Corporate Valuation

DEFIN544

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Content

Unit 01: Overview of Corporate Valuation

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Objectives

- understand the meaning and objectives of corporate valuation
- explain the elements of corporate valuation
- discuss the conceptual overview of corporate valuation
- explain the context of corporate valuation
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- understand the process of valuation
- analyse the corporate valuation in practice
- discuss the importance of knowing the intrinsic value

Introduction

Valuation is a process in which we can determine the value of certain assets: tangible or intangible, securities, liabilities, and a specific corporate as a going concern or any company listed or unlisted or other forms of organization, partnership or proprietorship. 'Value'means signifying the material or monetary worth of a thing, which can be estimated in terms of the medium of exchange.

corporate valuation requires a working knowledge of a variety of factors, and professional judgment and experience.So, corporate valuation means when the corporate is valued from the perspective of what the other person is perceiving. Valuation is essential for mergers and acquisitions, where a sound decision has to be made whether and at what price to acquire a company. This includes recognizing the purpose of the valuation, the value drivers impacting the subject company, and an understanding of the industry, competitive and economic factors, as well

as the selection and application of the appropriate valuation approach (es) and method(s). Recently, valuation has become a source of political and economic debates in the wake of the privatization of state-owned enterprises. Many owners and managers often ask," How much is our corporate worth? And how much is theirs?" Due to increasing sophistication in corporate and changing economic and social environment of corporate, professional valuers face questions like

- "What is the corporate worth?"
- "What is their corporate worth?"
- "What is the right price of that company?"
- "What is the right price of our company?"

1.1 Corporate Valuation

corporate valuation in which the value is ascertained for the enterprise. Or any corporate or corporate sector. this is an important aspect of corporate finance, used for a wide variety of purposes... The value of a corporate could be different for sellers and buyers, so valuation is an integral part of the negotiation process. It is crucial for the effective management of a company, for identifying its value-generating units and formulating strategies for growth

In other words, it is an assessment resulting in an expression of opinion rather than arithmetical exactness. Initial public offerings, portfolio management, and tax assessment are also areas that involve a lot of corporate valuation.corporate valuation to a company is an important exercise since it can help in improving the company. An experienced financial analyst knows how to use these methods in combinations to reach conclusive valuations.

Some of the important objectives of corporate valuation are to

- Assist an arbitrator in deciding a dispute between parties
- Assist a lender in quantifying the security for the loan.
- Determine the value for stamp duty.
- Quantify a value for inclusion in accounting records
- Assess a consequential loss claim
- Assess management buyout or a leveraged buyout

1.2 Elements of Corporate Valuation

corporate valuation refers to the process and set of procedures used to determine the economic value of an owner's interest in a corporate.

The three elements of corporate Valuation are-

1. **Economic Conditions**: As we see in Portfolio Management Theory, wherein we use the Economy-IndustryCompany (E-I-C) approach, in corporate Valuation too, a study and understanding of the national, regional, and local economic conditions existing at the time of valuation, as well as conditions of the industry in which subject corporate operates, is important. For instance, while valuing a company involved in sugar manufacture in India in January 2008, the present conditions and forecasts of the Indian economy, industries, and agriculture need to be understood, before the prospects of the Indian sugar industry and that of a particular company are evaluated.

2. **Normalization of Financial Statements:** This is the element that needs to be understood for the following purposes:

a. **Comparability adjustments**: this also helps to facilitate comparison with other organizations operating within same industry

b. **Non-operating adjustments**: Non-operating assets need to be excluded.

c. **Non-recurring adjustments**: Items of expenditure or income which are of the nonrecurring type need to be excluded to provide a meaningful comparison between various periods.

d. **Discretionary adjustments**: Wherever discretionary expenditure had been booked by company, it will need to be adjusted to arrive at a fair market value.

3. **Valuation Approach**: There are some common approaches to corporate valuation - Discounted Cash Flow Valuation, Relative Valuation, and the Contingent Claim Valuation - and within each of these approaches, there are the various techniques for determining the fair market value of a corporate.

1.3 Conceptual Overview

1 **Equity and Enterprise Value**: There is an important distinction between equity value and enterprise value. The equity value of a company is the value of the shareholders' claims in the entity. The value of share is arrived at by dividing the value of company's equity as accounted in the balance sheet by the total number of shares outstanding. When a company is publicly traded, the value of the equity equals the market capitalization of the entity. The enterprise value of a company denotes the value of the entire company to all its claim holders.

Enterprise value = Equity value + market value of debt + minority interest + pension and other similar provisions + other claims.

.2 **Fundamental vs Relative Valuation**: Fundamental valuations are calculated based on a company's fundamental economic parameters relevant to company and its future, and are also referred as 'standalone valuations'. On the other hand, Relative valuations or relative multiples apply a relation of specific financial or operational characteristics from a similar company or the industry to the company being valued. They express the value of the company as a multiple of specific statistics.

3 **Basis for valuations:**

The different bases that can be used in valuations are:

A. 1. **Cash flows** the cash flow to equity shareholders (dividends) or both equity shareholders and debtors (free cash flow)
B. 2. **Returns:** The difference between company's capital and its cost of capital.
C. 3. **Operational Variables**: Production capacity, subscriber base (as in telecom), etc

1.4 Context of Valuation

The Corporate valuation is done in the following situations:-

1. Arising capital for the new venture:- Venture capital has become an important source of capital for newly set up firms. Venture capitalists and private equity investors generally participate in equity. It is investee companies that they hold for a few years before liquidating the same. since new ventures are characterized by high risk, the venture capitalists and private equity investors value these corporates in such a way that their expected return is commensurate with the risk they incur.

Acquisitions:- Acquisitions can be done in different ways like takeovers, mergers, and purchases of corporate divisions.

Mergers:- refers to the combination of the two or more companies into one company., It may involve absorption or consolidation.

In a takeover, one company acquires a controlling stake in another company.

2. Initial public offering:- This is one of the most common situations where the company raises their public offerings through the initial public offering and a very important issue in his context is: At what price should the initial public offering be made? For that purpose, the firm has to be valued properly.

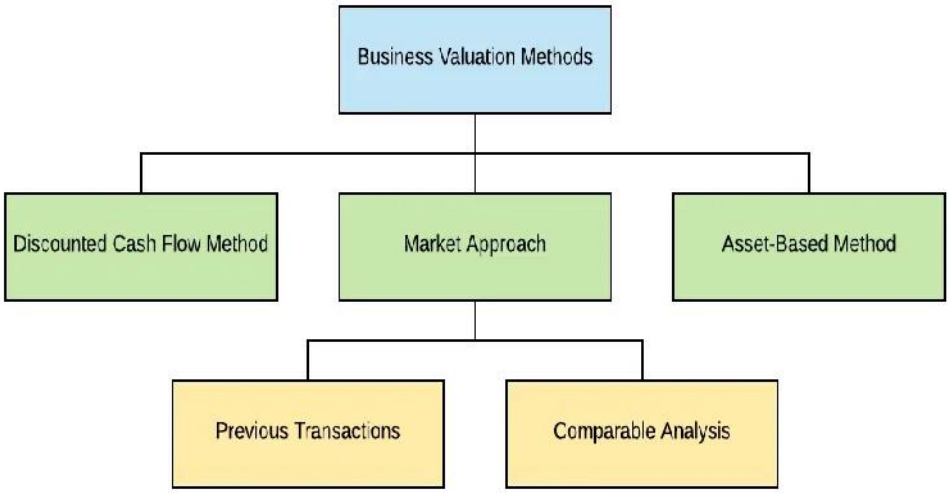
3. Employee stock option scheme:- in determining the exercise price for employee stock options the valuation of the company, when the company is unlisted, has to be done.

4. Portfolio Management:- The role of valuation in portfolio management depends on a investment philosophy of the investor. Valuation matters a great deal to an active investor who

subscribes to fundamental analysis but is not of much significance to a passive investor or an investor who relies on technical analysis.

1.5 Valuation Approaches

1 Discounted Cash Flow Valuation: This approach is also known as the Income approach, where the value is determined by calculating the net present value of the stream of benefits generated by the corporate or the asset. Thus, the DCF approach equals the enterprise value to all future cash flows discounted to the present using the appropriate cost of capital.



2 Relative Valuation: This is known as a market approach. In this approach, value is determined by comparing a subject company or asset with other companies or assets in a same industry, of a same size, and/or within a same region, based on common variables such as earnings, sales, cash flows, etc.

The Profit multiples often used are

(a) Earnings before interest tax depreciation and amortization (EBITDA),

(b) Earnings before interest and tax (EBIT), (c) Profits before tax, and

(d) Profits after tax.

3 Contingent Claim Valuation: This approach uses the option pricing models to estimate the value of assets.

4 Asset-based approach: A fourth approach called the asset-based approach is also touted as another approach to valuation.

The valuation here is simply the difference between the assets and liabilities taken from the balance sheet, adjusted for certain accounting principles.

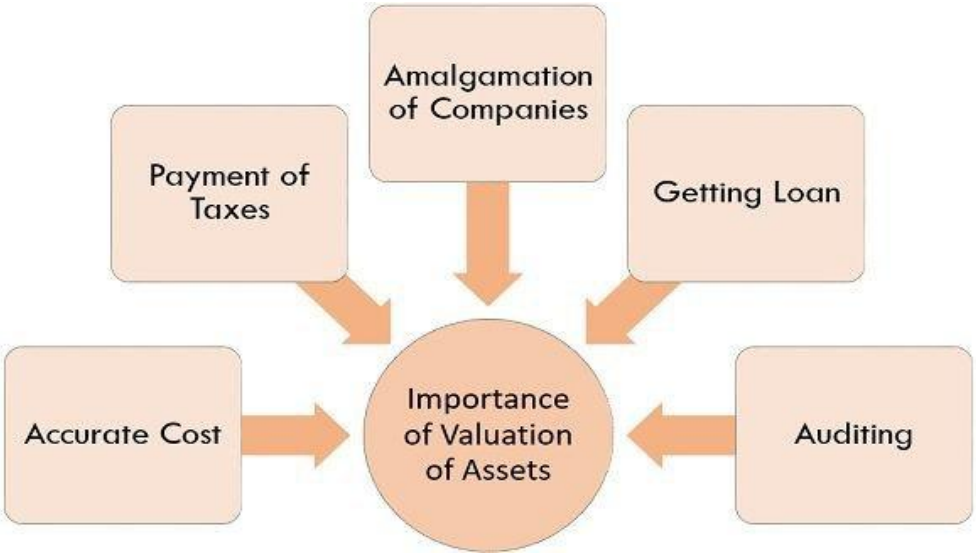
Two methods are used here:

a**. The Liquidation Value** is a sum of estimated sale values of the assets owned by the company.

b. Replacement cost: The current cost of replacing all the assets of the company.

However, the asset-based approach is not the alternative to first three approaches, as this approach itself uses one of the three approaches-determining mines the values.

This approach is commonly used by property and investment companies, cross-check check for asset-based trading companies such as hotels and property developers, underperforming trading companies was with strong asset bases (market value vs. existing use), and woutbreakreak – valuations.



Benefits of valuation of Assets

5 **Other Approaches**: The two other approaches are the EVA and Performance-based compensation plans. Refer CPA article titled "Building Long-Term Value" included in the Reader. Extracts are given as below:

- **Economic Value added (EVA**): This analysis is based on a premise that shareholder value is created by earning a return over the company's cost of capital. EVA is calculated by subtracting a capital charge (invested capital x WACC) from the company's net operating profit after taxes (NOPAT). If the EVA is positive, shareholder value has increased. Therefore, increasing the company's future EVA is key to creating shareholder value.

EVA model normally includes an analysis of the company's historical EVA performance and the projected future EVA under the various assumptions. By changing these assumptions, such as for revenue growth and operating margins, management can see the effects of certain value improvement initiatives.

A simple illustration is given below;

NOPAT = $15,000

Invested capital = $50,000

WACC = 12%

EVA = NOPAT – (Invested capital x WACC)

= $16,000 – ($60,000 x 10%)

= $10,000

- **Performance-based compensation.** This effective tool for motivating employees aligns their interests with the shareholders. For example, establish the base level of compensation plus a bonus pool tied to certain EVA targets. A minimum level of EVA is required for any bonus to apply, and the pool increases based on how much the actual EVA exceeds a minimum threshold. By tying compensation to certain performance metrics, such as EVA or EVA improvement, employees have a sense of ownership and strong incentives to help achieve a company's value-creation goals. Numerous criteria and performance metrics can be used in setting up the performance-based compensation plan. However, to be effective, the performance criteria must be achievable, measurable, and communicated to the employees intended to be impacted by it. Regular feedback and information reporting procedures should be established that will help employees monitor their progress for meeting the performance goals throughout the year.

1.6 Choice of Approach

1 In determining which of these approaches to use, a valuer must exercise discretion as each technique has advantages as well as drawbacks. It is normally considered advisable to employ more than one technique, which must be reconciled with each other before arriving at a value conclusion.

2 The valuation analyst should use all the valuation approaches and methods that are appropriate to engagement and consider all the three generally accepted valuation approaches. For a valuation of the corporate, corporate ownership interest, or security, and a valuer should consider:

• The DCF approach. • The market approach. • The asset-based approach.

3 For a valuation of the intangible asset, a valuer should consider

- The DCF approach.
- The market approach.
- The cost approach.

4 Applying a "rule of thumb" is not the appropriate valuation method. However, the rule of thumb can be used as a genuine check-in a valuation analysis but should not be a only method used to value a subject interest.

1.7 Need of Valuation

Valuation of corporate plays a very important role, so the corporate owner or individual need to know the value of a corporate. The fair market value standard consists of an independent buyer and seller having the requisite knowledge and facts, not under any undue influence or stressors, and having access to all of the information to make the informed decision. the corporate valuation is the complex financial analysis that should be undertaken by a qualified valuation professional with ta appropriate credentials. corporate owners who seek a low-cost corporate valuation are seriously missing out on the important benefits received from a comprehensive valuation analysis and valuation report performed by a certified valuation expert. These benefits will help the corporate owners to negotiate a strategic sale of their corporate, minimize a financial risk of the corporate owner in a litigation matter, minimize a potential tax that the corporate owner or estate may pay in the gift or estate tax as well as provide defense in the audit situation.

The necessity for valuation arises for statutory as well as commercial reasons:

- Assessment under the Wealth-tax Act, Gift tax Act.
- Formulation of the scheme for amalgamation.
- The Purchase and sale of shares of the private companies.
- Raising loans on the security of shares.
- For paying the court fees.
- Conversion of the shares.
- Purchase of the block of shares to acquire the interest or otherwise in another company.
- Purchase of the shares by the employees of a company where retention of such shares is limited to the period of their employment.
- Compensation to the shareholders by government under a scheme of nationalization.
- Acquisition of shares of dissenting shareholders under the scheme of reconstruction. Normally a stock exchange is a most common source of ascertaining the value of shares, especially for the transactions involving the small block of shares that are quoted on stock exchanges. But the stock exchange prices form an unreliable basis because prices on a particular day are generally determined based on the demand and supply which are influenced by the factors outside the corporate.

The other key areas where the valuation is needed are- Mergers & Acquisitions and Succession Planning.

1. Mergers & Acquisitions: Valuation is an important aspect in the M&A. It not only supports corporate owners in determining the value of their corporate, but also helps to maximize value when considering a sale, merger, acquisition, joint venture, or strategic partnership in the company

Valuation is often the combination of cash flow and the time value of money. A corporate's worth is in part the function of profits and cash flow it can generate. As with many financial transactions, the time value of money is also a factor. How much is the buyer willing to pay and at what rate of interest should they discount the other firm's future cash flows?

Both sides in an M&A deal will have different ideas about the worth of the target company: its seller will tend to value a company at a higher price, while a buyer will try to acquire a company at the lowest price.

2. Succession Planning : In planning for a transfer of the family corporate to a next generation.

- **Succession to employees**: For many closely-held corporatees, the sale of a corporate to one or more key employees is often a viable succession strategy.
- **Succession to outside partie**s: It comprises mergers, acquisitions, purchases, and sales of corporatees.

One of the key factors in a valuation of a corporate is a reasonable compensation of the owner(s) who plays an active in the operations of the corporate. A discussion regarding a fact that the owner is overpaid for services they render to a corporate is a difficult conversation. Bringing an owner to the understanding that such a circumstance results in a higher valuation seems to be counterintuitive to an owner and often offense is taken at the premise:" You are overpaid." This is the example of the "de-personalization" that must take place for a successful transfer of a corporate from the founder to the next generation.

3. Going Public: In general, when a new company goes for an Initial Public Offering (IPO), for raising capital for setting up of the corporate operations and to meet the long-term financial requirements, in such a circumstance, a question arises as to how to evaluate a fair value of the stock. The Indian Capital Market follows a free pricing regime and thus a accurate pricing of an IPO is of the immense importance.

Example: The process of going public often begins when the young company needs additional capital to grow its corporate. To gain access to that capital, a firm will sometimes choose to sell an ownership stake or shares of stock to the outside investors.

IPO of Reliance Power in the Year 2008: This IPO was sold between January 15 and January 18, 2008, and was subscribed about 70 times. Before Coal India, IPO enjoyed a status of the 'biggest IPO ever' title. But Rs 11,560 crore issue had another distinction

Dispute Resolution: Valuations are an increasingly important aspect of many commercial disputes. Before deciding how to manage the dispute, it is necessary to determine a likelihood of a successful outcome and the potential stake involved. Judicial precedents are also available that affect the selection of valuation methodologies and the applicability of discounts/ premiums.

