needs to be adjusted according to own

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gearing level. The Asset Beta represents only systematic risk of the underlying project or asset of the company and it does not represents any financial risk.

In other words it can be said that Asset Beta represents only company's business risk. Applying similar logic of calculation of WACC, the Asset Beta of the company can be calculated using following equation.

$$\beta_a = \beta_e \left[\frac{E}{E + D(1-t)} \right] + \beta_d \left[\frac{D(1-t)}{E + D(1-t)} \right]$$

β_a = Ungeared or Asset Beta

β_e = Geared or Equity Beta

β_d = Debt Beta

E = Equity

D = Debt

t = Tax Rate

From the above equation it can be seen that company's Equity Beta shall always be greater than Asset Beta. In case company is debt free then Equity Beta shall be equal to Asset Beta.

Generally it is assumed that the Debt Beta tends to be Zero as Bonds' Returns are not linked to the volatility of market portfolio. In such situation the above mentioned equation shall become:

$$\beta_a = \beta_e \left[\frac{E}{E + D(1-t)} \right]$$

Thus, if we have been provided with figures of β_e of a company we can calculate β_a, which shall be common for the industry or Pure Play firm.

Now let us see what steps are exactly involved in computation of Equity Beta for a new of business or project for the company.

Step 1: Identify the Pure Play firms or companies (engaged entirely in same business and also called proxy companies) and their Equity Betas to surrogate the Equity Beta of new Project or business.

Step 2: Once Beta of proxy companies have been identified we de-gear it and compute the Asset Beta as the different companies may have different gearing levels.

Step 3: In case if there is only one proxy company then Asset Beta of the same company shall be continued for further analysis. In case there are more than one proxy companies then we shall take average of Asset Betas of these companies. Otherwise we can also opt for the Asset Beta of the company that appears to be most appropriate.

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Step 4: In next step we must re-gear the Asset Beta as per capital structure of the appraising company to reflect the financial risk using the following formula (changing the positions of Asset Beta mentioned earlier)

$$\beta_e = \beta_a \left[\frac{E + D(1-t)}{E} \right]$$

Step 5: In this step we can insert computed β_e in CAPM and can compute required rate of return for project under consideration or value of the business.

Illustration 1

There is a privately held company X Pvt. Ltd that is operating into the retail space, and is now scouting for angel investors. The details pertinent to valuing X Pvt. Ltd are as follows –

The company has achieved break even this year and has an EBITDA of 90. The unleveraged beta based on the industry in which it operates is 1.8, and the average debt to equity ratio is hovering at 40:60. The rate of return provided by risk free liquid bonds is 5%. The EV is to be taken at a multiple of 5 on EBITDA. The accountant has informed that the EBITDA of 90 includes an extraordinary gain of 10 for the year, and a potential write off of preliminary sales promotion costs of 20 are still pending. The internal assessment of rate of market return for the industry is 11%. The FCFs for the next 3 years are as follows:

	Y1	Y2	Y3
Future Cash flows	100	120	150

The pre-tax cost of debt is 12%. Assume a tax regime of 30%.

What is the potential value to be placed on X Pvt. Ltd?

Solution

The levered beta of the company will be 1.8[1+(1-0.3)*40/60)] = 2.64

The adjusted EBITDA would be 90 –10 – 20 = 60

The EV will be multiple of 5 on the 60 obtained above = 300

The Cost of equity in accordance with CAPM = r (f) + β (Rm – Rf)

= 5% + 2.64 (11% - 5%) = 20.84%

The WACC = Cost of Equity + Cost of Debt

= 20.84 (60/100) + 12.0 (1-0.3) (40/100) = 15.864

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Finally, the future cash flows can be discounted at the WACC obtained above as under –

	Y1	Y2	Y3
Future Cash flows	100	120	150
Discount factor	0.863	0.745	0.643
PVs of cash flows	86.30	89.40	96.45
VALUE OF THE FIRM			**272.15**

5. RELATIVE VALUATION

The three approaches that we saw to arriving at the value of an enterprise viz. the asset based, the earnings based and the cash flow based are for arriving at the 'intrinsic value' of the same. Relative Valuation is the method to arrive at a 'relative' value using a 'comparative' analysis to its peers or similar enterprises. However, increasingly the contemporary financial analysts are using relative valuation in conjunction to the afore-stated approaches to validate the intrinsic value arrived earlier.

The Concept of 'Relative Valuation': One way to look at the practical implementation of fair value within the valuation context would be to identify assets that are similar to the ones held by the acquiree company so that the values can be compared. This would be a significant departure from the 'intrinsic value' approach that we have seen until now. Trying to get a value that would be the nearest to the market price would mean that the valuation of a particular portfolio, or a divestiture in an entity, would happen at an agreeable price that fits into the normal distribution.

In one sense, we are indeed using the relative valuation in a limited approach when we speak about expected market returns, or when we are adopting an index based comparative. The more the asset pricing gets correlated to the similar assets in the market, the more inclusive it gets. Thus, when we are comparing bonds, the closer the YTM of the bond to the government index of return, the more credible it gets when it comes to pricing.

The Relative valuation, also referred to as 'Valuation by multiples,' uses financial ratios to derive at the desired metric (referred to as the 'multiple') and then compares the same to that of comparable firms. Comparable firms would mean the ones having similar asset and risk dispositions and assumed to continue to do so over the comparison period. In the process, there may be extrapolations set to the desired range to achieve the target set. To elaborate –

1. Find out the 'drivers' that will be the best representative for deriving at the multiple
2. Determine the results based on the chosen driver(s) through financial ratios
3. Find out the comparable firms, and perform the comparative analysis, and,
4. Iterate the value of the firm obtained to smoothen out the deviations

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Step 1: Finding the correct driver that goes to determine the multiple is significant for relative valuation as it sets the direction to the valuation approach. Thereby, one can have two sets of multiple based approaches depending on the types of the drivers –

(a) Enterprise value based multiples, which would consist primarily of EV/EBITDA, EV/Invested Capital and EV/Sales.

(b) Equity value based multiples, which would comprise of P/E ratio and Price Earning Growth (PEG) Ratio.

We have already seen the concept and application of Enterprise Value in previous section. However, in light of relative valuation, we can definitely add that whereas EV/EBITDA is a popular ratio and does provide critical inputs, the EV/Invested Capital will be more appropriate to capital intensive enterprises, and EV/Sales will be used by companies who are cash rich, have a huge order book, and forecast organic growth through own capital.

The P/E has a celebrated status amongst Equity based multiples, and the PEG (PE Ratio/ Growth Rate i.e. the ratio of the PE to the expected growth rate of the firm) is more suitable where we are doing relative valuation of either high growth or sunrise industries.

Step 2: Choosing the right financial ratio is a vital part of success of this model. A factor based approach may help in getting this correct – for example – a firm that generates revenue mostly by exports will be highly influenced by future foreign exchange fluctuations. A pure P/E based ratio may not be reflective of this reality, which couldn't pre-empt the impacts that Brexit triggered on currency values. Likewise, an EV/Invested Capital would be a misfit for a company which may be light on core assets, or if has significant investment properties.

Step 3: Arriving at the right mix of comparable firms. This is perhaps the most challenging of all the steps – No two entities can be same – even if they may seem to be operating within the same risk and opportunity perimeter. So, a software company 'X' that we are now comparing to a similar sized company 'Y' may have a similar capital structure, a similar operative environment, and head count size – so far the two firms are on even platform for returns forecast and beta values. On careful scrutiny, it may be realized that the revenue generators are different – X may be deriving its revenues from dedicated service contracts having Full Time Equivalent (FTE) pricing, whereas Y earns through Unit Transfer Pricing (UTP) model. This additional set of information dramatically changes the risk structure – and this is precisely what the discerning investor has to watch for. In other words, take benchmarks with a pinch of salt.

Take another example – a firm is operating in a niche market, and that obviously leads to getting comparable firms become a difficult task. In such cases, one may have to look beyond the current operating market and identify similar structured companies from other industries.

The comparable firm can either be from a peer group operating within the same risks and opportunities perimeter, or alternatively can be just take closely relevant firms and then perform a regression to arrive at the comparable metrics. You would notice that in our example, the analyst is

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adopting the later approach. Whereas the company 'X' will have to ignore 'Y' and search for a similar revenue-risk based company. However, as a last resort, it may adopt a regression based model as above.

Step 4: Iterate / extrapolate the results obtained to arrive at the correct estimate of the value of the firm.

Thus, we can conclude that 'Relative Valuation' is a comparative driven approach that assumes that the value of similar firms can form a good indicator for the value of the tested firm. There are some assumptions that are inherent to this model –

i. The market is efficient

ii. The function between the fundamentals and the multiples are linear

iii. The firms that are comparable are similar in structure, risk and growth pattern

Further, we can approach Enterprise Value (EV) in two ways –

(a) Take Entity Value as the base, and then adjust for debt values for arriving the 'EV';

or

(b) Take a balance sheet based approach and arrive at EV.

Let's apply the above concepts into a relative valuation illustration:

Illustration 2

A Ltd. made a Gross Profit of ₹ 10,00,000 and incurred Indirect Expenses of ₹ 4,00,000. The number of issued Equity Shares is 1,00,000. The company has a Debt of ₹ 3,00,000 and Surplus Funds to the tune of ₹ 5,00,000. The market related details are as follows:

Risk Free Rate of Return	4.5%
Market Rate of Return	12%
β of the Company	0.9

Determine:

(a) Per Share Earning Value of the Company.

(b) Equity Value of the company if applicable EBITDA multiple is 5.

Solution

(a) Capitalization Rate using CAPM

4.5% + 0.9(12% - 4.5%) = 11.25%

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Calculation of Earning Value Per Share

	(₹ 000)
Gross Profit	1000
Less: Indirect Expenses	(400)
EBITDA	600
Earning Value of Company (600/ 0.1125)	5333.33
Number of Shares	1,00,000
Earning Value Per Share	₹ 53.33

(b) Equity Value of Company

	(₹ 000)
EBITDA	600
EBITDA Multiple	5
Capitalized Value	3000
Less: Debt	(300)
Add: Surplus Funds	500
Equity Value	3200

Now let us see how EV can be arrived at using Balance Sheet approach in the following illustration.

Illustration 3

The balance sheet of H K Ltd. is as follows:

	₹ 000
Non-Current Assets	1000
Current Assets	
Trade Receivables	500
Cash and cash equivalents	500
	2000
Shareholders' funds	800
Long Term Debt	200
Current Liabilities and Provisions	1000
	2000

The shares are actively traded and the Current Market Price (CMP) is ₹ 12 per share. Shareholder funds represent 70,000 shares of ₹ 10 each and rest is retained earnings. Calculate the Enterprise Value of HK Ltd.

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Solution

Shares outstanding	70,000
CMP	₹ 12
Market Capitalization	₹ 8,40,000
Add: Debt	₹ 2,00,000
Less: Cash & Cash equivalents	(₹ 5,00,000)
Enterprise Value (EV)	**₹ 5,40,000**

6. OTHER APPROACHES TO VALUE MEASUREMENT

6.1 Contemporary Approaches to Valuation

With businesses become exceedingly technology driven and managements now trying to position themselves as 'value creators' thereby venturing into a 'conglomerate' way of thinking and running business, the concept of value and valuation has also undergone a paradigm shift. The tag of 'MNC' and inorganic growth has given rise to complex structures and tiers of management styles and business houses. Of course, the more discerning of the lot would still stick to the original game-plan as has been ruminated by us in the sections of this guide till now – separate the seed from the chaff - by using the time honored 'asset' based, or 'income' based approaches or by adopting a more mature 'cash flow' based one; and even a meticulous combination of all the three; but it's not common to find the bull market referring to, and analysts liberally using terminologies like the 'PEs' and 'Exit Multiples', and to 'LBOs' and 'Brand Value'.

It is worth noting here that some of these concepts used in valuation have been borne out of the peculiarities of certain industries. An internet company would have virtually zero fixed assets – but a robust online presence and a huge brand recall value. This would give rise to a new method of valuation – Price Per Page visited. Or an online play store can be valued now using 'Price Per Subscriber'. However, like previously referred, the more discerning would still like to ask for the cash to sales ratio, apply a DCF model before they put the money in the pot.

Another contemporary way to value a company is to have 'Goodwill' based approach – a retail giant looking to desperately acquire a traditional mom-pop store in a particular hotspot that is giving a run for its money could rightfully adopt this method – firstly take an asset based valuation, and then value for the goodwill separately by linking a multiple to its annual sales or its footfall.

Price Earning Ratio (PER) - It equates the EPS (Earnings Per Share) to the price prevailing on the stock market – the logic being that the market prices the stock based on its fundamentals, and as a corollary you don't have to look beyond the same to value the stock! So, assume the EPS of a company is ₹ 40, and the average share price over the last quarter is ₹ 50, the PER would be 50/40 which works to 1.25. But we need to understand the important fact that PER is a relative figure, and

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comparison across industries in the same sector can give a more median PER that may be acceptable for valuation purposes.

LBOs (Leveraged Buy Outs) – The increasing complex nature of commerce and its applications have given rise to a new category of 'strategic investors' – Private Equity (PE) firms who scout for enterprises in the 'rough', acquire the same using a clever mix of debt and equity (typically at 70:30 debt to equity), and then targeting to sell the same within a medium term period, say 3 to 5 years. In the process, they leverage on the debt and create value (both perceived and real), and then they either spin off the management control to another entity for a price, or go for an outright sale.

Example

X is a small software company that is providing a niche data control and testing service having 60 employees and some steady contracts, which generates an EBIDTA of ₹ 100 Lacs per year. A Venture Capitalist (VC) convinces the managing director of the company to sell off the majority stake to him – valued at a premium of 100% per share over the Book Value plus one time goodwill payoff of ₹ 50 Lacs, using an Income Based Valuation approach. Thus, the total consideration comes out ₹ 250 Lacs.

Next, the VC ropes a banker to pump in ₹ 200 Lacs for the acquisition-cum-expansion as well as to do brand marketing, thereby making the company a visible player in the market. The gap of ₹ 50 Lacs is his contribution as promoter equity towards securities premium. Since the core operations team is not dismantled, the company easily achieves an approximate 20% average growth in each of the next 3 years.

At the end of the third year, the VC puts the company on the 'Sale Block' and is able to garner interest of a leading MNC in the same. Assume if the exit multiple that the VC looks is at 7 times the EBDAT. The entity value is hypothetically can be worked out as under –

	(in ₹ Lacs)			
	Y_0	Y_1	Y_2	Y_3
EBIDTA	100.00	120.00	144.00	178.00
Less: Interest#	36.00	30.00	24.00	18.00
EBDTA	64.00	90.00	120.00	160.00
Less: Taxes @ 30%	19.20	27.00	36.00	48.00
EBDAT	**44.80**	**63.00**	**84.00**	**112.00**
Multiple				7
Capitalized Value at end of Y_3				784
Less: Debt				(100)
Equity Value				**684**
# Debt principal assumed to be repayable linearly in 6 years.				

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One of the prime casualties in a LBO model is that the future cannot be predicted with exactitude. Thus, if at end of third year, the industry is caught in a cyclical slowdown, the VC will find itself saddled with a huge loan and burgeoning interest costs difficult to recycle.

6.2 Chop-Shop Method

This approach attempts to identify multi-industry companies that are undervalued and would have more value if separated from each other. In other words as per this approach an attempt is made to buy assets below their replacement value. This approach involves following three steps:

Step 1: Identify the firm's various business segments and calculate the average capitalization ratios for firms in those industries.

Step 2: Calculate a "theoretical" market value based upon each of the average capitalization ratios.

Step 3: Average the "theoretical" market values to determine the "chop-shop" value of the firm.

Illustration 4

Using the chop-shop approach (or Break-up value approach), assign a value for Cornett GMBH. whose stock is currently trading at a total market price of €4 million. For Cornett, the accounting data set forth in three business segments: consumer wholesaling, specialty services, and assorted centers. Data for the firm's three segments are as follows:

Business segment	Segment sales	Segment assets	Segment income
Consumer wholesaling	€1,500,000	€ 750,000	€100,000
Specialty services	€800,000	€700,000	€150,000
Assorted centers	€2,000,000	€3,000,000	€600,000

Industry data for "pure-play" firms have been compiled and are summarized as follows:

Business segment	Capitalization/sales	Capitalization/assets	Capitalization/ operating income
Consumer wholesaling	0.75	0.60	10.00
Specialty services	1.10	0.90	7.00
Assorted centers	1.00	0.60	6.00

Solution

Cornett, GMBH. – Break-up valuation

Business Segment	Capital-to-Sales	Segment Sales	Theoretical Values
Consumer wholesaling	0.75	€1,500,000	€1,125,000
Specialty services	1.10	€800,000	€880,000
Assorted centers	1.00	€2,000,000	€2,000,000
Total value			€4,005,000

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Business Segment	Capital-to-Sales	Segment Sales	Theoretical Values
Consumer wholesaling	0.60	€750,000	€450,000
Specialty services	0.90	€700,000	€630,000
Assorted centers	0.60	€3,000,000	€1,800,000
Total value			€2,880,000

Business Segment	Capital-to-Sales	Segment Sales	Theoretical Values
Consumer wholesaling	10.00	€100,000	€1,000,000
Specialty services	7.00	€150,000	€1,050,000
Assorted centers	6.00	€600,000	€3,600,000
Total value			€5,650,000

$$\text{Average theoretical value} = \frac{4,005,000 + 2,880,000 + 5,650,000}{3} = 4,178,333.33 \text{ say } 4,178,000$$

Average theoretical value of Cornett GMBH. = €4,178,000

6.3 Economic Value Added (EVA)

Economic Value Added (EVA) is a holistic method of evaluating a company's financial performance, which means that EVA is used not only as a mere valuation technique, but also to find the economic contribution of a company to the society at large. The core concept behind EVA is that a company generates 'value' only if there is a creation of wealth in terms of returns in excess of its cost of capital invested. EVA insists on separation of the firm's operation from its financing. So if a company's EVA is negative, it means the company is not generating value from the funds invested into the business. Conversely, a positive EVA shows a company is producing value from the funds invested in it.

Why EVA? Up to now we have seen several financial performance metrics like ROI, ROCE, etc. and also several approaches based on asset base / earnings / FCFs to finding out the 'worth' of the entity. Then what is the need for EVA? Or in other words, what is the gap that EVA is trying to fill in, that others couldn't?

The answer to the above is the way EVA looks at performance of the 'management' of a company. To elaborate, all the approaches seen up to now were just a function of 'number-crunching'. But EVA tries to make management more accountable to their individual decisions and the impact of decisions on the path to progress of the company. Take a simple example – if there are two dissimilar but equal risk opportunities that are feasible and the management needs to take a decision, it would most probably go by the project which would break-even earlier. In choosing so it is also cutting down the risk of future losses, fair enough. However, had the management invested in both the projects, still it would have generated a positive IRR, though the second one would have had a larger pay-back period. This impact of management's strategic decision making comes out evidently in

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EVA computations, whereas under the techniques seen till now, this performance-driven aspect would have never been highlighted. The efficiency of the management gets highlighted in EVA, by evaluating whether returns are generated to cover the cost of capital.

EVA is a performance measure for management of the company, and this is as evident in its calculation formula as 'the excess of returns over the weighted average cost of invested capital '. The formula is as below –

EVA = NOPAT – (Invested Capital * WACC)

OR

NOPAT – Capital Charge

The concept NOPAT (Net Operating Profit After Tax) is nothing but EBIT minus tax expense. The logic is that we are trying to find out the cash returns that business operations would make after tax payments. Note that we have left depreciation untouched here – it being an operational expense for the limited purposes of EVA. From this NOPAT we need to further identify the non-cash expenses and adjust for the same to arrive at the 'actual' cash earnings. One common non-cash adjustment would 'provision for bad and doubtful debts', as this would just be a book entry.

After arriving at the correct NOPAT, the next step would be finding the capital charge. This would involve finding out.

(a) Invested Capital – Which would be easy from published financials, as it would be the difference between total assets subtracted by the non-interest bearing current liabilities, like sundry creditors, billing in advance, etc. Care should be taken to do the adjustments for non-cash elements like provision for bad and doubtful debts. Also, it means equity plus long-term debt and generally at the start of the year. Further some changes or adjustment are needed to be made on account of Non-Cash Expenses both in Invested Capital and NOPAT.

(b) Applying the company's WACC on the invested capital arrived in step (a)

Finally, the EVA is computed by reducing the capital charge as calculated by applying the WACC on the invested capital from the adjusted NOPAT.

Illustration 5

Compute EVA of A Ltd. with the following information:

All Figure are in ₹ Lac

Profit and Loss Statement		Balance Sheet	
Revenue	1000	PPE	1000
Direct Costs	-390	Current Assets	300
Selling, General & Admin. Exp. (SGA)	-200		**1300**

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EBIT	**410**	Equity	700
Interest	-10	Reserves	100
EBT	**400**	Non-Current Borrowings	100
Tax Expense	-120	Current Liabilities & Provisions	400
EAT	**280**		**1300**

Assume Bad Debts provision of ₹ 20 Lac is included in the SGA, and same amount is reduced from the trade receivables in current assets.

Also assume that the pre-tax Cost of Debt is 12%, Tax Rate is 30% and Cost of Equity (i.e. shareholder's expected return) is 8.45%.

Solution

Step I: Computation of NOPAT

NOPAT	
EBIT	410
Less: Taxes	-123
Add: Non-Cash Expenses	20
NOPAT	**307**

Step II: Finding out the Invested Capital:

Invested Capital	
Total Assets	1300
Less: Non Interest bearing liabilities	-400
	900
Add: Non Cash adjustment	20
	920

Note: It is assumed that the current liabilities also include the 100 of tax liability.

Step III: Compute the WACC

WACC = Cost of equity + Cost of debt

In this case, WACC = (800/900*8.45%) + [100/900*12% (1 - 0.30)] = 8.44%

Step IV: Find out the Capital Charge

Capital Charge = Invested Capital * WACC = 920 * 8.44% = 77.65

Step V: EVA = Adjusted NOPAT – Capital Charge = 307 – 77.65 = 229.35

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6.4 Market Value Added (MVA)

The 'MVA' (Market Value Added) simply means the Current Market Value of the firm minus the Invested Capital that we obtained above. Let the current MV of the firm be 1000. Hence MVA will be–

1000 – 920 = 80.