For example, Updating the current Market valuation for tax purposes, publication to outline various dispute resolution mechanisms, including the availability of expert valuer conferencing, etc. The subject of the valuation is of vital importance to a valuation process, the selection of inputs, approach.

1.8 Steps in Corporate Valuation

corporate valuation can be determined in 10 steps:-

Step1:- Engage the services of corporate valuation professional- Making the right judgment calls is where the expertise of a seasoned corporate valuation professional is crucial. Because every

company is unique and the purpose and circumstances surrounding every valuation is different, the experience a good corporate appraiser brings to the task is critical in arriving at a value that is both accurate and defensible.

Step2:- Understand the purpose of the valuation. The purpose of the valuation shows the standard of value and valuation approach or approaches applied, and the assumptions made in calculating value, each of which has an impact on the conclusion of the value.

Step3:-Determine the basis of value. Consider the type of value being measured and perspectives of the parties in a transaction. Is the value the transaction price between a willing seller and willing buyer, or the investment value to the current owner? The basis of value is often stipulated by regulation, law, or contract, and maybe the reason for pursuing the valuation.

Step4:- Determine the premise of value. The purpose of the valuation and basis of value determine the premise of value: going concern premise, or orderly/forced liquidation premise. In the former, the continued operation of the corporate and use of the corporate assets is assumed; in the latter, operation or sale of the assets individually or in a group is assumed (i.e. the company will not continue operating in its current form). Another case is mergers and acquisitions; in an M&A transaction, the purchaser may realize benefits that make the acquired corporate more valuable than the fair market value. This might make the premise of a value substantially higher than for a going concern or orderly/forced liquidation premise.

Step5:- Gather relevant data. Financial records, contracts, customer/supplier agreements, leases, loans, and all other obligations that will impact future corporate profitability will need to be analyzed; these records should be compiled by the client and provided to the appraiser. This corporate valuation checklist offers an overview of the information needed for making an accurate assessment. In addition, the valuation expert will gather information about similar companies' financial performance for comparison.

Step6:- Review the historic performance of the business. To establish how the Subject Company has performed relative to similar corporate, it is very difficult to find the company's historical performance, its historical financial performance.It will make to find out the comparison of different financial performance of the same industry.The comparison can be made on the basis of ' price-to-earnings ratios, price-to-book values, and price-to-free cash flow metrics.

Step7:- Determine the future outlook for the corporate. Value, in the eyes of a purchaser or investor, derives from the prospect of future cash flows. Future value can be forecasted by taking into account the current strategy of the corporate and its performance to date. With that understanding, future revenues, operating expenses, taxes, capital requirements, cost of capital, and market share can be projected. Comparison of these metrics to other similar companies can also add insight into the Subject Company's prospects. Finally, there must be a corporate plan valuation.

Step8:- Determine the valuation approach to use. Selecting the appropriate valuation approach or approaches depends on the purpose for the valuation, the basis and premise of value, and in some cases, the availability (or lack) of relevant data. In many cases, more than one approach will be used to determine value with the values derived from each approach averaged to produce a defensible value The three basic valuation approaches used in the corporate valuation process are the market, income, and cost approaches. The advantages and disadvantages of each approach, and the situations where each is most appropriate, are covered in detail in this article..

Step9:- Apply discounts. For private companies, a marketability discount will apply, to account for the lack of ability to quickly convert an ownership stake to cash.. In some specific cases, a key man discount might also apply, to reflect the value associated with an important person such as the founder; the value of the company without that key individual would be substantially less. A lack of control discount also applies to the inability of a minority shareholder to control key decisions affecting a company

Step10:- Arrive at a determination of value. The last step is concluding the value. This is usually supported by a comprehensive valuation report, which shows the information regarding the valuation of organisation This also explain about the methodology that how it was derived.

1.9 Features of Corporate Valuation Process

Different person has different views in this world as they have their perceptions likewise corporate valuation has two different opposite views. According to one view, the valuation is a precise

science, there is no chances of human bias and on the other hand the opposite views says that corporate valuationis an art and analysts has the freedom to produce whatever value number they want. But the valuation actually lies somewhere in the middle of two views. So, we must study these characteristics to know about corporate valuation.

1. Bias in Valuation

When we value a company we are not like a blank slate before we value the company we have some presuppositions regarding the reputation of the company in terms of its earnings or profits generated by them.

First, the bias in valuation starts with the companies we choose to value. These choices are almost never random, and how we make them can start laying the foundation for bias. It may be that we have read something in the press (good or bad) about the company or heard from an expert that it was under or overvalued.

Second, present market value of the company indirectly influences our valuation.

Third, institutional pressure portequity analysts to issue buy not sell recommendations.So, they are likely to argued that the firm are undervalued rather than overvalued.

2. Uncertainty in valuation

- Many times there are uncertainty in valuation , stemming from the following:
- **Estimation uncertainty**: Even if the analyst uses reliable information, he has to translate raw information into inputs and use these inputs into valuation models.
- **Firm-specific Uncertainty**: A analyst could go wrong in forecasting the for,'s future. The performance of firm could be such better or worse than expected.
- **Macroeconomic Uncertainty**: Even if the firm's future performance is in line with expectations, macroeconomic environment may change unpredictably.The economy may do better or worse than expected andinterest rates may go up or down - these macroeconomic factors will affect value.

There are some responses that analyst respond to uncertainties. These are as follows:-

- **Better valuation model**:- The analyst may build better valuation models that utilise fully the information that is available for valuation.
- **Valuation Ranges**:- Realising the uncertaintycharacterizing valuation, analyst may do simulation analysis or scenario analysis and come up with a valuation range, rather than the single value estimate.
- **Probabilistic Statements**:- The analyst may express his valuation in probabilistic terms to reflet uncertainty he feels.

For example:- An analyst who come up with the value of $50 for the stock that is trading at $40 may state hat there is a 75 percent chance that the stock is undervalued rather than categorically stating that it is undervalued.

3. Valuation Complexity

Over the past years valuations models have become more and more complex as a result of two developments.

First, computers and calculators have become far more powerful and affordable. Those tasks which took days or weeks to complete it now can be done in fraction of seconds.

Second, information is plentiful and accessible. So, you can download detailed data on thousands of companies very easily.

As this system is becoming more complex and information intensive, there are certain problems and disadvantages:-

The corporate valuation analysts can suffer from information overload. The valuations carries these vast quantities of conflicting information, they are likely to make poor input choices. The analysts often face time constraints when valuing companies.

And the model becomes very complex the analysts may not understand its inner working: and this model becomes a 'black box' for them in which they just feed inputs and get the output.

1.10 Corporation Valuation in Practice

Investment banking industry employs three basic valuation methods for enterprise valuation:

- Relative valuation
- Transaction multiples
- Discounted cash flow valuation

1. **Pricing for Initial Public Offerings:-** In this situation, relative valuation, based on multiples of comparable companies, seems to be the preferred method. Relative valuationmakes sense in this situation because the company being valued will have publicly traded equity and investors can choose between the said company and any other company in which the 'peer' company is publicly traded.
2. **In Mergers and Acquisitions (M&A**) analysis, the transactions multiple method is used along with discounted cash flow method. The logic for using transactions multiples is simple: both buyers and sellers cannot ignore the multiples paid for similar transactions. Besides, from using the transactions multiples, the buyer would rely on DCF valuation that reflects forecast of how the corporate would perform under its ownership.

 **Note:**There may be slight differences in the DCF methods used by different investment banks, the typical approach is a hybrid method wherein free cash flows during the planning period are considered along with a terminal value which is estimated using a relative valuation method.

1.11 Importance of Knowing the Intrinsic Value

Valuations have been wrong from time to time, eventually they have returned to the level justified by economic fundamentals.

What are the impact of such behavior for corporate managers? As it is important to find out the intrinsic value of the corporate sectors as it is helpful in taking advantage of any deviations, as and when they occur.

Corporate managers can manage such deviations by:-

1. Issuing additional shares when the share price is very high relative to its intrinsic value.
2. Buying back shares when the share price is significantly less than its intrinsic value.
3. Paying for acquisitions with shares instead of cash when the share is overvalued.
4. Divesting particular corporations when trading multiples are higher than what it can be justified by the fundamentals.

Summary

- As value maximization is the important and unavoidable aspect of financial management, all managers must understand that what is the basic meaning of value and how it can be determined.
- The fair market value of corporate is the price ate which buyer and seller freely make transactions and they do not have any compulsion of making the transactions and both the pirates having reasonable knowledge of relevant facts.
- Corporate valuation is done in the following situations: in case of merger and acquisitions initial public offering, raining capital for new venture from venture capitalists.
- The different approaches of corporate valuation are: book value approach, stock and debt approach, discounted cash flow approach, relative valuation approach etc.

- The process of valuation also characterizes by personal biasness and also the logical method to calculate the value of the corporate.
- Several methods can be used to mitigate the chances of personal biasness like avoiding precommitments, delink valuation from reward/ punishment, diminish institutional pressures and increase self-awareness etc.
- According to investment banking industry employs three basic methodologies for enterprise valuation: relative valuation, transaction multiples and discounted cash flow valuation.

Keywords

- **Fair market value (FMV)** is the price of an asset when buyer and seller have reasonable knowledge and are willing to trade without any influence.
- **Merger and acquisitions-** Merger occurs when two separate entities combine to create a new organization. an acquisition refers to the takeover of one entity by another
- **Employee stock option(ESO)**- is a grant to the employee giving the right to buy a certain number of shares in the company's stock for a set price.
- **Discounted cash flow (DCF**)- is a valuation method that is used to estimate the value of an investment based on its expected future cash flows.
- **Intrinsic value-** is the perceived or calculated value of an asset, investment, or a company and is used in fundamental analysis and the options markets

SelfAssessment

1. Which of the following is NOT a metric used in the comparable company analysis?

A. enterprise value to sales (EV/S)
B. price to discounted cash flow (P/CF)
C. price to depreciation (P/D)
D. price to bookvalue(P/B)

2. Which of the following is not one of the three fundamental methods of firm valuation?

A. Discounted Cash flow
B. Income or earnings - where the firm is valued on some multiple of accounting income or earnings.
C. Balance sheet - where the firm is valued in terms of its assets
D. Market Share

3. What is the value of the firm usually based on?

A. value of debentures and equity.
B. value of equity
C. value of debentures
D. value of assets

4. Internal rate of return is …

(a) Rate at which discounted cash inflow is more than the discounted cash outflow

(b) Rate at which discounted cash inflow is less than the discounted cash outflow

(c) Rate at which discounted cash inflow is equal to the the discounted cash outflow

(d)none of the above

5. Book value of assets includes

A. Fixed assets, current asset
B. Fixed assets, current asset, intangible asset
C. Fixed assets, current asset, fictitious asset
D. Fixed assets, current asset, intangible asset,fictitious asset

6. Which of the following valuation methods is based on "Going concern concept"

A. Market value method
B. Book value method
C. Liquidation method
D. net asset value

7. What does the price-to-earnings ratio (P/E) tell you?

A. How much each of a company's products sells on average.
B. How many investors are willing to pay per unit of a company's earnings.
C. How much tax per unit investors are willing to pay.
D. None of the above

8. Present Value

A. replacement value
B. Higher of the net selling price and value in use
C. Value of the future net cash inflows
D. Value net of expense

9.Which one is not the approach of corporate valuation?

A. book value approach
B. Stock and Debt approach
C. Discounted cash flow approach
D. none of the above option

10. The Balance sheet valuation is a .....

A. Relative Valuation Model
B. Forward Approach
C. Historical Approach
D. Time series Analysis

11. ....., map-out the trading multiples (EV/Sales,EV/EBITDA, and P/E) for set of comparable companies

A. Locate
B. Spread
C. Select
D. Benchmark

12. Company valuation Price/Earnings multiples would refer to.....

A. Relative value
B. Equity Value
C. Market Value
D. book value

13. Right valuation requires .....

A. Inherent subjectivity
B. logical approach
C. historical approach
D. Market Approach

14. Which one of the following is covered in the valuation report?

A. Proposed Transaction
B. Related Parties
C. Share Holding Pattern
D. Valuation Methodologies

15. The technique of converting figures into percentage in some common base is called…

A. Ratio analysis
B. Common size statement analysis
C. Comparative statements
D. None of the above

Answers for SelfAssessment

l.	C	2.	D	3.	B	4.	C	5.	B
6.	B	7.	B	8.	C	9.	D	10.	C
11.	A	12.	B	13.	B	14.	D	15.	A

Review Questions

1. What do you mean by fair market value?
2. Discuss the different situations in which corporate valuation is done?
3. What are the sources of bias in valuation? How should the analyst respond to uncertainties in valuation?
4. Explain the approaches of calculating the corporate value?
5. Explain the importance of knowing intrinsic value?

Further Readings

https://www.researchgate.net/publication/338306623_Introduction_to_corporate_Valuation

https://www.investopedia.com/terms/b/corporate-valuation.asp

https://executiveeducation.wharton.upenn.edu/for-individuals/all-programs/corporate-valuation

https://corporatefinanceinstitute.com/resources/knowledge/valuation/valuation-methods/

https://corporatefinanceinstitute.com/resources/knowledge/valuation/valuation/

http://www.corporatevaluations.in/about-valuation

Unit 02: Cost of Capital

CONTENTS

Objectives

- understand the meaning of cost of capital
- explain the factors affecting the cost of capital
- discuss the components of cost of capital
- explain the types of costs
- explore how to calculate the cost of capital
- understand the target weights

Introduction

cost of capital means the acquiring of funds. It is an important financial concept where one has to find out what will be the return on the amount invested in the company. This is the rate of return paid on the capital invested in the business. When the fund is raised from different sources then the firm has to pay some monetary value in the form of interest to the shareholders of that company. In this chapter, we will study the meaning of the cost of capital, the process of cost of capital, its methods for calculating the cost of capital, the importance of cost of capital, and the limitations of cost of capital.

2.1 Understanding Cost of Capital

The concept of the cost of capital is key information used to determine a project's hurdle rate. A company embarking on a major project must know how much money the project will have to generate to offset the cost of undertaking it and then continue to generate profits for the company.

The cost of capital, from the perspective of an investor, is an assessment of the return that can be expected from the acquisition of stock shares or any other investment. This is an estimate and might include best- and worst-case scenarios. An investor might look at the beta of a company's financial results to determine whether a stock's cost is justified by its potential return.

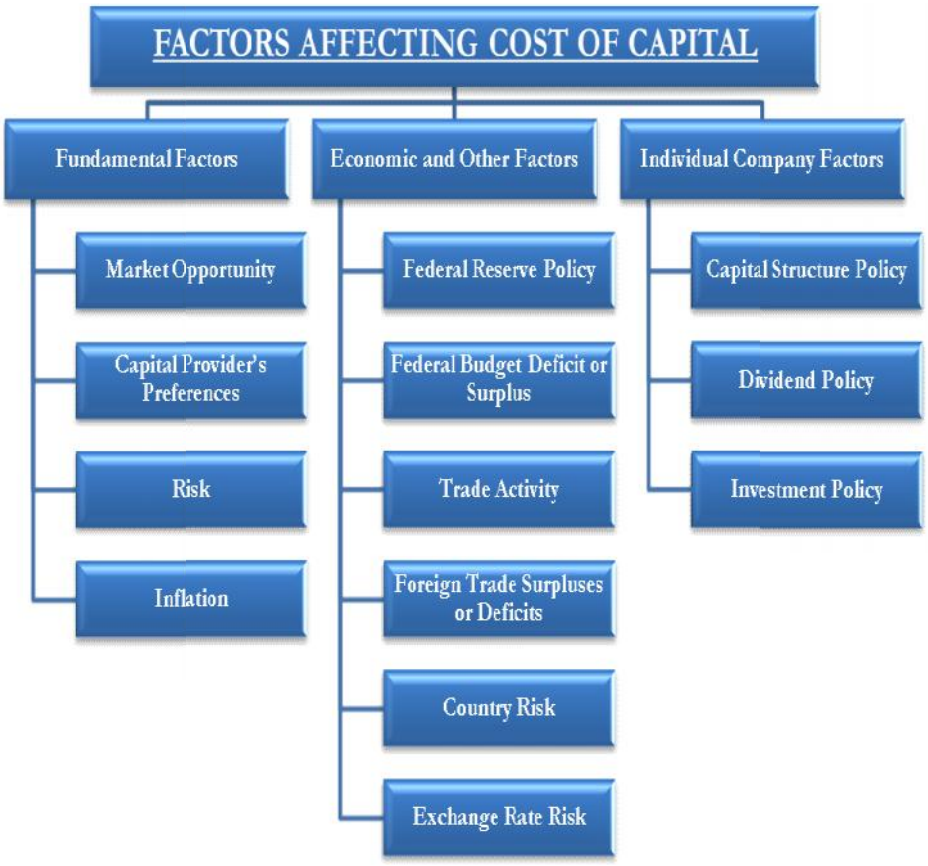
2.2 Cost of Capital

The cost of capital means the amount which the firm generates on its investment in the particular project, that revenue generated by the firm is distributed to the shareholders in the form of dividends and which also leads the business to increase the wealth of the shareholders.

we can say that:-

- this is the return on investment
- the return is paid by the company
- it is provided to the shareholders
- it is provided in the form of interest or dividend
- It helps in generating the reputation of the company.