MVA is an attempt to resolve some of the issues involved in EVA e.g., ignoring Value Drivers, Book Value etc. Though MVA itself does not give any basis of share valuation but an alternative way to gauge performance efficiencies of an enterprise, albeit from a market capitalization point of view, the logic being that the market will discount the efforts taken by the management fairly. Hence, the MVA of 80 arrived in example above is the true value added that is perceived by the market. In contrast, EVA is a derived value added that is for the more discerning investor.

Since MVA represents market views regarding company's future value generation companies with a higher MVA will naturally become the darlings of the share market and would eventually become 'pricey' from a pure pricing perspective. In such cases, the EVA may also sometimes have a slightly negative correlation as compared to MVA. But this will be a short term phenomenon as eventually the gap will get closed by investors themselves. A stock going ex-dividend will exhibit such propensities.

We can conclude that the main objective of EVA is thus to show management efficiency in generating returns over and above the hurdle rate of invested capital.

6.5 Shareholder Value Analysis (SVA)

Now that we have seen 'EVA' and 'MVA', let's proceed to see the concept of 'SVA' but questions first – why SVA? And how does SVA behave?

We understand that the EVA is the residual that remains if the 'capital charge' is subtracted from the NOPAT. The 'residual' if positive simply states that the profits earned are adequate to cover the cost of capital.

However, is NOPAT the only factor that affects shareholder's wealth? The answer is not a strict 'no', but definitely it is 'inadequate', as it doesn't take future earnings and cash flows into account. In other words, NOPAT is a historical figure, albeit a good one though, but cannot fully represent for the future potencies of the entity. More importantly, it doesn't capture the future investment opportunities (or the opportunity costs, whichever way you look). SVA looks to plug in this gap by tweaking the value analysis to take into its foray certain 'drivers' that can expand the horizon of value creation. The key drivers considered are of 'earnings potential in terms of sales, investment opportunities, and cost of incremental capital.

The following are the steps involved in SVA computation:

(a) Arrive at the Future Cash Flows (FCFs) by using a judicious mix of the 'value drivers' as discussed earlier

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(b) Discount these FCFs using the WACC

(c) Add the terminal value to the present values computed in step (b)

(d) Current market value of non-core assets and marketable investment.

(e) Reduce the value of debt from the result in step (d) to arrive at value of equity.

Let's take a progressive case study to run through the SVA calculations:

Step a.1: Using the appropriate value drivers, arrive at the operating cash flows:

				(in $ Millions)
	Y1	**Y2**	**Y3**	**Y4 onwards**
EBIT (growing at 5% yearly)	100.00	105.00	110.25	115.76
Interest Cost	5.00	6.00	7.00	8.00
EBT	95.00	99.00	103.25	107.76
Taxes @ 33%	31.35	32.67	34.07	35.56
EAT	**63.65**	**66.33**	**69.18**	**72.20**
Add back : Depreciation	5.00	5.00	6.00	7.00
Add back : One time write offs	1.00	-	-	-
Operating Cash Flow	**69.65**	**71.33**	**75.18**	**79.20**

Step a(2):

Operating Cash Flow	**69.65**	**71.33**	**75.18**	**79.20**
Less: Forecasted Incremental Capital Invest.	--	12.00	6.00	9.00
Less: Forecasted Inc. in Net Working Capital	5.00	5.00	6.00	7.00
Free Cash Flow (FCFs)	**64.65**	**54.33**	**63.18**	**63.20**

Step b: Applying the WACC to find out the discounted values:

Free Cash Flow (FCFs)	**64.65**	**54.33**	**63.18**	**63.20**
WACC (discount rate) @ 12%	0.89	0.80	0.71	0.64
Present Value of FCFs	**57.54**	**43.46**	**44.86**	**40.45**

Step c: Finding out the proper TV:

Present Value of FCFs	**57.54**	**43.46**	**44.86**	**40.45**
Multiplier for TV (1 ÷ 0.12)				8.33
Present Value of FCFs	**57.54**	**43.46**	**44.86**	**336.95**

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Step d & e:

Total PVs	**482.81**
Add: Investment Property (at FV)	35.00
Less: Carrying cost of Debt	(19.00)
Value of Equity	**498.81**

Thus, we observe that SVA brings out a futuristic sense of value for shareholders. In fact, this can be a good benchmark for shareholders from a cash return on investment perspective too.

7. ARRIVING AT FAIR VALUE

The ultimate purpose of a potential acquirer of the controlling stake and / or the takeover of a company is that 'he would purchase the same at the fair price – no less no more'.

In fact, the approaches to valuation seen in this chapter along with the different methods of performing a value added analysis is to identify entities that are 'attractive' in terms of the true value to a potential investor.

A Chartered Accountant's perspective to 'fair value' would automatically envisage a transaction to be measured at the arm's length. For a financial analyst, the term would be akin to the present value of an entity in cash terms, and for a speculative investor, the term would represent the arbitrage opportunities that open up among similar entities having dissimilar value numbers put to it.

However, it's an undeniable fact that in an upward boom time, the valuations defy fair value, for example, the dot com boom had companies getting valued for astronomical sums. And when the downturn arrived, some of these companies vanished and others were just able to stand up their ground.

In this chapter we have discussed various methods of valuation. Though they have their own pros and cons but it depends on the vision of the ultimate decision maker which method is suitable for his/ her purpose. Further it can be said that there is no single answer to method of valuation as correct one and it will be better if a range of values i.e. minimum acceptable by seller and maximum payable by the buyer could be determined. Ultimately the final deal would depend on the negotiation among the parties.

Accordingly, following approaches can be adopted to solve the question especially involving evaluation and synthesis skill assessment requirements.

(i) Unless specified otherwise calculate valuation by as many as possible with available data.

(ii) Give comments on the valuation by each of these methods.

(iii) Supplement your conclusion with any additional information if available.

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8. GOING CONCERN AND NON-GOING CONCERN VALUATION

One of the basic accounting assumptions is that an enterprise is a going concern and will continue in operation for the foreseeable future. Hence, it is assumed that the enterprise has neither the intention nor the need to liquidate or curtail materially the scale of its operations; if such an intention or need exists, the financial statements may have to be prepared on a different basis and, if so, the basis used needs to be disclosed.

The valuation of assets of a business entity is dependent on this assumption. Traditionally, historical costing is followed in majority of the cases.

Non-Going Concern Valuation is also known as Liquidation Valuation because it is the net value realised after disposing off all the assets and discharging all the liabilities. Since an on-going firm could continue to earn the profit, which contributes to its value in addition to its liquation value the Going Concern Value is known as Total Value.

Generally, the going-concern value of a firm will be greater than its liquidation value because when it is acquired as on basis the value of its assets and considers the value of its future profitability, intangible assets, and goodwill and hence the acquired firm can charge premium for the same.

Another reason for lower valuation on non-going concern is that liquation not only implies the laying off its employees and, but it creates a feeling of bad reputation among potential investors.

Thus, valuation based on non-going concern should be applied only when investors are of view that the firm has no longer value as a going concern.

9. VALUATION OF DISTRESSED COMPANIES

Some firms are clearly exposed to possible distress, though the source of the distress may vary across firms. For some firms, it is too much debt that creates the potential for failure to make debt payments and its consequences (bankruptcy, liquidation, and reorganization) whereas for other firms, distress may arise from the inability to meet operating expenses.

A company is said to be in distress when the company is unable to meet, or has difficulty paying off, its financial obligations to its creditors, typically due to high fixed costs, illiquid assets, or revenues being sensitive to economic downturns. Such distress can lead to operational distress as increasing costs of borrowings take a toll on the operations of the company as well.

Distressed companies are businesses that are likely to, or already have defaulted on their debts. Although a company may not be making payments on some, or all of its debt obligations, however there still may be some value remaining on the instruments they hold. Just because a company cannot make payments on its debt does not mean the company is entirely worthless.

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Conventional methods are not usefully deployed when valuing companies in distress as:

- Discounted cashflow valuation method required terminal value calculation which is based upon an infinite life and ever-growing cashflows. However, the assumption of perpetuity of cash flows may not be relevant in case of distressed firm because of negative cash flows.
- A distressed firm generally has negative and declining revenues hence expects to lose money for some more time in the future. For such firms, estimating cash flows is difficult, since there is a high risk of bankruptcy. For firms expected to fail, DCF does not work very well, since DCF values a firm as a going concern – even if the firm is expected to survive, projections have to be made until the cash flows turn positive, else the DCF would yield a negative value for equity or firm.
- Discount rates used in conventional methods reflect companies which are operationally as well as financially sound. They have to be adjusted for the probabilities of failures of the companies to be used in case of distressed companies.

Methods of valuation of distressed companies

The above-mentioned reasons warrant adjustments or amendments and modifications to be made to the conventional methods to eliminate any issues that may arise in the valuation of a distressed company.

9.1 Modified Discounted Cash Flow Valuation

This method requires coming up with probability distributions for the cashflows (across all possible outcomes) to estimate the expected cashflow in each period. While computing this cash flow the likelihood of default should be adjusted for. In conjunction with these cashflow estimates, discount rates are also estimated:

- Using updated debt to equity ratios and unlevered beta to estimate the cost of equity.
- Using updated measures of the default risk of the firm to estimate the cost of debt.

However, in case of inability to estimate the entire distribution, probability of distress shall be estimated for each period and used as the expected cashflow:

Expected cash $flow_t$ = Cash $flow_t$ * (1 - Probability of $distress_t$)

9.2 DCF Valuation + Distress Value

A DCF valuation values a business as a going concern. However, DCF valuations will understate the value of the firm if there is a possibility that the firm will fail before it reaches stable growth, and the assets will be sold for a value less than the present value of the expected cashflows (a distress sale value).

Thus, the value of Distressed firm can be computing by following under-mentioned steps:

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(i) Value the business as a going concern by looking at the expected cashflows it will have if it follows the path back to financial health.

(ii) Determine the probability of distress over the lifetime of the DCF analysis.

(iii) Estimate the distress sale value as a percentage of book value or as a percentage of DCF value of equity estimated as a going concern.

Accordingly following formula can be used to calculate the value of equity of a distressed firm.

Value of Equity= DCF value of equity (1 - Probability of distress) + Distress sale value of equity (Probability of distress)

9.3 Adjusted Present Value Model

This approach is based on the logic of separating investment decision from financing decision. Accordingly, first the value of firm is computed without debt (the unlevered firm) and then effect of debt on firm value is adjusted in the same:

Firm Value = Unlevered Firm Value + (Tax Benefits of Debt - Expected Bankruptcy Cost from the Debt)

While the first part can be computed by discounting the free cashflows to the firm at the unlevered cost of equity the second part reflects the present value of the expected tax benefits from the use of debt. The expected bankruptcy cost can be estimated as the difference between the unlevered firm value and the distress sale value:

Expected Bankruptcy Costs = (Unlevered firm value - Distress Sale Value)* Probability of Distress

9.4 Relative Valuation

Relative Valuation multiples such as Revenue and EBITDA multiples are used more popular measures to value distressed firms than healthy firms because multiples such as Price Earnings or Price to Book Value etc. often cannot even be used for a distressed firm. Analysts who are aware of the possibility of distress often consider them subjectively at the point when they compare the multiple for the firm they are analysing to the industry average. For example, assume that the average telecom firm trades at 2 times revenues. So, adjust this multiple down to 1.25 times revenues for a distressed telecom firm.

10. VALUATION OF START UPS

As discussed, earlier following are three most common globally accepted methods of valuing a business:

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(i) Earning/ Cash Flow Approach: In this approach, estimated cash flows for the foreseeable future are discounted to present value and business is valued accordingly.

(ii) Asset approach: This approach is generally used when the business is not a going concern viz. during liquidation, untimely losses etc. The assets and liabilities are valued based on their current realisable value and that is considered as value of the business.

(iii) Market approach: This approach assigns the value of a business based on the value of comparable companies in same/ similar industries, adjusted for their specific parameters.

One common feature in the above approaches is that it pre-supposes a business that is established and generates cash flows using its assets.

On the contrary it is difficult to call Start-ups "established" in any sense or assume that their cash flows (if not already spent on marketing) will remain constant. Profitability seems to be a cursed word in the startup investor circles.

Like the valuation of startups is often required for bringing in investments either by equity or debt. However, the most significant differentiating factor in the valuation of a startup is that there is no historical data available based on which future projections can be drawn.

The value rests entirely on its future growth potential, which, in many cases, is based on an untested idea and may not have been based on an adequate sampling of consumer behaviour or anticipated consumer behaviour. The estimates of future growth are also often based upon assessments of the competence, drive, and self-belief of, at times, very highly qualified and intelligent managers and their capacity to convert a promising idea into commercial success.

The major roadblock with startup valuation is the absence of past performance indicators. There is no 'past' track record, only a future whose narrative is controlled based on the founders' skill. It can be equated as founders walking in the dark and making the investors believe that they are wearing night vision goggles. While this is exciting and fun for the founders, this is risky for the investors.

This is why valuation of startups becomes critical and the role of a professional comes in – it is a way of definitively helping investors navigate the dark using facts, rather than fairy tales.

10.1 Why traditional methods cannot be applied?

Each of the commonly used methods discussed above pre-suppose an established business – which is profitable, has established competitors and generates cash using its assets.

• However, this is missing in new age startups whose value can lie majorly in the concept and potential rather than numbers with a track record.

The failure of each of the traditional methods in case of new age startups is tabulated below:

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Method	Why does it fail in case of new age startups
Income approach	A vast majority of startups operate under the assumption of not generating positive cash flows in the foreseeable future. Off late, this business model has been accepted and normalised by the investor community as well. Since there are no or minimal positive cash flows, it isn't easy to value the business correctly.
Asset approach	There are two reasons why this approach does not work for new age startups: **(i)** Startups have negligible assets because a large chunk of their assets are in the form of intellectual property and other intangible assets. Valuing them correctly is a challenge and arriving at a consensus with investors is even more difficult. **(ii)** Start ups are new, but usually operate under the going concern assumption; hence their value should not be limited to the realisable value of assets today.
Market approach	New-age startups are disruptors. They generally function in a market without established competitors. Their competition is from other startups working in the same genre. The lack of established competitors indicates that their numbers may be skewed and not be comparable enough to form a base. However, out of the three traditional approaches, we have seen a few elements of the market approach being used for valuing new-age startups, especially during advanced funding rounds.

10.2 Value Drivers for startups

While every startup can be vastly different, we now take a look at a few key value drivers and their impact on the valuation of a startup.

Drivers	Impact on valuation
Product	The uniqueness and readiness of the product or service offered by significantly impact the company's valuation. A company that is ready with a fully functional product (or prototype) or service offering will attract higher value than one whose offering is still an 'idea'. Further, market testing and customer responses are key sub-drivers to gauge how good the product is.
Management	More than half of Indian unicorn startups have founders from IIT or IIM. While it may seem unfair prima facie, it is a fact that if the founders are educated from elite schools and colleges, the startup is looked upon more favourably by the investors and stakeholders alike. Accordingly, it is imperative to consider the credentials and balance of the management. For instance, a team with engineers is not as well balanced as a team comprising engineers, finance professionals and MBA graduates. Keeping aside the apparent subjectivity in evaluating the management, the profile of the owners plays a crucial role in valuing the startup.
Traction	Traction is quantifiable evidence that the product or service works and there is a demand for it. The better the traction, the more valuable the startup will be.

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Revenue	The more revenue streams, the more valuable the company. While revenues are not mandatory, their existence is a better indicator than merely demonstrating traction and makes the startup more valuable.
Industry attractiveness	The industry's attractiveness plays a vital role in the value of a company. As good as the idea may be, to sustainably scale, various factors like logistics, distribution channels and customer base significantly impacts the startup value. For example, a new-age startup in the tourism industry will be less valuable, as innovative or unique as their offering is if significant lockdowns are expected in the future.
Demand - supply	If the industry is attractive, there will be more demand from investors, making the industry's individual company more valuable.
Competitiveness	The lesser the competitors, the more valuable the startup will be. There is no escaping the first-mover advantage in any industry. While it is easier to convince investors about a business that already exists (for example, it must have been easier for Ola to convince investors when Uber was already running successfully), it also casts an additional burden on the startup to differentiate itself from the competition.

10.3 Methods for valuing startups

One key observation would be that most value drivers described above are highly subjective. Hence, there is a need to provide standard methods using value drivers above in order to value the startup in a manner comparable to others.

There are many innovative methods for valuing startups that try to reduce the subjectivity in the valuation of startups that have come in recent times.

Let us take a look at the most common methods of valuing startups:

10.3.1 Berkus Approach

The Berkus Approach, created by American venture capitalist and angel investor Dave Berkus, looks at valuing a startup enterprise based on a detailed assessment of five key success factors:

(1) Basic value,

(2) Technology,

(3) Execution,

(4) Strategic relationships in its core market, and

(5) Production and consequent sales.

A detailed assessment is carried out evaluating how much value the five critical success factors in quantitative measure add up to the total value of the enterprise. Based on these numbers, the startup is valued.

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This method caps pre-revenue valuations at $2 million and post-revenue valuations at $2.5 million. Although it doesn't consider other market factor, the limited scope is useful for businesses looking for an uncomplicated tool.

10.3.2 Cost-to-Duplicate Approach

The Cost-to-Duplicate Approach involves taking into account all costs and expenses associated with the startup and its product development, including the purchase of its physical assets. All such expenses are considered determine the startup's fair market value based on all the expenses. This approach is often criticized for not focusing on the future revenue projections or the assets of the startup.

10.3.3 Comparable Transactions Method

With the traditional market approach, this approach is lucrative for investors because it is built on precedent. The question being answered is, "How much were similar startups valued at?"

For instance, imagine XYZ Ltd., a logistics startup, was acquired for Rs 560 crores. It had 24 crore, active users. That's roughly Rs 23 per user.

Suppose you are valuing ABC Ltd, another logistics startup with 1.75 crore users. ABC Ltd. has a valuation of about Rs 40 crores under this method.

With any comparison model, one needs to factor in ratios or multipliers for anything that is a differentiating factor. Examples would be proprietary technologies, intangibles, industry penetration, locational advantages, etc. Depending on the same, the multiplier may be adjusted.

10.3.4 Scorecard Valuation Method

The Scorecard Method is another option for pre-revenue businesses. It also works by comparing the startup to others already funded but with added criteria.

First, we find the average pre-money valuation of comparable companies. Then, we consider how the business stacks up according to the following qualities.

- Strength of the team: 0-30%
- Size of the opportunity: 0-25%
- Product or service: 0-15%
- Competitive environment: 0-10%
- Marketing, sales channels, and partnerships: 0-10%
- Need for additional investment: 0-5%
- Others: 0-5%

Then we assign each quality a comparison percentage. Essentially, it can be on par (100%), below average (<100%), or above average (>100%) for each quality compared to competitors/ industry.

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For example, the marketing team has a 150% score because it is thoroughly trained and has tested a customer base that has positively responded. You'd multiply 10% by 150% to get a factor of .15.

This exercise is undertaken for each startup quality and the sum of all factors is computed. Finally, that sum is multiplied by the average valuation in the business sector to get a pre-revenue valuation.

10.3.5 First Chicago Method

This method combines a Discounted Cash Flow approach and a market approach to give a fair estimate of startup value. It works out:

- Worst-case scenario
- Normal case scenario
- Best-case scenario

Valuation is done for each of these situations and multiplied with a probability factor to arrive at a weighted average value.

10.3.6 Venture Capital Method

As the name suggests, venture capital firms have made this famous. Such investors seek a return equal to some multiple of their initial investment or will strive to achieve a specific internal rate of return based on the level of risk they perceive in the venture.

The method incorporates this understanding and uses the relevant time frame in discounting a future value attributable to the firm.

The post-money value is calculated by discounting the rate representing an investor's expected or required rate of return.

The investor seeks a return based on some multiple of their initial investment. For example, the investor may seek a return of 10x, 20x, 30x, etc., their original investment at the time of exit.

New-age startups are disruptors in their own right and a necessary tool for global innovation and progress. By their very nature, startups disrupt set processes and industries to add value. In that process, they transcend traditional indicators of success like revenues, profitability, asset size, etc. Accordingly, it is no mean feat to uncover the actual value of a startup.

While the traditional methods fall short, there is no shortage of new innovative methods used to value startups based on their value drivers. However, the valuation of a startup is much more than the application of ways – it is about understanding the story of the future trajectory and communicating that narrative using substantial numbers.

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11. VALUATION OF DIGITAL PLATFORMS

A digital platform is a software based online infrastructure that facilitates interactions and transactions between users. Principally platforms are built to facilitate many to many interactions. A few illustrations based on the kind of services provided are as under:

Category	Descriptions
Marketplace	Multiple buyers are matched to multiple suppliers. **For example:** Booking.com connects guests to hotels, while Uber links travelers to drivers, Amazon connects sellers and buyers through its platform.
Search engine	Multiple people looking for information are matched to multiple sources of information. As a search request triggers the system to actively seek out the desired information, it is also called a search engine. **For example:** Google, Bing, and Baidu
Repository	Multiple suppliers 'deposit' their materials into a type of library, to be retrieved by users at a later moment. **For example:** Spotify, YouTube, GitHub
Digital communication	Multiple users to send messages and/or documents to a variety of other people, or interact in real time via voice as well as video. **For example:** Whatsapp, Microsoft Teams, Telegram, Slack etc are internet-based communication platforms.
Digital community	On a digital community platform, people who want to remain virtually connected for a longer period of time can find each other and interact. **For example:** Facebook lets one build one's own network of friends, LinkedIn plays a similar role in the business context.
Payments Platform	On a digital payment platform, matching takes place between those owing money and those wanting to be paid. **For example:** Paytm, GPay, are directed at online consumers and facilities payments across vendors.

The principles of valuation for digital platform are largely like other types of companies with certain nuances which are peculiar to the digital platform industry.

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11.1 Income Approach

As mentioned earlier, valuation methods under the Income Approach lay emphasis on projected financial performance which takes into consideration future revenues and costs using company specific revenue and cost drivers and applicable capital expenditure and working capital cycles.