2.3 Factors Affecting Cost of Capital



2.4 Components of Cost of Capital

There are some components of cost of capital which are as follows:-

1. **Zero Risk return:** It is the rate of return where there is no financial risk.
2. **The premium for Business Risk:** The premium for financial risk means when the shareholders want more return on the shares invested in the company then they are ready to take the risk. so, in this method, it can be said that for the highly risky project the shareholders will earn a high rate of return.
3. **The premium for financial risk:** Arises when there is higher debt in the firm's capital structure. So, we can say that the debts are a risky source of capital and if the firm includes debts in their capital structure it will increase the risk of the company.

2.5 Types of Cost of Capital

There are different types of cost of capital. These are discussed as below:-

1. **Specific cost and composite cost:-** when the cost is found for the separate source of capital like for equity share, then we can say that is a separate or specific cost of capital. when the cost is separated but the combined cost of all the sources of capital then it is called: as composite cost of capital.

 Example:- specific cost of capital is the cost of equity shares, cost of preference shares, cost of retained earnings, cost of debentures, as these are the examples of the cost of capital.

2. **Explicit and implicit cost**:- Explicit cost of capital means cost which is incurred on the expense done for the smooth run of operations of the business. it can be calculated by balancing the cash inflows and the present value of cash outflows.

implicit cost means any cost that is also called the opportunity cost means the return you are sacrificing for the investment in a particular project.

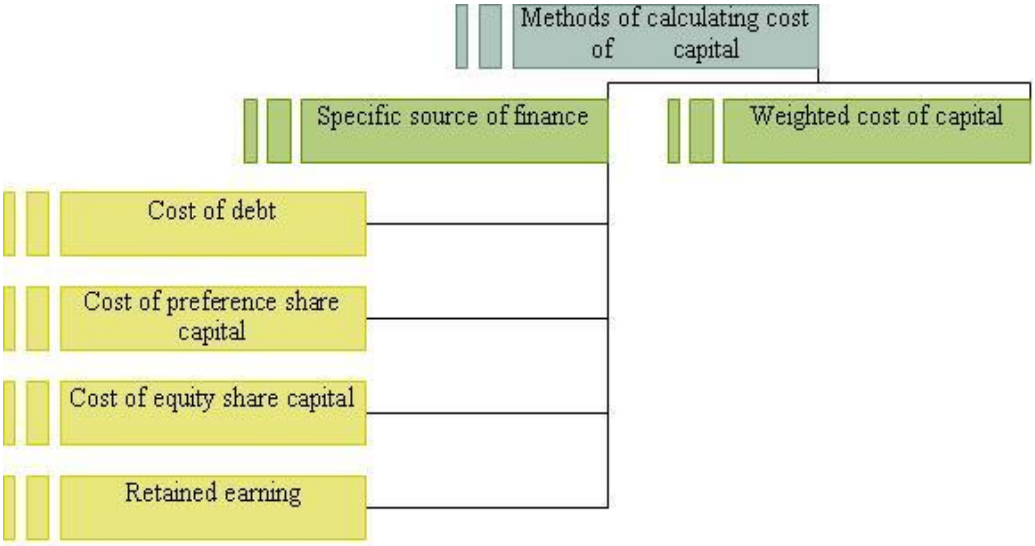
 Example:- When a businessman has one building and instead of his personal use he uses it for the organization's purpose then this is called the implicit cost where you are foregoing one income for the sake of another project.

3. **Average cost and Marginal cost**:- Average cost is the cost where the average is calculated on the cost of capital from all sources and then the weights are assigned to the different sources. Marginal cost means when the cost is incurred when the company is incurring costs on a new additional source of capital.

historical cost and future cost:- Historical cost of capital means the cost which is incurred on the previous sources of capital or from which the funds have been raised by the business while the future cost of capital is the cost where the cost is yet to be incurred in future for the new sources of capital.

2.6 How to Calculate The Cost of Capital

There are two types of cost of capital, and you can better understand with the help of this diagram



2.7 Computation of Specific Cost of Capital

The specific cost of capital means where the cost is calculated on the specific source of capital and not combined. like there can be cost on equity, cost of preference shares, etc. it can be listed as below:-

- the cost of preference shares
- cost of equity
- cost of debentures
- cost of retained earnings

Computation Of Weighted Average Cost of Capital

In the weighted average cost of capital, the combined cost of capital is found out rather than the separate cost of capital. That is why it is also called the composite cost of capital.

Computation The Cost of Equity Shares

The cost of equity shares is the return on the investment made by the shareholders in the company. The cost of equity shares can be calculated through different methods like capital asset pricing model, dividend discount model approach, earning price approach, etc.

1. **CAPM (Capital Asset Pricing Model)**

   As per the capital asset pricing model, the return on equity E(R) is equal to the risk-free return on the asset and market-based premium risk. So, through the model we can also find the cost of equity capital through the capital asset pricing model and the formula can be written as follows:-

$$E(R_i) = R_f + \beta_i [E(R_M) - R_f]$$

   In this formula, E(R) = the return on equity

   Rf = risk-free rate of return

   Bi = beta of the security that reflects the sensitivity in the market

Here, market risk premium remains the same but the beta value differs company to company as it is not consistent throughout the economy. So, the return on equity can be understood with the three concepts:-

- Risk-free Rate
- Market premium risk
- beta

2. Dividend Discount Model Approach

In the dividend discount model approach, the cost of equity shares can be found with the help of dividend received by the equity holders. The dividend is the return that the shareholders earn on the investment.

The formula of dividend discount model can be calculated as follows:-

$$P_0 = \frac{D_1}{(1+r)^1} + \frac{D_2}{(1+r)^2} + \cdots$$

$$= \sum_{t=1}^{\infty} \frac{D_t}{(1+r)^t}$$

Note:- if the dividend is to be provided with the constant growth rate then the price of equity shares can be written as follows:-

$$P = \frac{D_1}{(1+r)^1} + \frac{D_1(1+g)}{(1+r)^2} + \frac{D_1(1+g)^2}{(1+r)^3} + \cdots \infty$$

so, to summarize the formula we will get the following equation:-

$$r = \frac{D_1}{P_0} + g = \frac{D_0(1+g)}{P_0} + g$$

3. EARNING PRICE RATIO APPROACH

In this method, the price of equity shares can be calculated concerning the earnings through the equity shares and it can be calculated as follows:-

$$r = E_1 / P_0$$

where the r is the cost of equity shares,

E= earnings per share for next year and

P= current market price per share

Equity Beta of Listed Company

The equity beta of listed companies can be calculated by estimating the market value of shares but this cannot be done in case of unlisted companies. the return can be calculated as follows:-

$$\frac{\text{Dividend} + (\text{Ending price} - \text{Beginning price})}{\text{Beginning price}}$$

Equity Beta of Unlisted Company

For calculating the equity beta of unlisted companies, we need to first calculate the asset beta of listed companies, and after calculating the asset beta of listed companies engaged in the same type of business we need to make some adjustments in the capital structure and tax rates which will apply to unlisted companies.

Steps To Calculate The Equity Beta of Unlisted Company

The procedure for calculating the4 equity beta for an unlisted company involves the following steps:-

Step 1 :- Find as sample of listed firms engaged in the same line of business Identify a sample of listed firms which are engaged wholly or largely yin same lien of business.

Step 2 :- Obtain equity btas for the sample firms To calculate the equity beta of a firm, employ the procedure discussed earlier. Regress the monthly return of the equity stock of the firm on the monthly return of the market portfolio for 50 to 60 months. Where 50 to 60 observations of monthly returns arenot available, you may use 50- 60 observations of fortnightly returns.

Step 3 :- Derive assets betas after adjusting equity betas for financial leverage. For each firm in the sample, the asset beta can be derived from its equity beta using the following relationship:

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

Step 4 :-Find the average os asset betas. Once the asset betas for the sample firms are obtained, the average can be readily calculated.

Step 5 :- Figure out the equity beta for the unlisted company. The equity beta for the unlisted company can be derived by adjusting the average asset beta (obtained in the previous step) for the financial leverage. Remember the formula:

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

2.8 Cost of Debenture

The cost of debentures is the total income on that instrument on its maturity. It is the cost that incurs constant cost and interest is provided on the debentures to the debentures holders. The cost of debentures can be calculated as follows:-

$$P_0 = \sum_{t=1}^{n}\frac{I}{(1+r_D)^t} + \frac{F}{(1+r_D)^n}$$

Here, P= the market price of debentures

I= Annual interest rate

F=Maturity value of debentures

rd=internal rate of return

Note:- Internal rate of return can be calculated by trial and error procedure but if do to some reasons it is not possible to calculate the internal rate of return through trial and error procedure then we can use this formula:-

$$r_D = \frac{I+(F-P_0)/n}{0.6\,P_0 + 0.4F}$$

To illustrate this formula, calculate the cost of debentures of R and L ltd

Face value	2000
coupon rate	6%
Remaining period to maturity	4years
Current market price	2080

The approximate yield to maturity of debentures as follows:-

=120+(2000-2080)/4

0.6(2080)+0.4(2000)

=4.88 Percent

If the firm has to raise the loan from the bank, then the interest charged on the bank loan is the cost of loan raised by the firm from the bank.

Example:- suppose if R & L Ltd. raised a loan of $6,00,000 from the bank, they will pay an interest of 10% this is the cost of loan raised by R & L Ltd. if they pay interest of 12% then $12000 will be the cost of the loan to that firm.

2.9 Cost of Preference Shares

Preferences shareholder is the fixed-rated shares of the company. these shares charge the fixed rate of dividend on the preference shares. they can be considered as -bonds with fixed commitments.

Features of preference share

1. preference shares carry a fixed rate of dividend

2. they are redeemable in nature

3. obligations of a firm towards the preference shareholders are different from the obligations towards the debenture holders.

4. it is not a tax-deductible expense.

The cost of preference shares can be calculated with the help of the dividend rate and its repayable commitment and there is no need for tax considerations. so, the cost of preference shares can be calculated as follows:-

Example:- To illustrate the data regarding the preferred stock of R. & L. Ltd. are as follows:-

Face value =100

Dividend Rate=10 percent

Maturity period=6

Market price=94

To calculate the yield on preference shares we will calculate through the following formula:-

=10+(100-94)/6

0.4*100+0.6*94

=11.41 percent

Weighted average cost of capital

In the earlier methods of calculating the cost of capital we calculated the cost separately but in this weighted average cost of capital we assign the weights to the different sources of capital and find the total cost of capital. the formula of weighted average cost of capital as follows:-

$$WACC = w_E r_E + w_p r_P + w_D r_D (1 - T_c)$$

where,

WACC= Weighted average cost of capital

w_E =proportion of equity

r_E =cost of equity

w_P =proportion of preference shares

r_P =cost of preference shares

w_D = proportion of debentures

r_D = cost of debentures and

T_C = corporate tax rate.

Table

Type of Capital	Proportion in the new capital structure (W)	Before-tax cost of capital (X)	(2) x (3) (WX)
(1)	(2)	(3)	(4)
Equity capital	25	24	600
Debt. Capital	50	8	400
Preference capital	10	23	230
Retained earnings	15	19	285
	ΣW = 100		ΣWX = 1515

The formula for the weighted cost of capital before-tax is :

$$WX / W = 1515 / 100$$

$$= 15.15\%$$

In this table, in the first column, the sources of capital are given like equity shares, debt. capital, preference capital, and retained earnings. In the second column, the weights are assigned to

different sources of capital like the equity share 25 proportion is assigned, and so on. The third column includes the cost of capital of a specific source of capital like 24 costs of equity shares and we have to multiply weights with the cost of sources of capital and then divide the weighted cost with the total of weights.

Example of Cost of Capital calculations using WACC

Aero Ltd had the following cost capital structure employed for financing its projects and would like to calculate the cost of capital.

	Amount (Rs.)	After-tax Cost %	
Equity share capital	8,00,000	16%	0.0225
Retained earnings	4,00,000	15%	0.03
Preference share capital	6,00,000	12%	0.025
Debentures	6,00,000	9%	0.053
Total	24,00,000		

Calculation of Cost of capital of Aero Ltd

Source	Amount (Rs.) (1)	Weights (Specific Capital/Total cost) (2)	After-tax Cost (Cost%/100) (3)	Weighted Cost (4) = (2) *(3)
Equity share capital	8,00,000	0.34	0.16	0.053
Retained earnings	4,00,000	0.16	0.15	0.024
Preference share capital	6,00,000	0.25	0.12	0.03
Debentures	6,00,000	0.25	0.09	0.023

Total	24,00,000			0.13

Weight Average Cost of Capital here is 13% (0.13*100). This implies that the overall cost of capital employed by Aero Ltd is 13%. In other words, we can say that the company is paying a premium of 13% to the lenders of capital as a return for their risk.

You can use the formula we discussed, and the result will be similar.

= (6,00,000 / 24,00,000) * 0.09 + (6,00,000 / 24,00,000) * 0.12 + (4,00,000 / 24,00,000) * 0.15 + (8,00,000 / 24,00,000) * 0.16 = 13%

Determining Cost of Capital is one of the key factors in deciding the investment. It helps you in evaluating the different investment projects basis the cost, benefits, and risks. Another important factor to be considered here is capital budgeting and the payback period. Here, the payback period is nothing, but the time taken to recover the investment amount. Read "What Is Capital Budgeting? Process, Calculation and Example' to know the process and calculations.

2.10 Target Weights To Determine the Cost of Capital

After estimating the cost of equity, cost of debt, and cost of preference shares we have to take the blend of all these to get the expected cost of capital. To do so, use the weights in target capital structure as stated in market value(book value terms):-

$$WACC = w_E r_E + w_D r_D (1 - T) + w_P r_P$$

where

w= weights associated with equity

w= weights associated with preference shares

w= weights associated with debentures

r= cost of equity

r= cost of preference shares

r= cost of debentures

T= marginal income tax of the company

Summary

- The cost of capital is the weighted average of the costs of all the sources of capital. It is calculated in post-tax terms, defined in nominal terms, based on market value weights, and reflects the risks borne by various providers of capital.
- The weighted average cost of capital in its simplest form is the market based weighted average of the cost of equity and post-tax cost of debt:
- WACC= R(e/v) + R (1-T) (D/V)
- Several approaches are used to estimate the cost of equity: the capital asset pricing model approach, the dividend discount model approach, the bond yield plus risk premium approach and earnings-price approach.
- According to the CAPM, the expected rate of return on a security is equal to the risk-free rate plus the risk premium-the risk premium is equal to the security's beta times the market risk premium.
- According to the dividend discount model approach, the cost of equity is equal to the dividend yield plus the expected growth rate.

- According to the bond yield plus risk premium approach, the cost of equity is equal to the yield on long-term bonds plus a risk premium.
- According to the earrings-price ratio approach, the cost of equity is equal to the expected earnings per share for the next year divided by the current market price per share.
- The cost of debt is the return expected by the providers of debt capital, adjusted for the tax rate because interest on debt is a tax-deductible expense.
- To find the weighted average cost of c capital, use the weights in the target capital structure stated in market value terms.

Keywords

Cost of capital, explicit cost, implicit cost, dividend discount model, earning price ratio model, Capital Asset Pricing Model, Equity shares, Preference shares, Debentures.

Self Assessment

1. The cost of equity share or debt is known as _____.

A. The specific cost of capital
B. The related cost of capital
C. The burden on the shareholder
D. None of the above

2. Which of the following methods involves computing the cost of capital by dividing the dividend_____ by market price/net proceeds per share?

A. Adjusted price method
B. Price earning method
C. Dividend yield method
D. Adjusted dividend method

3. In weighted average cost of capital, an organisation can affect its cost of capital through _____.

A. The policy of investment
B. The policy of capital structure
C. The policy of dividends
D. All of the above

4._____ is the rate of return for the most viable investment opportunity for a company that they will forgo by selecting any other project.

A. Implicit cost
B. Specific cost
C. Explicit cost
D. None of the above

5. What is Marginal Cost?

A. It is the cost of raising an additional unit of capital

B. It is the additional cost of capital when the company decides to raise finance for its operations
C. It is the weighted average cost of raising finance
D. All of the above

6. Which of the following statements are true?

A. When the dividends, earnings, and the price of an equity share are growing at the same rate, the dividend growth method can compute the cost of equity capital
B. The risk premium for a stock is arrived at by adding the risk-free rate to the market rate of return
C. Both a and b are false
D. Both a and b are true

7. The premium that is considered to be the difference between the current yield on treasury bonds and the expected return on common stock is _____.

A. Current risk premium
B. Past risk premium
C. Expected premium
D. None of the above

8. Which among the following figures is not relevant while calculating the cost of the redeemable preference shares?

A. Earnings per share
B. Flotation cost
C. Discount
D. None of the above

9. Which of the following factors affecting the cost of capital can be controlled by the firm?

A. Tax rates
B. Dividend policy
C. Level of interest rates
D. All of the above

10. Which of the following is an uncontrollable factor that affects the cost of capital for a firm?

A. Capital structure policy
B. Debt service charges
C. Investment policy
D. None of the above

11._____ is the cost that is used to raise the common equity of a firm by reinvestment of the internal earnings.

A. Cost of reserve assets

B. Cost of stocks
C. Cost of mortgage
D. Cost of common equity

12. Which of the following factors affects the determination of the cost of capital for a firm?

A. Operating and financing decisions
B. General economic factors
C. Market conditions
D. All of the above

13.The cost of capital for a firm _____.

A. Is the return required on the total assets of firm
B. Refers to the internal rate of return
C. Varies inversely with the overall cost of debt
D. None of the above

14. The cost of equity share capital is greater than the cost of debt because _____.

A. Equity shares carry a higher risk than debts
B. The face value of equity shares is lower than the face values of debentures in most cases
C. Equity shares do not provide a fixed dividend rate
D. Equity shares are not easily saleable

15. The cost of preference share capital is calculated by _____.

A. Dividing the price per preference share by the fixed dividend per share
B. Dividing the book value per preference share by the fixed dividend per share
C. Dividing the price per preference share by the fixed dividend per share and then adding the growth rate
D. Dividing the price per preference share by the fixed dividend per share and then adding the risk premium

Answers for Self Assessment

l.	A	2.	C	3.	D	4.	A	5.	A
6.	D	7.	A	8.	A	9.	B	10.	D
11.	D	12.	D	13.	A	14.	A	15.	A

Review Questions

1. What is the cost of a debt calculator?.
2. How is the cost of preference calculated?

3. What do you understand by the bond yield plus risk premium approach to calculate the cost of equity?
4. How is the cost of equity calculated using the dividend growth model approach?
5. Discuss the WACC?
6. What do you mean by the target capital structure of cost of capital?

Further Readings

- https://analystprep.com/cfa-level-1-exam/corporate-finance/target-capital-structure-wacc/
- https://www.investopedia.com/terms/c/costofcapital.asp#:~:text=Cost%20of%20capital%20represents%20the,preferred%20or%20existing%20capital%20structure.
- tps://www.wiley.com/en-us/Valuation%3A+Measuring+and+Managing+the+Value+of+Companies%2C+7th+Edition-p-9781119610885ht
- https://www.google.com/search?q=personna+chandra&oq=personna+chandra&aqs=chrome..69i57j46i13l2j0i13l4j46i13j0i13.7388j0j15&sourceid=chrome&ie=UTF-8

Unit 03: Enterprise DCF Model - I

CONTENTS

Objectives

- understand the steps of valuing the firm discounted Cash Flow Approach
- Analyze the historical performance using the different factors
- exploring the estimation of cost of capital
- understanding the forecasting of the performance
- analyzing the calculation and Interpretation of Results

Introduction

The book vale approach and the relative valuation approach earlier used more commonly. In today's scenario the discounted cash flow approach i.e., the enterprise DC F model - has received greater attention and are widely accepted. In this unit we will discuss MCKinsy method of Enterprise DCF model. It is mainly based on the Measuring and Managing the Value of Companies.

Valuing the company using discounted cash flow approach is similar to vfaluing the capital project using the present value method. But there are mainly two differences:-

A Capital project is considered to have finite life, but a firm is considered to have an indefinite life. so, in Capital project we find the economic life and calculate a salvage value to the assets of the project at the end of tis economic life but in case of firm we do not define the economic life and calculate the salvage value of assets at the end of the period.

In Capital project is valued at 'one-off' investment. We do not consider the investments on assumption that these will be evaluated separately as when they crystallize, A firm, however, is considered as growing and continuous entity fond for valuing the firm we take i9nto account the investment in fixed assets and net working capital that the firm has incurred in the due course of the business. this will help to maintain and sustain the growth of the firm.

So, in conclusion, we can say that valuing the firm using the discounted c as flow approach for forecasting cash flow over indefinite period of time for the long going concern. To deal with this situation we have to separate the two time periods.

Value of firm= Present value of cash flow during an explicit forecast period + Present value of Cash flow after the explicit forecast period

During the explicit forecast period- which is normally a period of 5 to 15 years - the firm is expected to evolve rather quickly and hence a considerable effort is required to forecast its cash flow on annual basis.

3.1 Steps of Valuing the Firm Using Discounted Cash Flow Approach

- Steps of valuing the firm using the discounted cash flow approach. This will includes the steps:-
- Analyzing Historical performance
- Estimating the cost of capital
- Forecasting the performance
- Determine the continuing value
- Calculating the firm value and interpreting the results

3.2 Analyzing Historical Performance

The historical performance is find out to determine and forecast the future performance. so, analysis of historical performance is done to value the business. So, the valuation of financial performance is not so designed with the valuation in mind, it is reorganized to focus on the company's financial performance.

This includes:

- Reorganizing the financial statements to get the economic performance, instead of accounting performance, we can calculate the Net Operating Profit less adjusted taxes (NOPLAT) and free cash flow (FCF). It has been redefined by McKinsey and Company, as NOPAT (net operating profit after tax).
- Getting perspective on drivers of FCF.
- Measuring and analyzing the return on invested capital (ROIC) to assess the ability of company to create value.
- Decomposing revenue growth into various components.
- Assessing the company's financial health and capital structure.

Here, we will discuss historical performance analysis, the profit and loss account and balance sheet of A.R. limited, the data has been given for 3 years.

Financial Statements of A.R. limited for the last 3 years

profit and loss account	1	2	3
Net sales	180	200	229
Incomefrom marketable securities	-	-	3
Non-operating income	-	-	8
Total Income	180	200	240
Cost of goods sold	100	105	125
Selling and general administration expenses	30	35	45
Depreciation	12	15	18
Interest expeneses	12	15	16

Total costs and expenses	154	170	204
PBT	26	30	36
taxes	8	9	12
PAT	18	21	24
Dividend	11	12	12
Retained Earnings	7	9	12

Balance Sheet

	1	2	3
Equity Capital	60	90	90
Reserves & Surplus	40	49	61
Debt	100	119	134
Total	200	258	285
Fixed assets	150	175	190
Investments	-	20	25
Net Currents assets	50	63	170
Total	200	258	285

2. Reorganizing the Accounting Statements

Accounting statements emphasize profit after tax. Return on return on equity. cash flow from operations, and net change in cash and cash equivalents. These measures reflect the combined effect of operating items, items, and capital structure.

For the exact understanding of historical performance, we should separate operating performance from non-operating items and capital structure. To do this, the accounting statements must be reorganized to get a handle over the following: operating invested capital, NOPLAT, ROIC, net investment. And cash flow.

3. Operating Invested Capital

The capital provided by shareholders and lenders is invested in operating assets and non-operating assets. Operating invested capital consists of net fixed deployed in the operations of the firm plus operating working capital. In practice, operating invested capital may be obtained as follows:

- Total assets in the balance sheet
- Non-operating fixed assets like surplus land
- Excess cash, and marketable securities

Assuming that the investment figures of 20 and 25 in the balance sheet of A.R. Limited at the end of years 2 and 3 excess cash and marketable securities, invested capital at the end of the years I, 2. and 3 for A.R. Limited is

	1	2	3
Operating	200	238	238

NOPLAT.

NOPLAT stands for net operating profit less adjusted taxes. It is equal

EBIT - Taxes on EBIT

EBIT (earnings before interest and taxes) is the pre-tax operating income the firm would have earned if it had no debt. While calculating EBIT, the following are excluded: interest income and non-operating income (Or loss).

Taxes on EBIT represent thee taxes the firm would pay if it had no debt, excess marketable securities, or non-operating income (Or loss). Taws on EBIT Can be calculated by adjusting income tax provision for the income tax attributable to interest expense and dividend from excess marketable securities.

The calculation of NOPLAT for A.R. limited is shown below, assuming a tax rate of 40 percent

	Year 1	Year 2	Year 3
Profit before tax	26	30	36
+ Interest expense	12	15	16
- Interest income	-	-	3
- Non-operating income	-	-	8
= EBIT	38	45	41
Tax provision form income statement	8	9	12
+ Tax shield on interest expense	4.8	6	6.4
-Tax on non-operating income	-	-	1.2
=Taxes on EBIT			3.2
NOPLAT	12.8	15	14.0
	25.2	30	27.0

Return on Invested Capital- ROIC is Return on Invested Capital can be defined as follows:-

ROIC = NOPLAT / Invested Capital

Invested capital measured in the beginning of the year or as average at the beginning and 3end of the year.

While calculating ROIC, we have to clarify the numerator and denominator consistently. If the asset is included in the invested capital, income related to it should be included in NOPLAT to achieve in the consistent way. The ROIC of A.R. Limited can be calculated as belows:-

	Year 2	Year 3
NOPLAT	30	27
invested capital at the beginning of the year	200	238
ROIC	30/200 =15%	27/238= 11.3%

ROIC shows the fair operating performance of company. It is the better measure as compared to return on assets and return on equity. As the return on equity reflects operating performance with the financial structure. Return on Assets is internally not consistent.

Net Investment

It is the difference between gross investment and depreciation:

Net Investment = Gross investment - Depreciation

Gross Investment - It is the sum of incremental expenses on the capital expenditures and net current assets. It represents the allnon cash charges.

Net investment during the year can be calculated as follows:-

(Net fixed assets at the end of the year + Net current assets at the end of the year)

- (Net fixed assets at the beginning of the year + Net current assets at the end of the year)

If you calculate in this way the net investment for A.R. limited as shown below:-

	Year 2	Year 3
Net fixed assets at the end of the year	175	190
+ Net current assets at the end of the year	63	70
- Net fixed assets at the beginning of the year	150	175
- Net current assets at the beginning of the year	50	63
	38	22

Free Cash Flow

The concept of Free cash flow is post-tax cash flow generated from operationsof the company after when investments in the fixed assets are provided and nt current are need for operations of the company.

FCF can be presented as follows:-

FCF = NOPLAT - Net Investment

FCF = (NOPLAT + Depreciation) - (Net Investment + Depreciation)

FCF = Gross cash flow - Gross Investment

	Year 1	Year 2	Year 3
NOPLAT	25.2	30	27
Depreciation	12	15	18
Gross cash flow	37.2	45	45
Increase / (decrease) in net current assets		13	7
Capital expenditure		40	33
Gross investment		53	40
Free Cash Flow		(8)	5

2. Getting a Perspective on the drivers of FCF

There are some key drivers FCF can be analyzed as follows:-

FCF = NOPLAT - Net Investment

= NOPLAT (1 - Net Investment / NOPLAT)

= Invested Capital × ROIC (1 - Growth rate / ROIC)

3. Developing the ROIC tree

As ROIC is the key driver of valuation and free cash flow, it is important that we develop the ROIC Tree. The ROIC tree is as follows:-

ROIC = NOPLAT / Investment

Since NOPLAT is equal to Earning before interest and tax, hence , ROIC can be expressed as:-

ROIC = EBIT (1 - cash tax rate) / Invested capital

4. Decomposing Revenue Growth

The value of the company can be derived by Return on invested capital, Weighted average cost of capital, and growth. Growth can also be called as the free cash flow.

Decompose of the reported revenue growth due to the year to year reported revenue growth for the last 3 to 5 years .The points are as follows:-

- Organic revenue growth
- Acquisitions and divestitures
- Currency effects
- Changes in accounting policies

5. Assessing Firm's financial health and capital structure

Besides observing the primary driver's of value like ROIC, growth, and cash flow, you should be aware and analyze that how the firm can fund its operations and how they can determine the capital structure?

To assess financial health and capital structure, we have to examine interest coverage, leverage and dividend payout ratio.

Interest Coverage:-

The Various measures of interest coverage, the very popular is EBITDA (Earnings before interest, taxes, depreciation and amortization) to the interest ratio. This measures the ability of company to meet its short term financial commitments using current profits and depreciation meant for capital replacement. A high EBITDA to interest ratio that can suggest that the firm is very well posed to medt its interest obligation, it does not say much about the ability to replace the earn out equipments.

Leverage The effect of the leverage can be understood better by assuming the relationship between return on equity (ROE) and return invested (ROIC).

ROE - ROIC + [ROIC - r (1 - t)] D / E

This equation can be calculated as follows:

ROE = PAT / E

= (PBIT - I) (1 - T) / E

= (PBIT) (1 - t) - I (1- t) / E

= ROIC × (d + e) - r D (1 - t) / E

= ROIC + [ROIC - R (1 - t)] D / E

The ROE is the return on equity, ROIC is return on invested capital, r (1 - t) is after-tax cost of debt. And D'E is the debt equity ratio.

According to this formula ROE is determined by ROIC, the spread ROIC and and the post-tax cost of debt, and the debt-equity ratio. A higher debt equity ratio has positive impact on ROE when ROIC exceeds post-tax cost of debt, but the negative impact of ROE.

Dividend Payout

dividend payout ratio of the firm is simply the dividend (plus dividend distribution tax) paid by the company divided by the net profit accruing to equity shareholders, which is simply profit after tax less preference dividend. Dividend payout ratio Of most companies 20 and dividend payout ratio must be evaluated in relation to a company's reinvestment needs. Can the reinvestment needs of a company be met with internal accruals? To what extent company has to rely on external finance to meet its company's free cash flows to exceed its dividend payments, Will the company repay debt or create excess liquidity? In this case, is the company foregoing valuable tax benefits associated with debt, or building excess liquidity that earns a low return, or running the risk of squandering over uneconomic ' projects?

3.3 General Guidelines for Historical Analysis

It is not impossible to provide a comprehensive checklist for historical financial performance analysis that is applicable across the board. Yet there are a few things that should generally be borne in mind:

- Consider a period of at least 10 years or more. A long time horizon helps you know whether a company and industry have a tendency to revert to some mean level of performance and whether trends are likely to endure.
- Disaggregate ROIC and revenue growth. The two principal value drivers, into their key components. As far as possible, link operating performance measures to value drivers.
- Is the performance has temporary or durable? Is it just an accounting effect?
- It represents a weighted average of the cost of sources of capital, as free cash flow reflects the cash available to providers of capital.
- It is calculated in post- tax because the free cash flow is expressed as post-tax terms.
- It is based on the market value weights for each component of financing, as market value, not book values; represent the economic claims of different providers of capital.

Formula

The formula can be utilized for estimating the weighted average cost of capital is:-

$WACC = r_E (S / V) + r_P (P / V) + r_D (1 - T) (B / V)$

hence,

WACC = weighted average cost of capital

r_E = the cost of equity capital

S = market value of equity

V = market value of the firm

r_P = cost of preference share capital

P = market value of the preference capital

B = market value of interest bearing debt

r = pre tax cost of debt and is multiplied by factor (1 - T)

III Forecasting Performance

When you analyzed historical performance, you have to develop a set of financial forecast, reflecting expected future performance of the firm.

It includes the following steps:-

1. Determine the length of the explicit forecast period
2. Develop the strategic perspective on future performance

3. Develop financial forecasts

Determine the Length of the Explicit Forecast Period

The valuation of the firm using the discounted cash flow approach calls for forecasting cash flows over the indefinite period of time for an entity that is expected to grow. Thai is daunting proposition. To handle this situation, the value of the firm is separated into two time periods:

Value of the firm = Present value of cash flow during and explicit forecast period

+

Present value of the cash flow after the explicit forecast period

Determine the strategic perspective on future performance

The strategic perspective reflects the credible story about the company's future performance. This is the story of telecom service provider is discussed below for illustrative purposes:

"The global telecom market is recovering. The company is good positioned in those segments of the telecom market that is growing rapidly. The company is restructuring its licensing arrangements with its customers and this is expected to augment its overall income from licensing.

3.4 Develop Financial Forecasts

The DCF value of the firm depends upon forecasted free cash flow and the later is derived from the profit and loss account and the balance sheet. These are:-

- Develop the sales forecast
- Forecast the Profit and loss account
- Forecast the balance sheet : Asset Side
- Forecast the balance sheet : Liabilities side
- Calculate FCF and ROIC
- Check for consistency and Alignment

IV Estimating the Continual Value

The different methods can be used for estimating the continuing value.

These can be classified into 2 categories:-

1. Cash Flow methods 2. Non Cash Flow methods

I Cash Flow Methods

The two cash floor methods are as follows:-

Growing Free Cash Flow Perpetuity Method

This method assumes that free cash flow would grow at constant rate for ever after the explicit forecast period; The continuing value of such stream can be established by applying the constant growth valuation model:

$CV_t = FCFt_{+1} / WACC - g$

Value Friver Method

This method frequently used the growing free cash flow perpetuity formula but it can be expressed as follows:-

$CV = NOPLAT (1 - g / ROIC) / WACC - g$

Where,

CV = Continuing value at the end of the year

NOPLAT = Expected operating profits less adjusted tax for the first year after the explicit forecast period

WACC = Weighted Average cost of capital

g = constant growth rate of No plat alter the explicit forecast period

ROIC = expected rate of return on new invested capital.

Non Cash flow Methods

There are some non cash flow methods also and these are discussed below:-

Multiples Method:

The multiples method assumes that the company is worth some multiple of future earning s or book value during the continuing period. This will include enterprise value to book value ratio, enterprise value to sales ratio, etc

Replacement cost Method

In this method, the continuing value is equated with the expecte d replacement cost of fixed assets of the company.

Liquidation Value Method:

As per the liquidation value method the continuing value of the fim at the end of explicit forecast period is proceeds expected form the sale of the assets of the firm. It is often different from the going concern value.