Backward working is required under the **Top-Down Approach,** which starts with analysis of the total potential market for the Platform on a global or domestic level. This is often referred to as Total Addressable Market ('TAM'). The next step is to estimate the share in this target market, the company estimates to gain in the future, and the time to reach such share. These are often referred to as Serviceable Addressable Market ('SAM') and Serviceable Obtainable Market ('SOM'). The company then needs to estimate its business plan to accomplish its objectives and the strategy. This would involve estimating the manner in which the company will gain market share and increase its revenues while optimizing cash or utilizing cash. The financial forecast should take into consideration the types and features of the business model of the platform. A digital repository which allows streaming of content may earn revenue based on its subscribers while a payments solution platform may earn revenues based on the number of transactions done using the same. The direct operating costs for these types of platforms shall also be unique to each type of platform or platform business.

It has often been seen in the digital platforms businesses that in order to create market share companies and popularize the platform among end users, companies have to resort to penetrative strategies by burning cash on books and keeping lower margins. The cash requirement is expected to reduce with time as profit margins become stable and the rate of reinvestment reduces.

The Top-Down Approach can be ambitious for a company at a nascent stage as estimating market size and market share poses its practical challenges. Under the **Bottom-Up Approach** the Platform can estimate its earnings based on the limited resources it has. A young Platform can estimate its revenue and costs given its financial constraints. The promoters of such platform can deploy appropriate strategies to target high margin sales and cost cutting methodologies to generate more cash for the Platform. This is more in line to making efficient capital budgeting decision, which will ultimately help to forecast earnings and cash flows.

Under both the scenarios i.e Top-Down or Bottom-up, the value of a digital platform will depend on the quality of the financial forecasts. In the digital platform the growth and survival of an entity is highly dependent on its promoters, investors and stakeholders creating products or services that fill or meet a need in the market, and their capability to execute their products and services efficiently by adapting to unexpected circumstances.

11.1.1 Discounting Rate

The discounting rate used should be based upon the type of cash flows being discounted. The free cash flow to the Firm ('FCFF') should be discounted using the Weighted Average Cost of Capital ('WACC') and the free cash flow to Equity should be discounted at the Cost of Equity Capital ('Ke').

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CAPM can be used to calculate the Cost of Equity which is calculated as under:

$R = r_f + \beta (r_m - r_f)$

Where R = expected rate of return

r_f = risk free rate of return

β = Beta value of the stock

r_m = market rate of return

11.1.2 Specific considerations

(a) Beta measures the sensitivity of a stock or company to the market. Practically, the beta of a company is estimated based on the sensitivity of the share price of the stock, its comparable or the industry with respect to the market. Due to the unique nature of each digital platform and scarcity of listed traded comparable, estimating beta becomes challenging. One might need to draw a comparison between the general diversified sector, the industry driving the revenue or international comparable.

(b) The survival of such a digital platform is highly dependent upon the quality of management, ability to adapt to change quickly, and foresee opportunity.

Thus, there are certain specific risks of a digital platform that cannot be estimated using CAPM with regard to only the industry or general sector beta. A Company Specific Risk Premium ('CSRP') or Alpha needs to be estimated and added to determine the appropriate cost of equity used to discount the estimated cash flows. The CSRP for nascent companies would be higher than mature digital platforms with adequately large operations having a large customer base.

11.2 Market Approach

The Market Approach values a company by drawing a comparison from similar valued companies based on multiples like profit to earnings ('P/E') ratio, Enterprise Value to Earnings before Interest, Tax, Depreciation and Amortization ('EV/EBITDA') ratio, Price to Book Value ratio, Price to Revenue/Sales Ratio. The selection of comparable to draw such comparison is vital and parameters like the market capitalization, revenue, Profit margins, capital structure etc. are used while making the selection.

However, in case of digital platform, such comparison becomes difficult due to the following reasons:

- The listed comparables are scarce and even absent for many platforms.
- The underlying value specifically Profit and EBITDA may be negative for certain digital platforms.
- Such digital platforms are capital-lite making their Book Value very low.

Due to the above complexity, the application of Market Approach for digital platform, lays emphasis on revenue of a digital platform. Comparison is sought on the manner the platform envisages its primary driver of revenue.

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Certain examples of the drivers of revenue that can be used as a basis are as under:

Category of Digital Platform	Drivers of Revenue
Market Place (Matching Supply and Demand)	No of Booking made, No of registered users, volume of Transactions
Payment (Matching Billing and Payments)	No of active subscriber, No of merchants registered on the platform, Compatibility and speed of the operating system, Security, Ease of Use
Community (Network of Contacts)	Number of users, subscription fees, platform for professionals
Communication (Network for Messaging)	Number of users, sponsored links, advertising revenue
Repository (Supply Library)	Number of readers and contributors, authenticity of data, duration of use, quality and variety of data
Search (Machine Queries and Information)	Number of users, relevant search results, time taken per search

Two Search engines can be compared based on their total number of active users and the average time taken to show relevant search results. The one with more relevant search results in shorter time, shall be valued at a premium and can be used as a base for comparison.

For a repository platform that seeks to draw subscription or advertising revenue based on the number of times the content is viewed on its platform and the duration of such visit, comparison can be drawn based upon the number of users, the average number of views per user and the average revenue per user.

Example: A Search engine platform Company valued at 100.00 Cr with a subscriber base of 50 million users and content of 100,00 hours can be used to draw a comparison while valuing a similar platform with fewer users however having same or similar revenue parameters.

11.3 Cost Approach

The Cost Approach estimates the value based on the sum total of the cost to build the same platform or similar platform with the same utility. Since, the asset behind the digital platform is the code written, the numbers of hours spent to write the code by the developers is the primary cost of the platform. However, this approach may not be most appropriate as it fails to take into account the revenue generating capacity of the digital platform which may create significantly higher value for the shareholders of the company versus the cost spent on developing the platform.

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The valuation of digital platform can be tricky based on the peculiarities as mentioned above. However, the fundamentals of valuation remain the same. The understanding of the business, the revenue model, the quality of management, and the risk-reward parameters determine the value of the digital platform.

12. VALUATION OF PROFESSIONAL/ CONSULTANCY FIRMS

The professional services firms can be defined as firms that provide customized, knowledge-based services to clients such as Chartered Accountants, Advocates, Management Consultancy firms etc. Even within industry firms vary significantly due to the different nature of services each firm provides.

Like any other business valuation understanding the present and projected industry trends plays a significant role in determining an accurate valuation amount but experts generally look at the firm's historical data to compare them with industry Key Performance Indicators (KPIs) and benchmarks. Further, generally valuation experts compare the company against its competitors. The main source of information are Audited Annual Statements and Income Tax Returns etc.

As mentioned earlier when using the income approach while historical data is important, projected growth (Terminal Value) also impacts the overall value. Although Valuation experts plan for future growth and compare it to the projected trends after conversations with management but there is an inherent risk associated with using future earnings potential, as results may or may not materialize. Hence, this risk should be factored into the overall calculation.

In addition to analysis of financial statements and their comparison to industry standards, normalisation of net income and cash flows is another important aspect. This step allows comparison of firms on equal footing. This step involves adding back of non-cash items and specific items, which might not apply to a new firm. Then these normalized cash flows are applied to the chosen valuation method and used in calculating overall value.

One commonly used method to analyse the extent that a firm meets expectations in comparison to current industry benchmarks and KPIs. Since professional services includes several different types of firms, KPIs can vary greatly and hence it is equally important to look at specific indicators which align with acquirer firm's goals.

To accurately value a professional services firm each piece of information contributes importantly.

13. IMPACT OF ESG ON VALUATION

As per Wikipedia Environmental, Social, Governance (ESG) is a framework designed to be embedded into an organization's strategy that considers the needs and ways in which to generate value for all organizational stakeholders (such as employees, customers and suppliers and financiers).

Illustrative list of contents included in these three factors are as follows:

Environmental	Social	Governance
Climate change	Employee development	Board Independence

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Water	Diversity & inclusion	Board diversity
Waste generation	Community development	Anti-Corruption & Bribery
Emissions	Health & Safety	Tax transparency
Biodiversity	Customer	Ethical conduct

ESG is on the radar of several investors today. Focusing on ESG issues can bring out risk and opportunities for the company's ability for sustainable value creation. The key environmental aspects under consideration are climate change and natural resource scarcity. It covers social issues like diversity and inclusivity, labor practices, health & safety, and cyber security. There is greater emphasis on governance aspect covering topics like board diversity and independence, executive pay, and tax transparency.

There has been tremendous momentum in the whole ESG game plan and the summary of key developments are captured as below:

- *Investment pace in ESG funds:* ESG funds tapped in excess of $ 50 billion in 2020 and total assets with ESG focus crossed more than $35 trillion in the same period.
- *Green bonds have been of significant focus:* The green bonds market in 2020 crossed a major milestone of $ 1 trillion dollars.
- *Sustainability taxonomy on the rise:* Key regions have already defined sustainability taxonomy for e.g. European Union (EU). Several other countries / region are in process of introducing taxonomy related to sustainability / ESG.
- *Up next - Convergence of ESG framework:* IFRS launched an important work to develop single global reporting standard on ESG.
- *SEBI* - SEBI (Securities Exchange Board of India) in February 2023 proposed a regulatory framework on ESG disclosures by listed entities.

The ESG performance and linked ratings have begun to play an influencing role for companies going to market to raise funds for future growth. The high ESG focus from investors, lenders and financial institution in the recent times has reached the tipping point and have started to impact the financing options for companies. Companies with high ESG focus stand to get benefits in the form of preferential / lower cost of debt or access to specialized financial products like the Green, Social and Sustainability linked Bonds.

Traditional belief was that ESG was 'good to have' in the area of business ethics, sustainability, diversity and community. However with the heightened interests from different stakeholders groups, directors realise that it is now moving into the 'must-to-have' territory. The business case for ESG generally begins with operational efficiency and risk reduction as primary goals and then extends to longer-term operational and organizational resiliency and sustainability. Boards recognize the strong and direct link to build a profitable business with a strong focus on environmental and social considerations. They also

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know that focus on ESG issues requires robust governance practices which will fortify their company's portfolio as a strong contender with investors and shareholders.

Now question arises how the risks of ESG factors can be incorporated in the Valuation of any business. As mentioned earlier the most popular technique of valuing any business is discounting of Future Cash Flows. Accordingly, the impact of these risks can be incorporated either in discount rate or expected cash flows.

Generally, management and investors are more interested in adjusting discount rate by inclusion of risk premium in the same. Even though this approach is more practical but the impact of ESG factors may not be that much explicit. Hence adjustment of ESG factors in cash flows would be more explicit.

Now let see how the impact of each factor can be incorporated in computation of expected cash flows:

(i) E of ESG: The risk of this factor (Environment) can be incorporated by carrying out 2-degree scenario analysis i.e. if temperature of the plant is increased by 2 degrees. Similarly, adjustment in cash flows can be made by considering carbon points.

(ii) S of ESG: The risk of this factor (Social) can be considered by adjusting the impact of social measures cost on the revenue such as better labour working conditions, CSR, and other welfare measures for the various stakeholders.