V Calculating and interpreting the results

After developing financial projections and continuing value estimate, go to final stage of valuation exercise. This stage involves the steps which are discussed below:-

- Determine the value of operations
- Discount Free Cash Flows
- Discount the continuing Value
- Calculate the value of operations

Summary

- From the early 1990s, the enterprise DCF model has received great attention, emphasis and acceptance.
- The valuation of the company using the DCF approach is conceptually similar to the valuing the capital project using the DCF approaches. still there are two differences: a) while the project is considered with the finite life, the firm has considered with a definite life , b) the capital project is typically where as the firm is viewed as growing entity requiring additional investments in fixed assets and net working capital.
- The DCF method to value a company involves the steps that are mentioned below:
    1. Analyzing historical performance,
    2. Estimating the cost of capital
    3. Forecasting performance
    4. Determining the continuing value
    5. Calculating the firm value and interpreting the results.
- If you analyze the company's historical performance calls for getting a handle over its NOPLAT and FCF, understanding the drivers of its FCF, to measure and analyze its ROIC, decomposing its revenue growth into the various components, and assessing its financial performance and capital structure.

- The providers of the capital want to be suitably compensated for the investing funds in the company. The cost of the capital reflects what they expect.
- The future is unpredictable, forecasting performance is best in educated guess work. It involves the steps like a) determine the length of explicit forecast period,

  b) It develop the strategic perspective on the future performance,

  c) Develop financial forecasts.
- There are several methods that are available to estimate the continuing value. It may be classified as growing free cash flow perpetuity method and value driver method.
  The non cash flow methods are: a) multiple method, b) replacement method, and c) liquidation value method
- The calculation and interpreting results involves the following steps:- a) determine the value of operations, b) calculate the equity value, c) explore multiple scenarios, and d) verify valuation results.

Keywords

- **Discounted Cash Flow**: - Discounted cash flow (DCF) is a valuation method used to estimate the value of an investment based on its expected future cash flows.
- **NOPLAT**: - NOPLAT stands for Net Operating Profit Less Adjusted Taxes. It represents a company's operating profit after adjusting to normalize for the impact of capital structure and deferred taxes.
- **ROI**: - Return on investment, or ROI, is a mathematical formula that investors can use to evaluate their investments and judge how well a particular investment has performed compared to others.

Self Assessment

1. Which of the following statements is true?

A. A firm has an entity that has the indefinite life.
B. A firm is a growing entity.
C. Both a) and b) are true
D. Both a) and b) are false

2. The sale of division or plant or unit of company to another is known as …….

A. Divestitures
B. Acquisitions
C. Amalgation
D. None of the above

3. Which of the following statement is false?

A. Capital project is deemed to have finite life.
B. Capital project is typically valued as one-off investment
C. Both statements are false
D. Both statements are true

4. Which of the following is the correct sequence of the process of of calculating the discounted cash flow?

1) Analyzing historical performance

2) Estimating the cost of capital

3) Forecasting the performance

4) Calculating the firm value and interpreting the results

5) Determining the continual value

Options are

A. 1,2,5,3,4
B. 2,5,4,3,1
C. 1,2,3,4,5
D. 1,2,3,5,4

5. What is the full form of NOPLAT?
A. Net operating profit less adjusted taxes
B. Net operating profit and taxes
C. both are true
D. none of the above

6. Which formula of return of invested capital is correct?
A. Net profit /Invested capital
B. NOPLAT / Invested capital
C. Both a) and c)
D. None of the above

7. …… is the difference between gross investment and depreciation.
A. Gross investment
B. Gross profit
C. Net Investment
D. None of the above

8. Among the following, which is the approach to valuation?
A. Book value approach
B. Stock and Debt approach Relative valuation approach
C. Both a) and c)
D. None of the above

9. The effect of …… can be understood better by considering the relationship between return on equity and return on invested capital.
A. Leverage
B. Interest coverage
C. Revenue growth
D. Dividend payout

10. …….is the dividend paid by company divided by net profit accruing to equity shareholders.

A. Interest Coverage
B. Leverage
C. Dividend payout
D. None of the above

11. What steps are followed to forecast performance?

A. Determine the length of the explicit forecast period
B. Develop the strategic perspective on the future performance
C. Develop financial forecasts
D. All of the above

12. Which is not a cash flow method for estimating continuing value?

A. Growing Free cash flow perpetuity method
B. Value Driver Method
C. Multiples method
D. All of the above

13. Which of the following is the non cash flow method of estimating continual value?

A. Multiples method
B. Replacement cost method
C. Liquidation method
D. All of the above

14. Which of the following involves the calculation and interpretation of the results?

A. Determine the value of the operations
B. Calculating equity value
C. Explore multiple scenarios
D. All of the above

15. Which of the following are the misconceptions about continuing value? The length of the explicit forecast period has bearing on value

A. Most of the value is created during the continuing value period
B. Competitive advantage period ends at the end of teh explicit forecast period
C. All of the above
D. None of the above

Answers for Self Assessment

l.	C	2.	A	3.	D	4.	D	5.	A
6.	B	7.	C	8.	D	9.	A	10.	C

11. D 12. C 13. D 14. D 15. B

Revision Questions

1. Explain the concept of Enterprise DCF Model?
2. Differentiate between valuing a company and valuing the project?
3. Explain the key drivers of FCF?
4. What are the different features of cost of capital?
5. Explain the steps involved in developing the financial forecasts?
6. Discuss the typical forecast drivers and forecast ratios for the most common line items in the profit and loss account?
7. What are the non cash methods available for estimating the continuing value?

Further Readings

- https://www.investopedia.com/articles/stocks/08/discounted-cash-flow-valuation.asp#:~:text=Discounted%20cash%20flow%20(DCF)%20is,must%20outperform%20the%20hurdle%20rate.
- https://corporatefinanceinstitute.com/resources/knowledge/valuation/dcf-formula-guide/
- https://en.wikipedia.org/wiki/Valuation_using_discounted_cash_flows
- https://www.youtube.com/watch?v=M8cuAJYYnTM

Unit 04: Enterprise DCF Model-I

CONTENTS

Objectives

- understand the concept of Terminal Value
- explain the approaches to estimate Terminal Value
- discuss the Free Cash Flow to Equity
- explain the Free Cash Flow to Firm
- discuss how to calculate and interpret results

Introduction

Discounted Cash Flow (**DCF**) analysis is the method of valuing security, project, company, or asset using the concepts of the time value of money. DCF analysis is widely used in investment finance, real estate development, corporate financial management and patent valuation. It was used in industry as early as the 1700s or 1800s, widely discussed in financial economics in the 1960s, and became widely used in U.S. courts in the 1980s and 1990s.

To apply the method, all future cash flows are estimated and discounted by using the cost of capital to give their present values (PVs). The sum of all future cash flows, both incoming and outgoing, is net present value (NPV), which is taken as a value of the cash flows in question.

Using DCF analysis to compute the NPV takes as input cash flows and the discount rate and gives as output a present value. The opposite process takes cash flows and the price (present value) as inputs, and provides as output the discount rate; this is used in the bond markets to obtain the yield.

In general, "Value of firm" represents the firm's enterprise value (i.e. its market value as distinct from market price); for corporate finance valuations, represents the project's net present value or NPV. The second term represents the continuing value of future cash flows beyond the forecasting term; here applying a "perpetuity growth model".

 **Note:** The valuation of equity, as opposed to "the firm", free cash flow to equity (FCFE) or dividends are modeled, and these are discounted at the cost of equity instead of WACC which incorporates the cost of debt.

4.1 What Is Terminal Value (TV)?

Terminal value (TV) or the continuing value is the value of the asset, business, or project beyond the forecasted period when future cash flows can be estimated. Terminal value assumes a firm will grow at a set growth rate forever after the forecast period. Terminal value often comprises a large percentage of the total assessed value.

- Terminal value (TV) determines a firm's value into perpetuity beyond a set forecast period—usually five years.
- Analysts use the discounted cash flow model (DCF) to calculate the total value of the business. The forecast period and terminal value are both integral components of DCF.
- The two common methods for calculating terminal value are perpetual growth (Gordon Growth Model) and exit multiple.
- The perpetual growth method assumes that the business will generate cash flows at a constant rate forever, while the exit multiple method assumes that the business will be sold.

4.2 Approaches to Estimate Terminal Value

There are two approaches to estimate terminal value.

1. Cash Flow methods

2. Non-Cash Flow methods

I Cash Flow Methods

The two cash flow methods are as follows: -

a)Perpetuity Method

Discounting is necessary because the time value of money creates a discrepancy between current and future values of a given sum of money. In the business valuation, free cash flow or dividends can be forecast for a discrete period of time, but the performance of the ongoing concerns becomes more challenging to estimate as the projections stretch further into the future. Moreover, it is difficult to determine the precise time when a firm may cease operations.

To overcome these limitations, investors can assume that cash flows will grow at the stable rate forever, starting at some point in the future. This represents the terminal value.

Terminal value is calculated by dividing the last cash flow forecast by the difference between the discount rate and the terminal growth rate. The terminal value calculation estimates the value of the company after the forecast period.

The formula to calculate terminal value is:

$$[FCF \times (1 + g)] / (d - g)$$

Where:

FCF = free cash flow for the last forecast period

g = terminal growth rate

d = discount rate (which is usually the weighted average cost of capital)

The terminal growth rate is the constant rate that the firm is expected to grow at forever. This growth rate starts at the end of the last forecasted cash flow period in a discounted cash flow model and goes into perpetuity. The terminal growth rate is usually in line with the long-term rate of inflation, but not higher than the historical gross domestic product (GDP) growth rate.

b)Value Driver Method

This method frequently used the growing free cash flow perpetuity formula but it can be expressed as follows:-

CV = NOPLAT (1 - g / ROIC) / WACC - g

where,

CV = Continuing value at the end of the year

NOPLAT = Expected operating profits less adjusted tax for the first year after the explicit forecast period

WACC = Weighted Average cost of capital

g = constant growth rate of NOPLAT ater the explicit forecast period

ROIC = expected rate of return on new invested capital.

II. Non Cash flow Methods

There are some non cash flow methods also and these are discussed below:-

a)Replacement cost Method

In this method, the continuing value is equated with the expected replacement cost of fixed assets of the company.

b)Liquidation Value Method

As per the liquidation value method the continuing value of the fim at the end of explicit forecast period is proceeds expected form the sale of the assets of the firm. It is often different from the going concern value.

c)Exit Multiple Method

If the investors assume the finite window of operations, there is no need to use the perpetuity growth model. Instead, the terminal value must reflect the net realizable value of a firm's assets at that time. This implies that the equity will be acquired by a larger firm, and the value of acquisitions are often calculated with exit multiples.

Exit multiples estimate the fair price by multiplying financial statistics, like sales, profits, or earnings before interest, taxes, depreciation, and amortization (EBITDA) by a factor that is common for a similar type of firms that were recently acquired. The terminal value formula using the exit multiple method is the most recent metric (i.e., sales, EBITDA, etc.) multiplied by decided upon multiple (usually an average of recent exit multiples for other transactions). Investment banks often employ this valuation method, but some detractors hesitate to use intrinsic and relative valuation techniques simultaneously.

4.3 How Is Terminal Value Estimated?

There are various terminal value formulas. Such as discounted cash flow (DCF) analysis, most terminal value formulas project future cash flows to return the present value of a future asset. The liquidation value model (or exit method) requires figuring the asset's earning power with the appropriate discount rate, then adjusting for the estimated value of outstanding debt.

The stable (perpetuity) growth model does not assume the firm will be liquidated after the terminal year. Instead, it assumes that cash flows are reinvested and that the company can grow at the constant rate into perpetuity. The multiples approach uses the approximate sales revenues of a firm during the last year of a discounted cash flow model, then uses a multiple of that figure to arrive at the terminal value without further discounting applied.

When Evaluating Terminal Value, Should I Use the Perpetuity Growth Model or the Exit Approach?

In DCF analysis, neither the perpetuity growth model nor the exit multiple approach is likely to render the perfectly accurate estimate of terminal value. The choice of which method of calculating terminal value to use depends partly on whether the investor wishes to obtain a relatively more optimistic estimate or a relatively more conservative estimate.

Notes: Using the perpetuity growth model to estimate terminal value renders the higher value. Investors can benefit from using both the terminal value calculations and then using an average of the two values arrived at for a final estimate of NPV.

4.4 Free Cash Flow to Equity

In corporate finance, **free cash flow to equity** (**FCFE**) is the metric of how much cash can be distributed to the equity shareholders of the firm as dividends or stock buybacks—after all expenses, reinvestments, and debt repayments are taken care of. It is also called as the **levered free cash flow** or the **flow to equity** (FTE). Whereas dividends are the cash flows actually paid to shareholders, the FCFE is the cash flow simply available to shareholders. The FCFE is normally calculated as a part of DCF or LBO modelling and valuation.

Assuming there is no preferred stock outstanding:

$$FCFE = FCFF + Net\ Borrowing - Interest * (1 - t)$$

where:

·*FCFF* is the free cash flow to firm;

·*Net Borrowing* is the difference between debt principals paid and raised;

·*Interest*(1–t)* is the firm's after-tax interest expense.

or

$$FCFE = NI + D\&A - Capex - \Delta WC + Net\ Borrowing$$

or

$$FCFE = NI - [(1 - b)(Capex - D\&A) + (1 - b)(\Delta WC)]$$

where:

·*NI* is the company's net income;

·*D&A* is the depreciation and amortization;

·*b* is debt ratio;

·*Capex* iscapital expenditure;

·*ΔWC* is change in working capital;

·*Net Borrowing* is the difference between debt principals paid and raised;

·In this case, it is important not to include the interest expense, as this is already figured into net income.

4.5 What Is Free Cash Flow to the Firm (FCFF)?

Free cash flow to the firm (FCFF) represents the amount of cash flow from operations available for distribution after accounting for depreciation expenses, taxes, working capital, and investments. FCFF is a measurement of a company's profitability after all expenses and reinvestments. It is one of the many benchmarks used to compare and analyze a firm's financial health.

Understanding Free Cash Flow to the Firm (FCFF)

FCFF represents the cash available to investors after a company pays all its business costs, invests in current assets (e.g., inventory), and invests in long-term assets (e.g., equipment). FCFF includes bondholders and stockholders as beneficiaries when considering the money left over for investors.

The FCFF calculation is an indicator of a company's operations and its performance. FCFF considers all cash inflows in the form of revenues, all cash outflows in the form of ordinary expenses, and all reinvested cash to grow the business. The money left over after conducting all these operations represents a company's FCFF.

Calculating Free Cash Flow to the Firm (FCFF)

The calculation for FCFF can take several forms, and it's important to understand each version. The most common equation is the following:

$$\text{FCFF} = \text{NI} + \text{NC} + (\text{I} \times (1 - \text{TR})) - \text{LI} - \text{IWC}$$

where:

NI=Net income

NC=Non-cash charges

I=Interest

TR=Tax Rate

LI=Long-term Investments

IWC=Investments in Working Capital

Free cash flow to the firm can also be calculated using other formulations. Other formulations of the above equation include:

$$\text{FCFF} = \text{CFO} + (\text{IE} \times (1 - \text{TR})) - \text{CAPEX}$$

where:

CFO=Cash flow from operations

IE=Interest Expense

CAPEX=Capital expenditures

$$\text{FCFF} = (\text{EBIT} \times (1 - \text{TR})) + \text{D} - \text{LI} - \text{IWC}$$

where:

EBIT=Earnings before interest and taxes

D=Depreciation

$$FCFF=(EBITDA\times(1-TR))+(D\times TR)-LI$$

FCFF=−IWC

where:

EBITDA=Earnings before interest, taxes, depreciation

and amortization

4.6 Calculating and Interpreting Results

After developing financial projections and containing value estimate you are ready to move on to the next stage that is the final stage of the valuation exercise. this stage involves the some of the steps:

- Determine the value of the operations
- Calculate the equity value
- Exploring multiple scenarios
- Verify the evaluation results

a)Determining the value of operations

Based on the free cash flow projections the present value of the operations can be calculated with the help of three steps

- Discount free cash flows
- discount the continuing value and
- determine the value of operations

i)Discount the free cash flows:- In some valuation a constant weighted average cost of capital is used to discount the future free cash flow. if the weighted average cost of capital changes over time, you can use a time varying discount rate to discount the future free cash flows.

The time-varying weighted average cost of capital can be considered if significant changes are expected in the capital structure of the company or cost of debt or the tax rate. In such case, dad justred present value approach is better alternative as it explicitly models the capital structure and debt generated tax-shields.

ii)Discounting the continuing value:- The continuing value is usually derived using the perpetuity based approach. so, it is already expressed as the value at the end of the explicit forecast period. hence, discount it it for number of years in explicit forecast period.

for example if the explicit forecast period is 5 years, discount the continuing value by 5 years, not 6 years. Further,If the weighted average cost of capital changes over the explicit forecast period following the approach described above in discounting continuing value

iii)**Calculating the value of operation:-** So, in this final step, at the present value of free cash flows in the explicit forecast period to the present value of continent value to get the value of the operations

The value of operations for the Matrix Limited is obtained as follows:

$$PV(FCF)=\frac{3.0}{(1.14)}+\frac{5.8}{(1.14)^2}+\frac{16.6}{(1.14)^3}+\frac{13.8}{(1.14)^4}+\frac{16.0}{(1.14)^5}$$

= 34.77 million

$$PV(CV) = \frac{440}{(1.14)^5} = 228.52 \text{ million}$$

Value of the operations = 34.77 + 228.52

=263.29 million

Calculating the Enterprise value and Value of Equity

To value of operations, you have to add the value of non-operating assets to get the enterprise value. From the enterprise value, you have to deduct the value of non-equity claims to get the equity value. Thus:

Enterprise Value = Value of operations + Value of non-operating Assets

Equity Value = Enterprise value – Value of non-equity claims

The best approach for determining the value of non-operating assets and non-equity claims depends on how their value changes with the DCF value of operations.

- **Non-operating assets**

The cash flows relating to non-operating assets like excess cash and marketable securities are not included in the free cash flows and therefore not reflected in the value of operations. So, the value of non-operating assets must be added to the other value of operations. We discuss below the important non-operating assets and how they may be valued.

- **Excess cash and Marketable securities:**

Non-operating assets that can be quickly converted into cash at a minimal cost can be called cash and marketable securities. Under the U.S. GAAP (Generally Accepted Accounting Principles) and IFRS (International Financial Reporting Standards), these assets have to be reported at their fair market value. So, consider the most recent book values as the proxy for the market value.

- **Quoted Investments in Associate Companies**

These investments which are made in companies belong to the same business group.

For example,Tata Power may hold shares of Tata Steel and vice-versa. Since these holdings are usually small and there is an active market for them, they may be valued at the prevailing market price.

Quoted Investments in the Subsidiary Companies

Since these investments represent the controlling interest they may be valued at the prevailing market price plus the control premium of about 25 percent.

Unquoted investments in Subsidiary Companies

With the DCF valuation of subsidiary and value the parent's equity stake in it. If you do not have adequate information for doing DCF valuation, rely on the relative valuation.

Excess real Estate and unutilized Assets

It is difficult to identify these assets in the outside-in valuation. If you are having information on the assets, rely on the most recent appraisal value.

Non-equity Claims

The enterprise value is the value of operations plus the value of non-operating assets. To get the value of equity, you have to deduct the value of non-equity claims from those of current equity shareholders.

There are of following types:

Debt

Preference capital

Hybrid claims

Debt Equivalents

Debt

Debt comes in the various forms like debentures, loans from financial institutions and banks, public deposits, and the commercial paper. If the debt is a form of tradable instrument (debentures and commercial paper), use its market value. If the debt instrument is not traded (loans and public deposits), discounting the promised interest and the principal repayments at the current interest rate applicable to such instrument to estimate its current value. If the interest rates and the default risk have not changed much since the debt issue, the book value of debt is a reasonable proxy for the current value.

Preference Capital

Preference Capital is the akin to unsecured debt and preference dividends can be likened to interest payments as they are predetermined and payable under the normal circumstances. If the preference shares are traded, use the market value, if it not then do a DCF valuation in which the expected payments (dividends and principal redemption) are discounted at the cost of unsecured debt.

Hybrid Claims

The most common hybrid claims are convertible debentures and employee stock options. Convertible debentures are the debentures that can be exchanged at the option of the holder, for equity shares at the predetermined conversion ratio. In essence, the convertible debenture is the package of the straight debenture with the call option on equity. The conversion option often has a significant value, convertible debt has to be treated differently from regular debt.

The value of convertible debentures depends on the value of the company. Hence, you cannot use the book value or the simple DC

The value of the debt cash flows to value convertible debentures. If the convertible debentures are actively traded, you can use their market value, otherwise, you may have to use option-based valuation.

Employee Stock option

If the cost of the stock options granted to employees is fully captured in the free cash flow projections, stock options should not be considered as the non-equity claims. If the cost of employee stock options is not fully reflected in the free cash flow projections, the unreflected portion has to be valued and the treated as non-equity claims.

4.7 Enterprise Value and the Equity Value of Matrix Limited

Assuming that the value of investments (only non-operating assets) is 25 million (the balance sheet value) and the value on non-equity claims is 134 million (the balance sheet value), the enterprise value and the equity value of Matrix Limited is :

Enterprise Value = value of operations + value of investments

=263.29 + 25.0

=288.29 million

Equity Value = Enterprise Value – Value of non-equity claims

=288.29 - 134

=154.29 million

Value under the Multiple Scenarios

The valuation is done to guide some of the management decisions such as acquiring the company, divesting the division, or adopting a strategic initiative. Hence the results of valuation must be analyzed from the perspective of the decision at hand. As the risk and the uncertainty characterize most business decisions, you must think of scenarios and their ranges of value, and be reflective of this uncertainty.

Verify the valuation results

After estimating the equity value, you should perform the several tests to verify the results of the valuation.

Is the Model Logically Correct?

Your model must satisfy the following logical conditions:

In the unadjusted financial statements, the balance sheet balances every year, net profit equals the dividends plus retained earnings, and the sources of cash equal the use of cash.

In the recognized financial statements, the invested capital plus the non-operating assets equal the financing sources.

Do the valuation results the correctly reflect value driver economics?

There are some of the checks to see that whether the valuation results correctly reflect value driver economics:

- If the expected ROIC is greater than the WACC, the value of operations must be greater than the book value of invested capital.
- If the expected ROIC is close to the WACC, value of the operations must be the fairly insensitive to the rate of growth.
- If the expected ROIC is significantly higher than the WACC, the value of operations must be highly sensitive to the rate of growth.

Are the Key Financial and Operating Ratios Consistent with Economic Logic?

The patterns of key financial and operating ratios such as capital turnover, profit margin, growth rate, and the tax rate must be realistic and consistent with the economic logic. Ensure that when you apply the continuing value formula the firm achieves the steady rate. If the firm is still evolving, extend the explicit forecast period.

Are the Final Results Plausible

If the firm is listed, compare your value estimate with market value. If the market value is very different from your estimate, don't conclude that the market is wrong. Indeed, it makes sense where it assumes that the market is right, unless you have the reason to believe that all the relevant information is not incorporated in the market price due to factors like small float or poor liquidity in the stock.

Compare the multiples of the firm with its peers. Satisfying yourself that the significant differences with the peer firms can be explained in terms of value drivers and the other relevant factors such as business characteristics and strategy.

Summary

Valuation using discounted cash flows (**DCF valuation**) is the method of estimating the current value of a firm based on projected future cash flows adjusted for the time value of money. The cash flows are made up of those within the "explicit" forecast period, together with the continuing or terminal value that represents the cash flow stream after the forecast period. In several contexts, DCF valuation is referred to as the "income approach".

Terminal value assumes a firm will grow at a set growth rate forever after the forecast period. Terminal value often comprises a large percentage of the total assessed value.

There are two approaches to estimate the continual or terminal value. These are: - Cash Flow methods , Non-Cash Flow Methods.

Exit multiples estimate the fair price by multiplying financial statistics, like sales, profits, or earnings before interest, taxes, depreciation, and amortization (EBITDA) by a factor that is common for a similar type of firms that were recently acquired.

Free cash flow to the firm (FCFF) represents the amount of cash flow from operations available for distribution after accounting for depreciation expenses, taxes, working capital, and investments.

Free cash flow to equity (**FCFE**) is the metric of how much cash can be distributed to the equity shareholders of the firm as dividends or stock buybacks—after all expenses, reinvestments, and debt repayments are taken care of. It is also called as the **levered free cash flow** or the **flow to equity** (FTE).

After developing financial projections and containing value estimate you are ready to move on to the next stage that is the final stage of the valuation exercise. this stage involves the some of the steps: -

1.Determine the value of the operations

2.Calculate the equity value

3.Exploring multiple scenarios

4. Verifying the evaluation results

Keywords

Discounted Cash Flow: - Discounted cash flow (DCF) analysis is the method of valuing a security, project, firm, or asset using the concepts of the time value of money.

Terminal Value: - Terminal value (TV) is the value of an asset, business, or project beyond the forecasted period when future cash flows can be estimated.

Free Cash to Firm (FCFF): - Free cash flow to the firm (FCFF) means the amount of cash flow from operations available for distribution after accounting for depreciation expenses, taxes, working capital, and investments.

Free Cash Flow to Equity: - free cash flow to equity (FCFE) is the metric of how much cash can be distributed to the equity shareholders of the firm as dividends or stock buybacks—after all expenses, reinvestments, and debt repayments are taken care of. It is also called the levered free cash flow or the flow to equity (FTE).

SelfAssessment

1.…… analysis is the method of valuing security, project, company, or asset using the concepts of the time value of money

A. Historical Valuation
B. Discounted Cash Flow
C. Both a) and b)
D. None of the above

2.……. is the value of the asset, business, or project beyond the forecasted period when future cash flows can be estimated.

A. Terminal Value
B. Continuing Value
C. Both a) and b)
D. None of the above

3.Which of the following are the method/methods for the valuation of terminal value?

A. Perpetuity Method
B. Value Driver Method
C. Replacement Cost Method
D. All of the above

4.The …… assumes that the business will generate cash flows at a constant rate forever, while the exit multiple method assumes that the business will be sold.

A. Perpetual Growth Method
B. Replacement Cost Method
C. Liquidation Value Method
D. None of the above

5.…….. is the metric of how much cash can be distributed to the equity shareholders of the firm as dividends or stock buybacks—after all expenses, reinvestments, and debt repayments are taken care of.

A. Free Cash Flow to Firm
B. Free Cash Flow to Equity
C. Adjusted Present Value
D. None of the above

6.……. the continuing value of the fim at the end of explicit forecast period is proceeds expected form the sale of the assets of the firm. It is often different from the going concern value

A. Exit Multiple Method
B. Replacement Cost Method
C. Liquidation Value Method
D. None of the above

7.…… estimate the fair price by multiplying financial statistics, like sales, profits, or earnings before interest, taxes, depreciation, and amortization (EBITDA) by a factor that is common for a similar type of firms that were recently acquired.

A. Liquidation Value Method
B. Replacement Cost Method
C. Exit Multiple Method
D. None of the above

8.Terminal value is calculated by dividing the last cash flow forecast by the difference between the …….and the terminal growth rate.

A. Discount Rate, Terminal Growth Rate
B. Historical Rate, Equity Rate
C. Discount Rate, Historical Rate
D. None of the above

9.Which of the following statements is/true w.r.t Free Cash Flow to Firm?

I. Free cash flow to the firm (FCFF) represents the amount of cash flow from operations available for distribution after accounting for depreciation expenses, taxes, working capital, and investments.
II. FCFF is a measurement of a company's profitability after all expenses and reinvestments.

The options are:

A. I only
B. II only
C. Both I and II
D. Neither I and II

10.The full form of EBITDA is ……..

A. Earnings Below Interest, Tax, Depreciation and Amortization
B. Earnings Before Interest, Tax, Depreciation and Amortization
C. Earnings Before Income, Tax, Depreciation and Amortization
D. None of the above

11. Which of the following is the correct sequence for the 'Calculation and Interpretation of Valuation Results'

I. Determine the value of the operations
II. Calculate the equity value
III. Exploring multiple scenarios
IV. Verify the evaluation results

The options are:

A. II, III, IV and I
B. I, II, III and IV
C. IV, III, II and I
D. None of the above

12.Which of the following steps will be followed to calculate the present value of the operations on the basis of the free cash flow projections?

I. determine the value of operations
II. discount the continuing value
III. Discount free cash flows

The options are:

A. III, II, and I
B. II, III and I
C. I, II and III
D. None of the above

13. Which of the following statements is/are true?

I. Debt comes in the various forms like debentures, loans from financial institutions and banks, public deposits, and the commercial paper.
II. If the debt is a form of tradable instrument (debentures and commercial paper), use its historical value.

The options are:

A. I only
B. II only
C. Both I and II
D. Neither I and II

14. …….. are the debentures that can be exchanged at the option of the holder, for equity shares at the predetermined conversion ratio.

A. Convertible Debentures
B. Non-convertible Debentures
C. Redeemable Debentures
D. None of the above

15. …… is the akin to unsecured debt and preference dividends can be likened to interest payments as they are predetermined and payable under the normal circumstances.

A. Debentures
B. Hybrid Claims
C. Preference Capital
D. None of the above

Answers for Self Assessment

l.	B	2.	C	3.	D	4.	A	5.	B
6.	C	7.	C	8.	A	9.	C	10.	B
11.	B	12.	A	13.	A	14.	A	15.	C

Review Questions

1.How is terminal value estimated? Explain some cash flow methods to calculate terminal value?

2.Discuss the concept of Free Cash Flow to Equity (FCFE)?

3.Explain with the help of formula Free Cash Flow to Firm.

4.What are the steps involved in calculating and interpreting results?

5.Calculate the Enterprise Value and the Value of Equity.

Further Reading

https://www.wallstreetmojo.com/terminal-value/

https://corporatefinanceinstitute.com/resources/knowledge/valuation/terminal-value/

https://www.educba.com/fcff-formula/

https://www.wallstreetprep.com/knowledge/free-cash-flow-to-firm-fcff/

https://corporatefinanceinstitute.com/resources/knowledge/valuation/free-cash-flow-to-equity-fcfe/

https://corporatefinanceinstitute.com/resources/knowledge/valuation/enterprise-value-vs-equity-value/

Unit 05: Equity DCF Model

CONTENTS

Objectives

- Understand the concept of dividend discount model
- Discuss about the zero growth model
- Explain the constant growth model and factors that drives the growth
- Explain the concept of two stage growth model with its formula
- Analyze the three stage growth model with the help of formula
- Discuss the H Model and explain the advantages of H Mode

Introduction

There are various models that are used to value the company or its equity using the DCF approach:

Enterprise DCF Model: - The firm DCF model discounts the free cash flow to the firm (FCFF) at the weighted average cost of capital.

Equity DCF Model: - There are two variants of the equity DCF model and that are dividend discount model and the free cash flow to equity model. The dividend discount model discounts the expected dividend at the cost of equity.

Adjusted Present Value (APV) Model: - The APV Model discounts the unlevered equity cash flow at the unlevered cost of equity and sums to it the discounted value of the interest tax shield on the debt.

Economic Profit Model: -The economic profit model discounts the economic profit stream at the weighted average cost of capital and sums to it the current invested capital.

Enterprise DCF Model	Equity DCF Model	Adjusted Present Value Model	Economic Profit Model

5.1 Dividend Discount Model

The enterprise DCF model is the standard DCF model used in valuation practice. Its principal advantage is that it incorporates the cost and benefits of borrowing in an easily understandable manner. The impact of the changes in financial leverage on the company value can be easily examined.

There are some problems with the enterprise DCF model

- It is easier to understand the free cash flows to equity than the free cash flows to the company. When they were asked to define the cash flows, we tend to think like owners and look at the cash flows after debt related payments. In simple terms, equity cash flows make more sense to us. The focus of enterprise cash flows on pre-debt cash flows can sometimes hide the problem of potential financial distress.

Example: - the companies that may have free cash flow to the company of 50 million but can have the debt servicing burden of 150 million. If the company want to survive it will have to raise 100 million of new financing. This problem is highlighted by the free cash flow to equity, not the by the free cash flow to the company.

- The calculation of the weighted average cost of capital for making implicit some assumptions that cannot be reasonable. An assumption that the market value debt ratio is 40 percent means threat the growing firm will have to issue large amounts of debt in future years to maintain that ratio. This means that he book value debt ratio can become unreasonably high.

In this situation, valuation practitioners sometimes value equity directly employing either the dividend discount model or free cash flow to equity model. This section discusses the dividend discount model and the following section discusses the free cash flow to the equity model.

So, equity share have no maturity period, they may be expected to bring the dividend stream of infinite duration. Hence the value of the equity share may be put as:-

$$P_0 = \frac{D_1}{(1+r)} + \frac{D_2}{(1+r)^2} + \cdots + \frac{D_\infty}{(1+r)^\infty} = \sum_{t=1}^{\infty} \frac{D_t}{(1+r)^t}$$

Where,

P_0 = price of equity shares for today

D_1 = dividend expected a year later

D =dividend expected two years hence

D = dividend expected at the end of the infinity

r = the required return

This shows the valuation model for the infinite horizon. So, is this applicable to finite horizon? And to demonstrate this considers how the equity share would be valued by the investor who plans to hold it for n years and sell it for the price of P_n.