(iii) G of ESG: The risk of this factor (Governance) can be considered by adjusting the impact of poor governance on revenue in the form of penalty, fines, taxes etc.

CASE STUDIES

A couple of real life case studies would help us to understand the Concepts better –

Case Study 1

The application of 'valuation' in the context of the merger of Vodafone with Idea Cellular Ltd:

The valuation methods deployed by the appointed CA firms for the merger were as follows:

(a) Market Value method: The share price observed on NSE (National Stock Exchange) for a suitable time frame has been considered to arrive at the valuation.

(b) Comparable companies' market multiple method: The stock market valuations of comparable companies on the BSE and NSE were taken into account.

(c) NAV method: The asset based approach was undertaken to arrive at the net asset value of the merging entities as of 31st December 2016.

Surprisingly, the DCF method was not used for valuation purposes. The reason stated was that the managements to both Vodafone and Idea had not provided the projected (future) cash flows and other parameters necessary for performing a DCF based valuation.

The final valuation done using methods a to c gave a basis to form a merger based on the 'Share Exchange' method.

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Above information extracted from: 'Valuation report' filed by Idea Cellular with NSE

However, let's see how the markets have reacted to this news – the following article published in The Hindu Business Line dated 20th March 2017 will give a fair idea of the same:

"Idea Cellular slumped 9.6 per cent as traders said the implied deal price in a planned merger with Vodafone PLC's Indian operations under-valued the company shares. Although traders had initially reacted positively to the news, doubts about Idea's valuations after the merger sent shares downward.

Idea Cellular Ltd fell as much as 14.57 per cent, reversing earlier gains of 14.25 per cent, after the telecom services provider said it would merge with Vodafone Plc's Indian operations."

Hence, we can conclude that the valuation methods, though technically correct, may not elicit a positive impact amongst stockholders. That is because there is something called as 'perceived value' that's not quantifiable. It depends upon a majority of factors like analyst interpretations, majority opinion etc.

Case Study 2

Valuation model for the acquisition of 'WhatsApp' by Facebook

Facebook announced the takeover of WhatsApp for a staggering 21.8 billion USD in 2015. The key characteristics of WhatsApp that influenced the deal were –

(a) It is a free text-messaging service and with a $1 per year service fee, had 450 million users worldwide close to the valuation date.

(b) 70% of the above users were active users.

(c) An aggressive rate of user account increase of 1 million users a day would lead to pipeline of 1 billion users just within a year's range.

The gross per-user value would thus, come to an average of USD 55, which included a 4 billion payout as a sweetener for retaining WhatsApp employees post takeover. The payback for Facebook will be eventually to monetize this huge user base with recalibrated charges on international messaging arena. Facebook believes that the future lies in international, cross-platform communications.

Above information extracted from the official website of business news agency 'CNBC'

TEST YOUR KNOWLEDGE

Theoretical Questions

1. Differentiate between EVA and MVA.

2. Relative Valuation is the method to arrive at a 'relative' value using a 'comparative' analysis to its peers or similar enterprises. Elaborate this statement.

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Practical Questions

1. ABC Company is considering acquisition of XYZ Ltd. which has 1.5 crores shares outstanding and issued. The market price per share is ₹ 400 at present. ABC's average cost of capital is 12%. Available information from XYZ indicates its expected cash accruals for the next 3 years as follows:

Year	₹ Cr.
1	250
2	300
3	400

Calculate the range of valuation that ABC has to consider. (PV factors at 12% for years 1 to 3 respectively: 0.893, 0.797 and 0.712).

2. Eagle Ltd. reported a profit of ₹ 77 lakhs after 30% tax for the financial year 2011-12. An analysis of the accounts revealed that the income included extraordinary items of ₹ 8 lakhs and an extraordinary loss of ₹10 lakhs. The existing operations, except for the extraordinary items, are expected to continue in the future. In addition, the results of the launch of a new product are expected to be as follows:

	₹ In lakhs
Sales	70
Material costs	20
Labour costs	12
Fixed costs	10

You are required to:

(i) Calculate the value of the business, given that the capitalization rate is 14%.

(ii) Determine the market price per equity share, with Eagle Ltd.'s share capital being comprised of 1,00,000 13% preference shares of ₹ 100 each and 50,00,000 equity shares of ₹ 10 each and the P/E ratio being 10 times.

3. ABC Co. is considering a new sales strategy that will be valid for the next 4 years. They want to know the value of the new strategy. Following information relating to the year which has just ended, is available:

Income Statement	₹
Sales	20,000
Gross margin (20%)	4,000
Administration, Selling & distribution expense (10%)	2,000

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PBT	2,000
Tax (30%)	600
PAT	1,400
Balance Sheet Information	
Fixed Assets	8,000
Current Assets	4,000
Equity	12,000

If it adopts the new strategy, sales will grow at the rate of 20% per year for three years. From 4th year onward Cash Flow will be stabilized. The gross margin ratio, Assets turnover ratio, the Capital structure and the income tax rate will remain unchanged.

Depreciation would be at 10% of net fixed assets at the beginning of the year.

The Company's target rate of return is 15%.

Determine the incremental value due to adoption of the strategy.

4. H Ltd. agrees to buy over the business of B Ltd. effective 1st April, 2012.The summarized Balance Sheets of H Ltd. and B Ltd. as on 31st March 2012 are as follows:

Balance sheet as at 31st March, 2012 (In Crores of Rupees)

Liabilities:	**H. Ltd**	**B. Ltd.**
Paid up Share Capital		
-Equity Shares of ₹100 each	350.00	--
-Equity Shares of ₹10 each	--	6.50
Reserve & Surplus	950.00	25.00
Total	**1,300.00**	**31.50**
Assets:		
Net Fixed Assets	220.00	0.50
Net Current Assets	1,020.00	29.00
Deferred Tax Assets	60.00	2.00
Total	**1,300.00**	**31.50**

H Ltd. proposes to buy out B Ltd. and the following information is provided to you as part of the scheme of buying:

(1) The weighted average post tax maintainable profits of H Ltd. and B Ltd. for the last 4 years are ₹ 300 crores and ₹ 10 crores respectively.

(2) Both the companies envisage a capitalization rate of 8%.

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(3) H Ltd. has a contingent liability of ₹ 300 crores as on 31st March, 2012.

(4) H Ltd. to issue shares of ₹ 100 each to the shareholders of B Ltd. in terms of the exchange ratio as arrived on a Fair Value basis. (Please consider weights of 1 and 3 for the value of shares arrived on Net Asset basis and Earnings capitalization method respectively for both H Ltd. and B Ltd.)

You are required to arrive at the value of the shares of both H Ltd. and B Ltd. under:

(i) Net Asset Value Method

(ii) Earnings Capitalisation Method

(iii) Exchange ratio of shares of H Ltd. to be issued to the shareholders of B Ltd. on a Fair value basis (taking into consideration the assumption mentioned in point 4 above.)

5. AB Ltd., is planning to acquire and absorb the running business of XY Ltd. The valuation is to be based on the recommendation of merchant bankers and the consideration is to be discharged in the form of equity shares to be issued by AB Ltd. As on 31.3.2006, the paid up capital of AB Ltd. consists of 80 lakhs shares of ₹ 10 each. The highest and the lowest market quotation during the last 6 months were ₹ 570 and ₹ 430. For the purpose of the exchange, the price per share is to be reckoned as the average of the highest and lowest market price during the last 6 months ended on 31.3.06.

XY Ltd.'s Balance Sheet as at 31.3.2006 is summarised below:

	₹ lakhs
Sources	
Share Capital	
20 lakhs equity shares of ₹10 each fully paid	200
10 lakhs equity shares of ₹10 each, ₹5 paid	50
Loans	100
Total	350
Uses	
Fixed Assets (Net)	150
Net Current Assets	200
	350

An independent firm of merchant bankers engaged for the negotiation, have produced the following estimates of cash flows from the business of XY Ltd.:

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Year ended	By way of	₹ lakhs
31.3.07	after tax earnings for equity	105
31.3.08	do	120
31.3.09	Do	125
31.3.10	Do	120
31.3.11	Do	100
	Terminal Value estimate	200

It is the recommendation of the merchant banker that the business of XY Ltd. may be valued on the basis of the average of (i) Aggregate of discounted cash flows at 8% and (ii) Net assets value. Present value factors at 8% for years

1-5: 0.93 0.86 0.79 0.74 0.68

You are required to:

(i) Calculate the total value of the business of XY Ltd.

(ii) The number of shares to be issued by AB Ltd.; and

(iii) The basis of allocation of the shares among the shareholders of XY Ltd.

6. The valuation of Hansel Limited has been done by an investment analyst. Based on an expected free cash flow of ₹ 54 lakhs for the following year and an expected growth rate of 9 percent, the analyst has estimated the value of Hansel Limited to be ₹ 1800 lakhs. However, he committed a mistake of using the book values of debt and equity.

The book value weights employed by the analyst are not known, but you know that Hansel Limited has a cost of equity of 20 percent and post tax cost of debt of 10 percent. The value of equity is thrice its book value, whereas the market value of its debt is nine-tenths of its book value. What is the correct value of Hansel Ltd?

7. Following information are available in respect of XYZ Ltd. which is expected to grow at a higher rate for 4 years after which growth rate will stabilize at a lower level:

Base year information:

Revenue	- ₹ 2,000 crores
EBIT	- ₹ 300 crores
Capital expenditure	- ₹ 280 crores
Depreciation	- ₹200 crores

Information for high growth and stable growth period are as follows:

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	High Growth	Stable Growth
Growth in Revenue & EBIT	20%	10%
Growth in capital expenditure and depreciation	20%	Capital expenditure are offset by depreciation
Risk free rate	10%	9%
Equity beta	1.15	1
Market risk premium	6%	5%
Pre tax cost of debt	13%	12.86%
Debt equity ratio	1 : 1	2 : 3

For all time, working capital is 25% of revenue and corporate tax rate is 30%.

What is the value of the firm?

8. Following information is given in respect of WXY Ltd., which is expected to grow at a rate of 20% p.a. for the next three years, after which the growth rate will stabilize at 8% p.a. normal level, in perpetuity.

	For the year ended March 31, 2014
Revenues	₹ 7,500 Crores
Cost of Goods Sold (COGS)	₹ 3,000 Crores
Operating Expenses	₹ 2,250 Crores
Capital Expenditure	₹ 750 Crores
Depreciation (included in Operating Expenses)	₹ 600 Crores

During high growth period, revenues & Earnings before Interest & Tax (EBIT) will grow at 20% p.a. and capital expenditure net of depreciation will grow at 15% p.a. From year 4 onwards, i.e. normal growth period revenues and EBIT will grow at 8% p.a. and incremental capital expenditure will be offset by the depreciation. During both high growth & normal growth period, net working capital requirement will be 25% of revenues.

The Weighted Average Cost of Capital (WACC) of WXY Ltd. is 15%.

Corporate Income Tax rate will be 30%.

Required:

Estimate the value of WXY Ltd. using Free Cash Flows to Firm (FCFF) & WACC methodology.

The PVIF @ 15 % for the three years are as below:

Year	t_1	t_2	t_3
PVIF	0.8696	0.7561	0.6575

9. With the help of the following information of Jatayu Limited compute the Economic Value Added:

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Capital Structure	Equity capital ₹ 160 Lakhs Reserves and Surplus ₹ 140 lakhs 10% Debentures ₹ 400 lakhs
Cost of equity	14%
Financial Leverage	1.5 times
Income Tax Rate	30%

10. RST Ltd.'s current financial year's income statement reported its net income after tax as ₹ 25,00,000. The applicable corporate income tax rate is 30%.

Following is the capital structure of RST Ltd. at the end of current financial year:

	₹
Debt (Coupon rate = 11%)	40 lakhs
Equity (Share Capital + Reserves & Surplus)	125 lakhs
Invested Capital	165 lakhs

Following data is given to estimate cost of equity capital:

Equity Beta of RST Ltd.	1.36
Risk –free rate i.e. current yield on Govt. bonds	8.5%
Average market risk premium (i.e. Excess of return on market portfolio over risk-free rate)	9%

Required:

(i) Estimate Weighted Average Cost of Capital (WACC) of RST Ltd.; and

(ii) Estimate Economic Value Added (EVA) of RST Ltd.

11. Tender Ltd has earned a net profit of ₹ 15 lacs after tax at 30%. Interest cost charged by financial institutions was ₹ 10 lacs. The invested capital is ₹ 95 lacs of which 55% is debt. The company maintains a weighted average cost of capital of 13%. Required,

(a) Compute the operating income.

(b) Compute the Economic Value Added (EVA).

(c) Tender Ltd. has 6 lac equity shares outstanding. How much dividend can the company pay before the value of the entity starts declining?

12. The following information is given for 3 companies that are identical except for their capital structure:

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	Orange	Grape	Apple
Total invested capital	1,00,000	1,00,000	1,00,000
Debt/assets ratio	0.8	0.5	0.2
Shares outstanding	6,100	8,300	10,000
Pre tax cost of debt	16%	13%	15%
Cost of equity	26%	22%	20%
Operating Income (EBIT)	25,000	25,000	25,000

The tax rate is uniform 35% in all cases.

(i) Compute the Weighted average cost of capital for each company.

(ii) Compute the Economic Valued Added (EVA) for each company.

(iii) Based on the EVA, which company would be considered for best investment? Give reasons.

(iv) If the industry PE ratio is 11x, estimate the price for the share of each company.

(v) Calculate the estimated market capitalisation for each of the Companies.

13. Delta Ltd.'s current financial year's income statement reports its net income as ₹ 15,00,000. Delta's marginal tax rate is 40% and its interest expense for the year was ₹ 15,00,000. The company has ₹ 1,00,00,000 of invested capital, of which 60% is debt. In addition, Delta Ltd. tries to maintain a Weighted Average Cost of Capital (WACC) of 12.6%.

(i) Compute the operating income or EBIT earned by Delta Ltd. in the current year.

(ii) What is Delta Ltd.'s Economic Value Added (EVA) for the current year?

(iii) Delta Ltd. has 2,50,000 equity shares outstanding. According to the EVA you computed in (ii), how much can Delta pay in dividend per share before the value of the company would start to decrease? If Delta does not pay any dividends, what would you expect to happen to the value of the company?

14. The following data pertains to XYZ Inc. engaged in software consultancy business as on 31 December 2010.

($ Million)

Income from consultancy	935.00
EBIT	180.00
Less: Interest on Loan	18.00
EBT	162.00
Tax @ 35%	56.70
	105.30

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Balance Sheet

($ Million)

Liabilities	Amount	Assets		Amount
Equity Stock (10 million share @ $ 10 each)	100	Land and Building		200
		Computers & Softwares		295
Reserves & Surplus	325	Current Assets:		
Loans	180	Debtors	150	
Current Liabilities	180	Bank	100	
		Cash	40	290
	785			785

With the above information and following assumption you are required to compute

(a) Economic Value Added®

(b) Market Value Added.

Assuming that:

(i) WACC is 12%.

(ii) The share of company currently quoted at $ 50 each

15. Herbal Gyan is a small but profitable producer of beauty cosmetics using the plant Aloe Vera. This is not a high-tech business, but Herbal's earnings have averaged around ₹ 12 lakh after tax, largely on the strength of its patented beauty cream for removing the pimples.

The patent has eight years to run, and Herbal has been offered ₹ 40 lakhs for the patent rights. Herbal's assets include ₹ 20 lakhs of working capital and ₹ 80 lakhs of property, plant, and equipment. The patent is not shown on Herbal's books. Suppose Herbal's cost of capital is 15 percent. What is its Economic Value Added (EVA)?

16. Constant Engineering Ltd. has developed a high tech product which has reduced the Carbon emission from the burning of the fossil fuel. The product is in high demand. The product has been patented and has a market value of ₹ 100 Crore, which is not recorded in the books. The Net Worth (NW) of Constant Engineering Ltd. is ₹ 200 Crore. Long term debt is ₹ 400 Crore. The product generates a revenue of ₹ 84 Crore. The rate on 365 days Government bond is 10 percent per annum. Market portfolio generates a return of 12 percent per annum. The stock of the company moves in tandem with the market. Calculate Economic Value added of the company.

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ANSWERS/ SOLUTIONS

Answers to Theoretical Questions

1. Please refer paragraph 6.4.

2. Please refer paragraph 5.

Answers to the Practical Questions

1. VALUATION BASED ON MARKET PRICE

Market Price per share ₹ 400

Thus value of total business is (₹ 400 x 1.5 Cr.) ₹ 600 Cr.

VALUATION BASED ON DISCOUNTED CASH FLOW

Present Value of cash flows

(₹ 250 cr x 0.893) + (₹ 300 cr. X 0.797) + (₹ 400 cr. X 0.712) = ₹ 747.15 Cr.

Value of per share (₹ 747.15 Cr. / 1.5 Cr) ₹ 498.10 per share

RANGE OF VALUATION

	Per Share ₹	Total ₹ Cr.
Minimum	400.00	600.00
Maximum	498.10	747.15

2. **(i)** Computation of Business Value

			(₹ Lakhs)
Profit before tax $\frac{77}{1-0.30}$			110
Less: Extraordinary income			(8)
Add: Extraordinary losses			10
			112
Profit from new product		(₹ Lakhs)	
Sales		70	
Less: Material costs	20		
Labour costs	12		
Fixed costs	10	(42)	28
			140.00
Less: Taxes @30%			42.00
Future Maintainable Profit after taxes			98.00

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Relevant Capitalisation Factor	0.14
Value of Business (₹98/0.14)	700

(ii) Determination of Market Price of Equity Share

Future maintainable profits (After Tax)	₹ 98,00,000
Less: Preference share dividends 1,00,000 shares of ₹ 100 @ 13%	₹ 13,00,000
Earnings available for Equity Shareholders	₹ 85,00,000
No. of Equity Shares	50,00,000
Earning per share = $\frac{₹\ 85,00,000}{50,00,000}$ =	₹ 1.70
PE ratio	10
Market price per share	₹ 17

3. Projected Balance Sheet

	Year 1	Year 2	Year 3	Year 4
Fixed Assets (40% of Sales)	9,600	11,520	13,824	13,824
Current Assets (20% of Sales)	4,800	5,760	6,912	6,912
Total Assets	14,400	17,280	20,736	20,736
Equity	14,400	17,280	20,736	20,736

Projected Cash Flows:-

	Year 1	Year 2	Year 3	Year 4
Sales	24,000	28,800	34,560	34,560
PBT (10% of sale)	2,400	2,880	3,456	3,456
PAT (70%)	1,680	2,016	2,419.20	2,419.20
Depreciation	800	960	1,152	1,382
Addition to Fixed Assets	2,400	2,880	3,456	1,382
Increase in Current Assets	800	960	1,152	-
Operating cash flow (FCFF)	(720)	(864)	(1,036.80)	2,419.20

Projected Cash Flows:-

Present value of Projected Cash Flows:-

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Cash Flows	PVF at 15%	PV
-720	0.870	-626.40
-864	0.756	-653.18
-1,036.80	0.658	-682.21
		-1,961.79

Residual Value - 2419.20/0.15 = 16,128

Present value of Residual value = $16128/(1.15)^3$

= 16128/1.521 = 10603.55

Total shareholders' value = 10,603.55 – 1,961.79 = 8,641.76

Pre strategy value = 1,400 / 0.15 = 9,333.33

∴ Value of strategy = 8,641.76 – 9,333.33 = – 691.57

Conclusion: The strategy is not financially viable

4. (i) Net asset value

H Ltd.	$\frac{₹\ 1300\ \text{Crores} - ₹\ 300\ \text{Crores}}{3.50\ \text{Crores}} = ₹\ 285.71$
B Ltd.	$\frac{₹\ 31.50\ \text{Crores}}{0.65\ \text{Crores}} = ₹\ 48.46$

(ii) Earning capitalization value

H Ltd.	$\frac{₹\ 300\ \text{Crores}/0.08}{3.50\ \text{Crores}} = ₹\ 1071.43$
B Ltd.	$\frac{₹\ 10\ \text{Crores}/0.08}{0.65\ \text{Crores}} = ₹\ 192.31$

(iii) Fair value

H Ltd.	$\frac{₹\ 285.71 \times 1 + ₹\ 1071.43 \times 3}{4} = ₹\ 875$
B Ltd.	$\frac{₹\ 48.46 \times 1 + ₹\ 192.31 \times 3}{4} = ₹\ 156.3475$
Exchange ratio	₹156.3475/ ₹875 = 0.1787

H Ltd should issue its 0.1787 share for each share of B Ltd.

Note: In above solution it has been assumed that the contingent liability will materialize at its full amount.

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5. Price/share of AB Ltd. for determination of number of shares to be issued

= (₹ 570 + ₹ 430)/2 = ₹ 500

Value of XY Ltd based on future cash flow capitalization (105x0.93)+(120x0.86)+(125x0.79)+(120x0.74)x(300x0.68)	₹ lakhs	592.40
Value of XY Ltd based on net assets	₹ lakhs	250.00
Average value (592.40+250)/2		421.20
No. of shares in AB Ltd to be issued ₹ 4,21,20,000/500	Nos.	84240
Basis of allocation of shares		
Fully paid equivalent shares in XY Ltd. (20+5) lakhs		2500000
Distribution to fully paid shareholders 84240x20/25		67392
Distribution to partly paid shareholders 84240-67392		16848

6. Cost of capital by applying Free Cash Flow to Firm (FCFF) Model is as follows:-

Value of Firm = $V_0 = \dfrac{FCFF_1}{K_c - g_n}$

Where –

$FCFF_1$ = Expected FCFF in the year 1

K_c= Cost of capital

g_n = Growth rate forever

Thus, ₹ 1800 lakhs = ₹ 54 lakhs /(K_c-g)

Since g = 9%, then K_c = 12%

Now, let X be the weight of debt and given cost of equity = 20% and cost of debt = 10%, then 20% (1 – X) + 10% X = 12%

Hence, X = 0.80, so book value weight for debt was 80%

∴ Correct weight should be 60 of equity and 72 of debt.

∴ Cost of capital = K_c = 20% (60/132) + 10% (72/132) = 14.5455% and correct firm's value

= ₹ 54 lakhs/(0.1454 – 0.09) = ₹ 974.73 lakhs.