The value of the equity share to him is:

$$P_0 = \frac{D_1}{(1+r)^1} + \frac{D_2}{(1+r)^2} + \cdots + \frac{D_n}{(1+r)^n} + \frac{P_n}{(1+r)^n}$$

$$= \sum_{t=1}^{n} \frac{D_t}{(1+r)^t} + \frac{P_n}{(1+r)^n}$$

Now, what will be the value of $P_n$in the above equation? The application of the dividend capitalization principle, the value of $P_n$would be present value of dividend stream beyond the nth year, evaluated as at the end of the nth year. This means

$$P_n = \frac{D_{n+1}}{(1+r)} + \frac{D_{n+2}}{(1+r)^2} + \cdots + \frac{D_n}{(1+r)^n}$$

Substituting the value of $P_n$in the above equation we get:

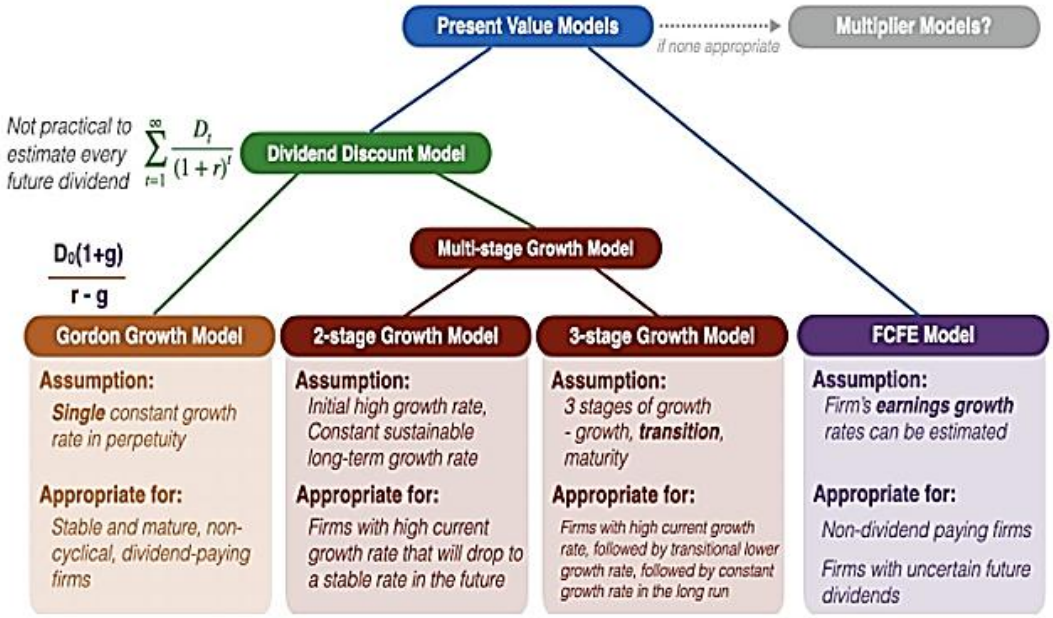
$$P_0 = \frac{D_1}{(1+r)^1} + \frac{D_2}{(1+r)^2} + \cdots + \frac{D_n}{(1+r)^n} + \frac{1}{(1+r)^n}\left(\frac{D_{n+1}}{(1+r)} + \frac{D_{n+2}}{(1+r)^2} + \cdots + \frac{D_\infty}{(1+r)^{\infty-n}}\right)$$

$$= \frac{D_1}{(1+r)} + \frac{D_2}{(1+r)^2} + \cdots + \frac{D_n}{(1+r)^n} + \frac{D_{n+1}}{(1+r)^{n+1}} + \cdots \frac{D_\infty}{(1+r)^\infty}$$

$$= \sum_{t=1}^{\infty} \frac{D_t}{(1+r)^t}$$

This is same as the eq.1 which can be regarded as the generalized multi-period valuation formula. In Eq.4 it is general enough to permit any dividend pattern, constant, rising, declining or sometimes randomly fluctuating. For the practical application it is important to make the simplifying assumptions about the pattern of the dividend growth. The commonly used assumptions are:-

- The dividend per share remains constant forever, that imply the growth rate is nil.
- The dividend per share grows at the constant rate per year forever.
- The dividend per share grows at the constant rate for the finite period, followed by the constant normal rate of growth forever thereafter i.e., two-stage model
- The dividend per share, currently growing at the above-normal rate, experiences the linearly declining rate of growth for a while. Thereafter, it grows at the constant normal rate.



5.2 Zero Growth Model

If we consider that dividend per share remains constant year afte4 the year at the value of D, Eq. 4 becomes:

$$P_0 = \frac{D}{(1+r)} + \frac{D}{(1+r)^2} + \cdots + \frac{D}{(1+r)^n} + \cdots \infty$$

Eq. 5, on simplification, becomes:

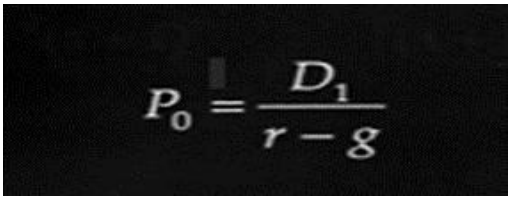
$$P_0 = \frac{D}{r}$$

5.3 Constant Growth Model

The most popular dividend discount model assumes that dividend per share grows at the constant rate (g). The value of the share, under this assumption, is:

$$P_0 = \frac{D_1}{(1+r)} + \frac{D_1(1+g)}{(1+r)^2} + \cdots \frac{D_1(1+g)^n}{(1+r)^{n+1}} + \cdots$$

When you apply the formula the sum of the geometric progression, the above expression simplifies to:



$$P_0 = \frac{D_1}{r - g}$$

What drives the growth?

The most stock valuation model based on the assumption that dividend grows over time. What drives the growth?

The answer to this question is that the major drivers of the growth are:-

a.plough back ratio and (b) return on equity

Example: - The Aseem Limited has an equity base of 100 at the starting of year. It earn the return on equity of 20 percent. It pays 40 percent of the equity earning and ploughs back 60 percent of the equity earnings. The financials of the Aseem Limited for the 3 year period as shown in the Exhibit 1. From this exhibit we can find that dividend grow at the rate of 12 percent per annum- from 8 to 8.96 and then from 8.96 to 10.04. The figure is the product of:

Exhibit1 Financials of The Aseem Limited

	Year 1	Year 2	Year 3
Beginning equity	100	112	125.44
Return on equity	20%	20%	20%
Equity earnings	20	22.4	25.1
Dividend payout Ratio	0.4	0.4	0.4
Dividends	8	8.96	10.04
Ploughback ratio	0.6	0.6	0.6
Retained earnings	12	13.44	15.06

5.4 Two stage Growth Model

The easiest extension of the constant growth model assumes that the extraordinary growth will continue for the finite number of years and thereafter normal growth rate will prevail indefinitely.

What Is the Two-Stage Model?

The two-stage dividend discount model which comprises of the two parts and assumes that the dividends will go through two stages of growth.

In the first stage, the dividend grows by a constant rate for the set amount of time.

In the second, the dividend is assumed to grow at a different rate for the remainder of the company's life.

In this way, the second part of the two-stage model is basically identical to the Gordon Growth Model, so a company holds of the more basic formula will help you to better understand the two-stage model and other, more complex, formulas.

The two-stage model is mostly used to determine the intrinsic value of the stock issued by the firm that is undergoing rapid expansion. Newer companies that have proven their staying power but are still in their beginning stage of rapid growth are good candidates for this valuation method. The first stage of two-stage dividend growth is generally assumed to be quite aggressive, reflecting the company's swift expansion, while the second stage assumes a lower, more sustainable rate of dividend growth.

When using projected dividend activity to determine the value of a stock, analysts use discount models because they account for the time value of money by using a required rate of return, or discount rate, to determine the present value of future dividend payments.

The time value of money simply refers to the fact that a dollar earned tomorrow is worth less than a dollar earned today because a dollar earned today could be invested and generates interest. The further down the road a payment is received, the less it is worth in the current moment.

This adjustment to the current value of future income is accomplished through the use of the discount rate. Discount rate, interest rate, and required rate of return are all synonyms for the amount of income an investor either expects to receive or is trying to generate, depending on the scenario, expressed as a percentage of the initial investment.

Example: -To earn $1,100 in one year at an interest rate of 10%, let's suppose you only need to invest $1,000 today. The present value of $1,100 at a discount rate of 10%, therefore, is $1,000.

Two-Stage Dividend Discount Model Formula

Like its predecessor, the Gordon Growth Model, the two-stage dividend discount model requires very little information to calculate. All that is needed is the anticipated dividend payment one year from the current date, the required rate of return, and the anticipated dividend growth rates.

So, this formula seems intimidating, and it is actually quite simple once all the variables are in place. In this situation,, D1 is the dividend to be paid one year from now and G2 is the dividend growth rate for stage two. This variable r shows the discount rate or expected rate of return, which remains constant. Finally, N represents the number of years the first dividend growth rate covers.

Merits and Limitations

While the two-stage dividend discount model can provide a more accurate valuation than simpler formulas.

It is having some disadvantages from its single-rate predecessor, the Gordon Growth Model.

1.Both models assume that the constant rates of growth, which is rarely an accurate representation of dividend growth. Though the two-stage model does account for multiple growth rates, it assumes that the switch happens over night, rather than accounting for a gradual decline between the first, more aggressive growth rate, and the stable growth rate in the second stage.

2.They do not account for outside factors that influence stock prices, such as public sentiment or company innovations. These valuations are based solely on dividend payments and do not provide a comprehensive reflection of the true value of a stock.

5.5 Three stage Dividend Discount Model

Stock prices that are meant to reflect the value of issuing company, but the question arises that how is that value determined? There are a number of factors that contribute to a business' true value, including public sentiment, profitability and growth potential, but many of these factors are hard to quantify. One of the methods of valuation popular among investors and analysts is the dividend discount method.

Unlike the firm's reputation, the dividends it distributes to shareholders every year are easily quantifiable, so its stock can be valued based on the amount of dividend income an investor can reasonably it expect over time. There are the number of different variations of this method that can be applied to businesses in different stages of growth, or to stocks with different dividend histories. However, the three-stage model offers the most accurate estimation of a stock's intrinsic value because it accounts for subtle changes in dividend growth over time, rather than it assumes that dividends will continue to grow at a fixed rate forever.

What Is the Three-Stage Model?

The three-stage dividend discount model is much like its simpler counterparts, the Gordon Growth Model, the two-stage model, and the H-Model. In fact, it is essentially a combination of these three models that aims to eliminate some shortcomings intrinsic to those formulas.

The Gordon Growth Model is the basis for all of these discount formulas, but its simplicity means that it is not particularly accurate because it assumes that the dividends grow at constant rate every time. Both the two-stage and H-Models allow for changing dividend growth rates, but only the H-Model allows for incremental changes rather than a sharp shift from one stable rate to another. The three-stage model incorporates elements of all three models: an initial period of very aggressive or paltry growth followed by a period of incremental increase or decrease that eventually stabilizes at the more moderate growth rate that is assumed to continue for the life of the company.

Because of the complexity of this formula and the numerous growth rates it can accommodate, it is the most likely of all the models to accurately reflect the value of a stock based on actual dividend data. Of course, a stock's price is not the product of its dividend valuation alone, so even the most precise model may not align perfectly with market values. Instead, the three-stage model and other dividend discount models are used as indicators of whether or not a stock is under or oversold, which helps investors identify the most profitable long-term investments.

Discount Models and the Time Value of Money

Like the other dividend discount models, the three-stage model uses the expected rate of return to discount future dividend income and render its present value. This adjustment is necessary to account for the time value of money, which simply refers to the increased buying power of a dollar earned today versus a dollar earned later. Because they can be invested in interest or dividend-bearing securities, funds you control now are more valuable than funds you have yet to earn.

The value of dividends you expect to receive at some point in the future, therefore, must be reduced to account for the fact that those dollars can't earn interest in the interim. All dividend discount models, therefore, sum the discounted present values of future dividends to estimate the intrinsic value of a stock.

Three-Stage Dividend Discount Model Formula

The formula for the three-stage dividend model is rather intimidating, but the components are straightforward and simple to understand. Like simpler models, the three-stage model requires only the value of the current dividend, the expected rate of return, the dividend growth rates and number of years over which the dividend growth rate is expected to change.

So, the stock value can be calculated with the help of the following formula:-

$$\frac{D_1}{(r+1)^1} + \frac{D_2}{(r+1)^2} + \frac{D_3}{(r+1)^3} + \frac{\frac{D_3(1+G_2)}{(r-G_2)}}{(r+1)^3}$$

In this formula, D1 = value of the next yearly dividend and

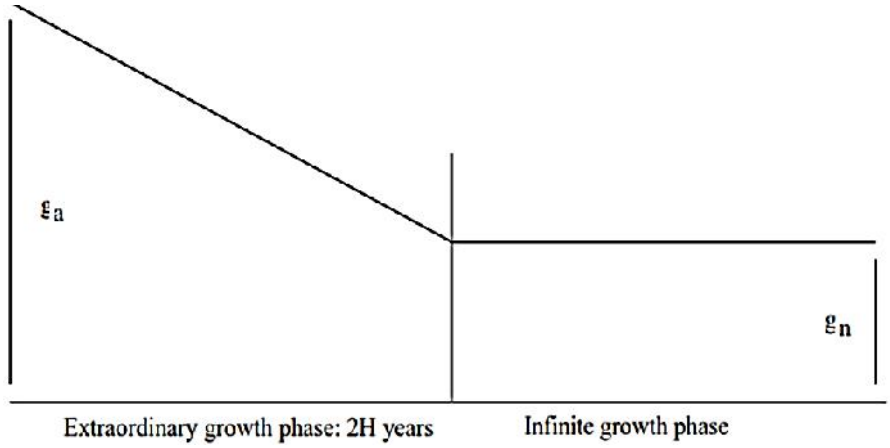
G2 = the final, stable dividend growth rate

5.1 The H Model of Valuation

The H model is a two-stage model for growth, but unlike the classical two-stage model, the growth rate in the initial growth phase is not constant but declines linearly over time to reach the stable growth rate in steady stage.

The Model The model which is based upon the assumption that the earnings growth rate starts at the high initial rate (ga) and declines linearly over the extraordinary growth period (which is assumed to last 2H periods) to a stable growth rate (gn). It assumes that the dividend payout and cost of equity are constant over time and that are not affected by the shifting growth rates

Figure 5.4 graphs the expected growth over time in the H Model.



The value of expected dividends in H Model can be written as:

$$P_0 = \frac{DPS_0 * (1+g_n)}{(k_e - g_n)} + \frac{DPS_0 * H * (g_a - g_n)}{(k_e - g_n)}$$

Advantages of the H Model

1. No biasedness

Dividend is the main unit of measurement in the H Model. The best thing is that the dividend payment means the same in every firm. However, the same cannot be said for several measures.

Example: - what makes up he "total earnings" can differ from one firm to another.

2.Consistency

Normally, the firm will experience fluctuations in the certain measures and one of the benefits of the H Model is that the dividend remain stable for the long time. However, it every times tries to ensure that dividend are obtained from the cash flow that it expects to achieve every year and that is the reason that most of the companies never set high dividend target because if thy fail to achieve it , it can create fall in the share price.

3.Sign of the maturity:-

The firm shows that the it is at maturity by providing the regular dividend. It shows that the operations are stable and not much inconsistency is to be faced in the future.

Limitations

This model ignores the problems linked with the growth rate dropping precipitously from the high growth to the stable growth phase, but it does so at a cost.

First, the decline in the growth rate is expected to follow the strict structure laid out in the model -- it drops in linear increments each year based upon the initial growth rate, the stable growth rate and the length of the extraordinary growth period. While small deviations from this assumption do not affect the value significantly, large deviations can cause problems.

Second,the assumption that the payout ratio is constant through both phases of growth exposes the analyst to an inconsistency -- as growth rates decline the payout ratio usually increases.

Works best for:

The allowance for the gradual fall in the growth rates over time can make this a useful model for company which are growing rapidly right now, but where the growth is expected to fall gradually over time as the firms get larger and the differential advantage they have over their competitors declines. The assumption that payout ratio is constant, however, makes this an inappropriate model to use for any firm that has low or no dividends currently. Thus, the model, by requiring a combination of high growth and high payout, may be quite limited in its applicability.

Summary

- The enterprise DCF model is the standard DCF model used in valuation practice. Its principal advantage is that it incorporates the cost and benefits of borrowing in an easily understandable manner.
- there are various methods of valuing the dividend discount model that are Zero growth model, two stage model, three stage model, The H Models etc.
- In the Zero growth model, this model considers that the firm will pay the same amount of dividends forever. This implies that there will be zero or no growth in the dividend amount, and hence, named Zero Growth Model.
- In constant growth rate model, we studied that the most popular dividend discount model assumes that dividend per share grows at the constant rate(g).
- The most stock valuation model based on the assumption that dividend grows over time. What drives the growth?
- The answer to this question is that the major drivers of the growth are:- a) plough back ratio and (b) return on equity
- The two-stage dividend discount model which comprises of the two parts and assumes that the dividends will go through two stages of growth.1. In the first stage, the dividend grows by a constant rate for the set amount of time. 2. In the second, the dividend is assumed to grow at a different rate for the remainder of the company's life.
- In three stage model, stock prices that are meant to reflect the value of issuing company, but the question arises that how is that value determined? There are a number of factors that contribute to a business' true value, including public sentiment, profitability and growth potential, but many of these factors are hard to quantify.
- The H model is a two-stage model for growth, but unlike the classical two-stage model, the growth rate in the initial growth phase is not constant but declines linearly over time to reach the stable growth rate in steady stage.
- We also have studied about the advantages of the H Model that are:- a) No biasedness, b) consistency, c) sign of the maturity

Keywords

- **Dividend Discount Model**:- It is the method of stock valuation where the valuation is done on the basis of the sum of future dividend received by the stakeholders and discounting the future dividend according to the present value.
- **Zero Growth Model**: - The zero growth model is that the dividend rate remains the same and there will be no growth in the dividend rate.
- **Two stage Model:** - The two stage growth model considers that the dividend will rise in the two stages. In first stage, the dividend will rise at the constant rate for certain period of time. In the second stage, the dividend will rise at the different rate for the remaining period of life.
- **Time value of money:** - The time value of money assumes that in present the money will worth more than the money will worth tomorrow.
- **H Model**: - It is the different form of dividend discount model under the discounted cash flow model in which the cash flow is divided into two phases and differs how the growth rate is defined in two stages.