7. **High growth phase :**

k_e = 0.10 + 1.15 x 0.06 = 0.169 or 16.9%.

k_d = 0.13 x (1-0.3) = 0.091 or 9.1%.

Cost of capital = 0.5 x 0.169 + 0.5 x 0.091 = 0.13 or 13%.

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Stable growth phase :

k_e = 0.09 + 1.0 x 0.05 = 0.14 or 14%.

k_d = 0.1286 x (1 - 0.3) = 0.09 or 9%.

Cost of capital = 0.6 x 0.14 + 0.4 x 0.09 = 0.12 or 12%.

Determination of forecasted Free Cash Flow of the Firm (FCFF)

(₹ in crores)

	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Terminal Year
Revenue	2,400	2,880	3,456	4,147.20	4,561.92
EBIT	360	432	518.40	622.08	684.29
EAT	252	302.40	362.88	435.46	479.00
Capital Expenditure	96	115.20	138.24	165.89	-
Less Depreciation					
Δ Working Capital	100.00	120.00	144.00	172.80	103.68
Free Cash Flow (FCF)	56.00	67.20	80.64	96.77	375.32

Alternatively, it can also be computed as follows:

(₹ in crores)

	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Terminal Year
Revenue	2,400	2,880	3,456	4,147.20	4,561.92
EBIT	360	432	518.40	622.08	684.29
EAT	252	302.40	362.88	435.46	479.00
Add: Depreciation	240	288	345.60	414.72	456.19
	492	590.40	708.48	850.18	935.19
Less: Capital Exp.	336	403.20	483.84	580.61	456.19
Δ WC	100.00	120.00	144.00	172.80	103.68
	56.00	67.20	80.64	96.77	375.32

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Present Value (PV) of FCFF during the explicit forecast period is:

FCFF (₹ in crores)	PVF @ 13%	PV (₹ in crores)
56.00	0.885	49.56
67.20	0.783	52.62
80.64	0.693	55.88
96.77	0.613	59.32
		₹ 217.38

Terminal Value of Cash Flow

$$\frac{375.32}{0.12 - 0.10} = ₹\,18{,}766.00\,\text{Crores}$$

PV of the terminal, value is:

$$₹\,18{,}766.00\,\text{Crores} \times \frac{1}{(1.13)^4} = ₹\,18{,}766.00\,\text{Crores} \times 0.613 = ₹\,11{,}503.56\,\text{Crores}$$

The value of the firm is :

₹ 217.38 Crores + ₹ 11,503.56 Crores = ₹ 11,720.94 Crores

8. Determination of forecasted Free Cash Flow of the Firm (FCFF)

(₹ in crores)

	Yr. 1	Yr. 2	Yr. 3	Terminal Year
Revenue	9000.00	10800.00	12960.00	13996.80
COGS	3600.00	4320.00	5184.00	5598.72
Operating Expenses	1980.00*	2376.00	2851.20	3079.30
Depreciation	720.00	864.00	1036.80	1119.74
EBIT	2700.00	3240.00	3888.00	4199.04
Tax @30%	810.00	972.00	1166.40	1259.71
EAT	1890.00	2268.00	2721.60	2939.33
Capital Exp. – Dep.	172.50	198.38	228.13	-
Δ Working Capital	375.00	450.00	540.00	259.20
Free Cash Flow (FCF)	1342.50	1619.62	1953.47	2680.13

* Excluding Depreciation.

Present Value (PV) of FCFF during the explicit forecast period is:

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FCFF (₹ in crores)	PVF @ 15%	PV (₹ in crores)
1342.50	0.8696	1167.44
1619.62	0.7561	1224.59
1953.47	0.6575	1284.41
		3676.44

PV of the terminal, value is:

$$\frac{2680.13}{0.15 - 0.08} \times \frac{1}{(1.15)^3} = ₹\ 38287.57 \text{ Crore} \times 0.6575 = ₹\ 25174.08 \text{ Crore}$$

The value of the firm is :

₹ 3676.44 Crores + ₹ 25174.08 Crores = ₹ 28,850.52 Crores

9. Financial Leverage = PBIT/PBT

1.5 = PBIT / (PBIT – Interest)

1.5 = PBIT / (PBIT – 40)

1.5 (PBIT – 40) = PBIT

1.5 PBIT – 60 = PBIT

1.5 PBIT – PBIT = 60

0.5 PBIT = 60

or PBIT $= \frac{60}{0.5}$ = ₹120 lakhs

NOPAT = PBIT – Tax = ₹120 lakhs (1 – 0.30) = ₹84 lakhs.

Weighted Average Cost of Capital (WACC)

= 14% × (300 / 700) + (1 – 0.30) × (10%) × (400 / 700) = 10%

EVA = NOPAT – (WACC × Total Capital)

EVA = ₹84 lakhs – 0.10 × ₹ 700 lakhs

EVA = ₹ 14 lakhs

10. Cost of Equity as per CAPM

k_e = R_f + β x Market Risk Premium

= 8.5% + 1.36 x 9%

= 8.5% + 12.24% = 20.74%

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Cost of Debt k_d = 11%(1 – 0.30) = 7.70%

WACC (k_o) $= k_e \times \frac{E}{E+D} + k_d \times \frac{D}{E+D}$

$= 20.74 \times \frac{125}{165} + 7.70 \times \frac{40}{165} = 15.71 + 1.87 = 17.58\%$

Taxable Income = ₹ 25,00,000/(1 - 0.30)

= ₹ 35,71,429 or ₹ 35.71 lakhs

Operating Income = Taxable Income + Interest

= ₹ 35,71,429 + ₹ 4,40,000

= ₹ 40,11,429 or ₹ 40.11 lacs

EVA = EBIT (1-Tax Rate) – WACC x Invested Capital

= ₹ 40,11,429 (1 – 0.30) – 17.58% x ₹ 1,65,00,000

= ₹ 28,08,000 – ₹ 29,00,700 = - ₹ 92,700

11. Taxable Income = ₹ 15 lac/(1-0.30)

= ₹ 21.43 lacs or ₹ 21,42,857

Operating Income = Taxable Income + Interest

= ₹ 21,42,857 + ₹ 10,00,000

= ₹ 31,42,857 or ₹ 31.43 lacs

EVA = EBIT (1-Tax Rate) – WACC x Invested Capital

= ₹ 31,42,857(1 – 0.30) – 13% x ₹ 95,00,000

= ₹ 22,00,000 – ₹ 12,35,000 = ₹ 9,65,000

EVA Dividend $= \frac{₹\ 9,65,000}{₹\ 6,00,000} = ₹\ 1.6083$

12. (i) Working for calculation of WACC

	Orange	Grape	Apple
Total debt	80,000	50,000	20,000
Post tax Cost of debt	10.40%	8.45%	9.75%
Equity Fund	20,000	50,000	80,000

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WACC

Orange:	(10.4 x 0.8) + (26 x 0.2)	=	13.52%
Grape:	(8.45 x 0.5) + (22 x 0.5)	=	15.225%
Apple:	(9.75 x 0.2) + (20 x 0.8)	=	17.95%

(ii)

	Orange	Grape	Apple
WACC	13.52	15.225	17.95
EVA [EBIT (1-T)-(WACC x Invested Capital)]	2,730	1,025	-1,700

(iii) Orange would be considered as the best investment since the EVA of the company is highest and its weighted average cost of capital is the lowest

(iv) Estimated Price of each company shares

	Orange	Grape	Apple
EBIT (₹)	25,000	25,000	25,000
Interest (₹)	12,800	6,500	3,000
Taxable Income (₹)	12,200	18,500	22,000
Tax 35% (₹)	4,270	6,475	7,700
Net Income (₹)	7,930	12,025	14,300
Shares	6,100	8,300	10,000
EPS (₹)	1.30	1.45	1.43
Stock Price (EPS x PE Ratio) (₹)	14.30	15.95	15.73

Since the three entities have different capital structures they would be exposed to different degrees of financial risk. The PE ratio should therefore be adjusted for the risk factor.

(v) **Market Capitalisation**

Estimated Stock Price (₹)	14.30	15.95	15.73
No. of shares	6,100	8,300	10,000
Estimated Market Cap (₹)	87,230	1,32,385	1,57,300

13. **(i)** Taxable income = Net Income /(1 – 0.40)

or, Taxable income = ₹ 15,00,000/(1 – 0.40) = ₹ 25,00,000

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Again, taxable income = EBIT – Interest

or, EBIT = Taxable Income + Interest

= ₹ 25,00,000 + ₹ 15,00,000 = ₹ 40,00,000

(ii) EVA = EBIT (1 – T) – (WACC × Invested capital)

= ₹ 40,00,000 (1 – 0.40) – (0.126 × ₹ 1,00,00,000)

= ₹ 24,00,000 – ₹ 12,60,000 = ₹ 11,40,000

(iii) EVA Dividend = ₹ 11,40,000/2,50,000 = ₹ 4.56

If Delta Ltd. does not pay a dividend, we would expect the value of the firm to increase because it will achieve higher growth, hence a higher level of EBIT. If EBIT is higher, then all else equal, the value of the firm will increase.

14. (a) Determination of Economic Value Added (EVA)

	$ Million
EBIT	180.00
Less: Taxes @ 35%	63.00
Net Operating Profit after Tax	117.00
Less: Cost of Capital Employed [W. No.1]	72.60
Economic Value Added	44.40

(b) Determination of Market Value Added (MVA)

	$ Million
Market value of Equity Stock [W. No. 2]	500
Equity Fund [W. No. 3]	425
Market Value Added	75

Working Notes:

(1) Total Capital Employed

Equity Stock	$ 100 Million
Reserve and Surplus	$ 325 Million
Loan	$ 180 Million
	$ 605 Million
WACC	12%

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	Cost of Capital employed $ 605 Million x 12%	$ 72.60 Million
(2)	Market Price per equity share (A)	$ 50
	No. of equity share outstanding (B)	10 Million
	Market value of equity stock (A) x (B)	$ 500 Million
(3)	Equity Fund	
	Equity Stock	$ 100 Million
	Reserves & Surplus	$ 325 Million
		$ 425 Million

15. EVA = Income earned – (Cost of capital x Total Investment)

Total Investments

Particulars	Amount
Working capital	₹ 20 lakhs
Property, plant, and equipment	₹ 80 lakhs
Patent rights	₹ 40 lakhs
Total	**₹ 140 lakhs**

Cost of Capital 15%

EVA= ₹ 12 lakh – (0.15 x ₹ 140 lakhs) = ₹ 12 lakh – ₹ 21 lakh = -₹ 9 lakh

Thus, Herbal Gyan has a negative EVA of ₹ 9 lakhs.

16. EVA = Income Earned – (Cost of Capital x Total Investment)

Total Investments

	Amount (₹ Crore)
Net Worth	200.00
Long Term Debts	400.00
Patent Rights	100.00
Total	700.00

WACC (ko) $= k_e \times \frac{E}{E+D} + k_d \times \frac{D}{E+D}$

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$$= 12 \times \frac{300}{700} + 10 \times \frac{400}{700}$$

= 5.14% + 5.71% = 10.85%

EVA = Profit Earned – WACC x Invested Capital

= ₹ 84 crore – 10.85% x ₹ 700 crore

= ₹ 8.05 crore

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