Self Assessment

1. The most stock valuation model based on the assumption that dividend grows over time. What drives the growth?

A. Plough back ratio
B. Return on equity
C. Both a) and b)
D. None of the above

2. In which model, the extraordinary growth will continue for the finite number of years and thereafter normal growth rate will prevail indefinitely.

A. Zero growth model
B. constant growth model
C. Two stage growth model
D. Three stage growth model

3. The two-stage model is mostly used to determine the…….. of the stock issued by the firm that is undergoing rapid expansion.

A. Intrinsic Value
B. Extrinsic Value
C. Both a) and b)
D. None of the above

4. Number of factors that contribute to a business' true value, including

A. public sentiment
B. profitability
C. growth potential
D. all of these

5. For the valuation of dividend, the three-stage model requires:-

A. the value of the current dividend
B. the expected rate of return and the dividend growth rates
C. number of years over which the dividend growth rate is expected to change
D. all of these

6. The H Model is similar to the ……..
A. Two stage growth model
B. Three stage growth model
C. Gorden growth model
D. none of these

7. Which of the following are the advantages of the H Model?
A. No biasedness
B. Consistency
C. Sign of maturity
D. All of the above

8. In…….. model ignores the problems linked with the growth rate dropping precipitously from the high growth to the stable growth phase, but it does so at a cost.
A. The H Model
B. The Two stage growth model
C. Three stage growth model
D. None of the above

9. In …… method of stock valuation where the valuation is done on the basis of the sum of future dividend received by the stakeholders and discounting the future dividend according to the present value.
A. Gordon Growth Model
B. Two stage growth model
C. Dividend Discount Model
D. None of the above

10. The…… assumes that in present the money will worth more than the money will worth tomorrow.
A. Intrinsic value
B. Equity Enterprise Model
C. Time value of money
D. None of the above

11. It is the different form of dividend discount model under the discounted cash flow model in which the cash flow is divided into two phases and differs how the growth rate is defined in two stages. Which model is this?
A. Dividend Discount Model

B. Two stage growth model
C. Three stage growth model
D. H Model

12. The……model is that the dividend rate remains the same and there will be no growth in the dividend rate.
A. Zero growth model
B. Two stage model
C. both a) and b)
D. None of the above

13. The two-stage dividend discount model which comprises of the two parts and assumes that the dividends will go through two stages of growth.
A. The dividend grows by a constant rate for the set amount of time.
B. The dividend is assumed to grow at a different rate for the remainder of the company's life.
C. Both the options are true
D. none of the above

14. In …… model, the dividends it distributes to shareholders every year are easily quantifiable, so its stock can be valued based on the amount of dividend income an investor can reasonably it expect over time.
A. The H model
B. Two stage growth model
C. Three stage growth model
D. none of the above

15. Which is/are the assumptions of the dividend discount model?
A. The dividend per share remains constant forever, that imply the growth rate is nil.
B. The dividend per share grows at the constant rate per year forever.
C. The dividend per share grows at the constant rate for the finite period, followed by the constant normal rate of growth forever thereafter i.e., two-stage model
D. All of the above

Answers for Self Assessment

1.	C	2.	C	3.	A	4.	D	5.	D
6.	A	7.	D	8.	A	9.	C	10.	C
11.	D	12.	A	13.	C	14.	C	15.	D

Review Questions

1. What do you understand by the dividend discount model? What are the different approaches of the dividend discount model?
2. What is the zero growth models? Explain it with the help of the formula?
3. Explain the constant growth model with the help of the example.
4. What do you understand by two stage growth model? Write its limitations.
5. Explain the three stage growth model? Explain it with the help of the formula.
6. What is H Model of discount model?
7. What are the various advantages and limitations of H Model?

Further Readings

- https://efinancemanagement.com/investment-decisions/zero-growth-model
- https://www.dividend.com/dividend-education/the-three-stage-dividend-discount-model/
- https://www.researchgate.net/publication/228180577_The_Dividend_Discount_Model/link/02e7e52a9f6097e78e000000/download
- https://pages.stern.nyu.edu/~adamodar/pdfiles/valn2ed/ch13.pdf

Unit 06: Other DCF Models

CONTENTS

Objectives

- Understand the concept of Free cash flow to equity model
- Explain the adjusted present value method with the help of a formula.
- Discuss the economic profit model with the help of an example
- Analyze the equivalence of the Enterprise DCF Model and EP Model

Introduction

Discounted cash flow (DCF) is a valuation method used to estimate the value of an investment based on its expected future cash flows. DCF analysis attempts to figure out the value of an investment today, based on projections of how much money it will generate in the future. This applies to the decisions of investors in companies or securities, such as acquiring a company or buying a stock, and for business owners and managers looking to make capital budgeting or operating expenditures decisions.

6.1 What Is Free Cash Flow to Equity (FCFE)?

Free cash flow to equity is the measure of how much cash is available to the equity shareholders of the firm after all the expenses, reinvestment, and debt are paid. FCFE is the measure of equity capital usage.

6.2 Understanding Free Cash Flow to Equity

The Free cash flow to equity is composed of net income, capital expenditures, working capital, and debt. Net income is located on firm income statement. Capital expenditures can be found within cash flows from the investing section on the cash flow statement.

Working capital is also found on the cash flow statement; however, it is in cash flows from the operations section. In general, working capital represents difference between the firm's most current assets and liabilities.

It includes:

- The measure of equity cash usage, free cash flow to equity calculates how much the cash is available to equity shareholders of a firm after all expenses, reinvestment, and debt are paid.
- The Free cash flow to equity includes net income, capital expenditures, working capital, and debt.
- The FCFE metric is sometimes used by analysts in an attempt to determine the value of the company.
- FCFE, as the method of valuation, gained popularity as the alternative to dividend discount model (DDM), especially for cases in which a firm does not pay a dividend.

The formula of FCFE, is

FCFE = (Profit after tax – Preference Dividend)

- (Capital expenditure – Depreciation)

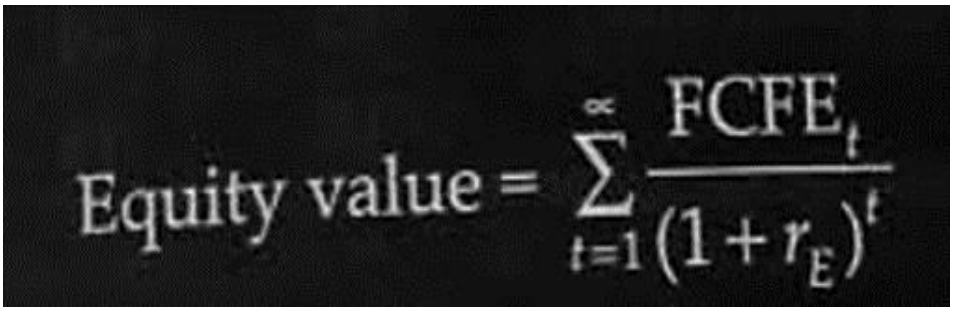
- (Change in the net working Capital)

+ (Net Debt issue -Debt Repayment)

+ (Net preference issue – Preference repayment)

- (change in investment in the marketable securities)

Equity value is the present value of FCFE stream, where discounting rate is cost of equity.



The FCFE model assumes that FCFE will be paid out to shareholders. This means that there is no surplus cash build-up in the company. So, expected growth in the FCFE will reflect only the growth in the income from operating assets.

Example: Let's take an example of Munish Limited for the year3, the year that has just ended, and for the next five years, years 4 through 8.

	3	4	5	6	7	8
Profit after tax	24	29	28	32	38	40
Preference Dividend	-	-	-	-	-	-
Fixed Assets (net)	190	220	240	266	294	324
Investments	25	10	-	-	-	-
Net Current Assets	70	75	88	90	100	109

Debenture	134	140	150	161	177	192
Preference	-	-	-	-	-	-

FCFE forecast for explicit forecast period, years 4 through 8, is worked as below:

	4	5	6	7	8
(Profit after tax – Preference Dividend)	29	28	32	38	40
- (Capital exp. – Dep.)	-30	-20	-26	-28	-30
- (change in net current assets)	-5	-13	-2	-10	-9
+ (net debt issue – Debt repayment)	+6	+10	+11	+16	+15
- (change in investment in marketable securities)	+15	+10	-	-	-
FCFE	15	15	15	16	16

To clearly go through this table remember the following identities:

Change in net fixed assets = Capital expenditure – Depreciation

Change in debt = Net debt issue – Debt repayment

If we assume that FCFE grows at the constant rate of 10 percent per year after explicit forecast period, the equity value using the FCFF valuation method can be calculated as follows:-

$$\text{Equity Value}_3 = \frac{FCFE_4}{(1+r_E)^1} + \frac{FCFE_5}{(1+r_E)^2} + \frac{FCFE_6}{(1+r_E)^3} + \frac{FCFE_7}{(1+r_E)^4} + \frac{FCFE_8}{(1+r_E)^5} + \frac{FCFE_9}{(r_E - 0.10)} \times \frac{1}{(1+r_E)^5}$$

Plugging the FCFE estimates and the cost of equity ($r\text{-}_e$) value of 15 percent, we get: -

$$\text{Equity value}_3 = \frac{15}{(1.1827)} + \frac{15}{(1.1827)^2} + \frac{15}{(1.1827)^3} + \frac{16}{(1.1827)^4} + \frac{16}{(1.1827)^5} + \frac{16(1.08)}{(1.1827 - 0.10)} \times \frac{1}{(1.1827)^5}$$

$$= 139.51 \text{ million}$$

6.3 Adjusted Present Value Model

The adjusted present value is net present value (NPV) of the project or firm if financed solely by the equity plus the present value (PV) of any financing benefits, which are the additional effects of debt. By taking this into account financing benefits, APV includes tax shields like those provided by deductible interest.

This is relevant when the capital structure of the company remains more or less constant over time, the adjusted present value is more accurate.

The Formula for APV Is

Adjusted Present Value = Unlevered Firm Value + NE

where:

NE = Net effect of debt

The net effect of debt includes tax benefits that are created when the interest on a company's debt is tax-deductible. This benefit is calculated as the interest expense times the tax rate, and it only applies to one year of interest and tax. The present value of the interest tax shield is therefore calculated as:

(tax rate * debt load * interest rate) / interest rate.

How to Calculate Adjusted Present Value (APV)

To determine the adjusted present value there are some steps involved and these steps are discussed as below: -

Step 1:- Having estimate the present value of cash flow, during planning period:-

The planning period cash flow comprises of the unlevered equity free cash flow to company is obtained as follows:-

Net operating income

-Taxes

-Net operating profit less adjusted taxes

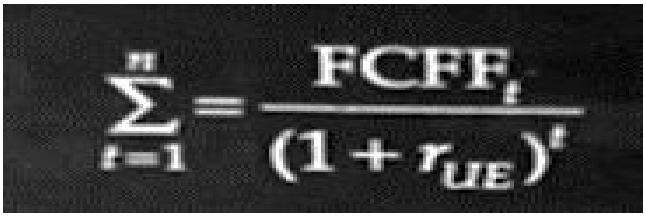
+Depreciation expense

- Capital expenditure

- Increase in the net working capital

= Unlevered equity-free cash flow

The present value of unlevered equity free cash flow during planning period is: -



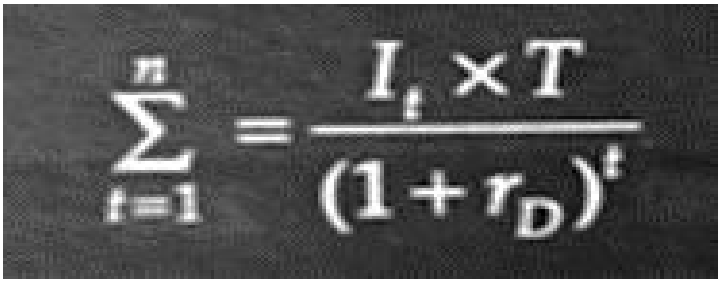
Where,

FCFF= Free cash flow to company for the year t,

r_{UE}= cost of unlevered equity,

n = planning period.

The present value of interest tax shield during planning period is:



Where,

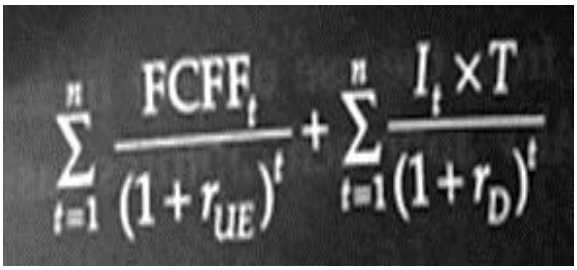
I_{t} = interest expense for the period t,

T = tax rate,

R_D = company's borrowing rate,

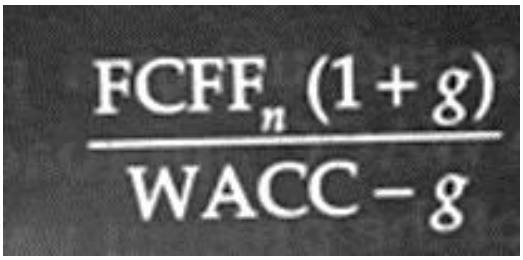
n = planning period.

The present value of cash flow during the planning period is: -



Step 2: - Estimating the terminal value of the company of planning period:

The terminal value of the company at the end of the planning period is: -



Where,

FCFF = Free cash flow to company at the end of planning period,

g = perpetual growth rate in FCFF beyond the planning period,

WACC = weighted average cost of capital beyond the planning period.

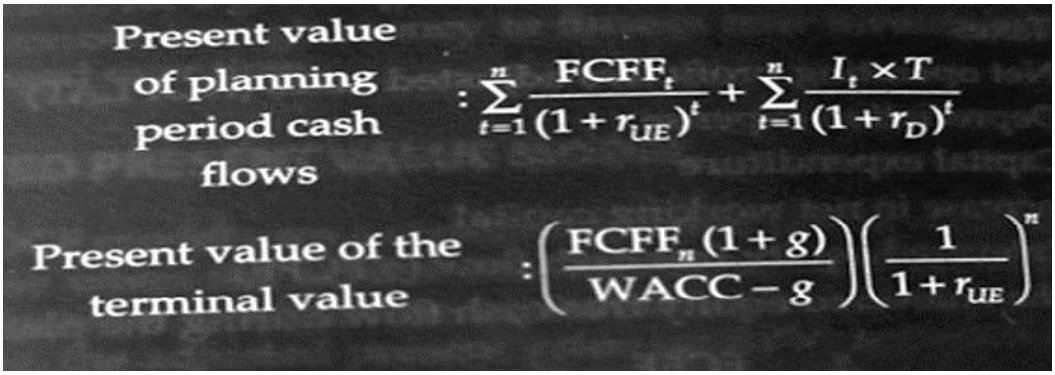
Note: - This formula for the terminal value of the company at the end of the planning period assumes that:

a) After the planning period, capital structure of company remains constant.

b) Company's cash flows beyond year n would grow at the constant rate of g which is less than WAC C.

Step 3: - Adding the present value of the cash flows during planning period and terminal value: -

The enterprise value, as per the APV approach, sum of the following: -



6.4 Economic Profit Model

Enterprise DCF model is endorsed by the academics and practitioners alike because it focuses on the cash flows in and out of the firm. However, it has the shortfall in sense that the cash flow of a single year hardly provides any insight into performance of a company. 15. While it produces the valuation that is identical to that of enterprise DCF model, it also gives a clear picture of how and where the company creates value.

The Economic profit is normally the surplus left after making the appropriate charge for a capital invested in the business. The EP of the single period is defined as: -

$$EP = IC\times (ROIC - WACC)$$

Where,

IC = invested capital,

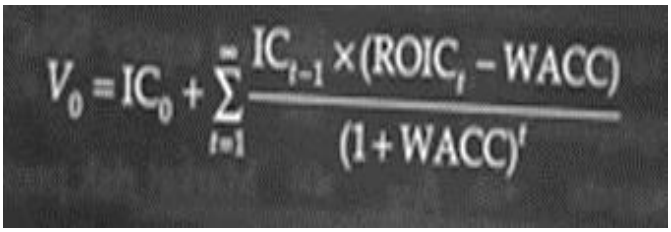
ROIC = Return on invested capital,

WACC = Weighted Average Cost of Capital,

As ROIC is equal to NOPLAT (net operating profit less adjusted taxes) divided by IC, which can be rewrite as:-

$$EP = NOPLAT - IC \times WACC$$

According to the EP model, value of the company (V_0) is current invested capital added to the present value of future economic profit stream. In symbols



6.5 Equivalence of Enterprise DCF model and the EP Model

The question arises, how does valuation as per EP model compare with the valuation as per the enterprise DCF model? The economic intuition tells us that two models should lead to the identical valuation. Indeed, this is true.

Example: - Omega Limited has invested capital of 50 million. Its return on invested capital is 12 percent and the weighted average cost of capital is 11 percent. This expected growth rate in Omega's invested capital will be 20 percent for first three years, 12 percent for the following 2 years, and 8 percent thereafter for ever. The forecast of Omega's free cash flow is given as below: -

Year	1	2	3	4	5	6	7
Invested Capital	50	60	72	86.4	96.77	108.38	117.06
NOPLAT	6	7.2	8.6	10.4	11.6	13	14.05
Net Investment	10	12	14.4	10.37	11.6	8.67	9.36
Free Cash Flow	(4)	(4.8)	(5.76)	-	-	4.33	4.69
Growth Rate (%)	20	20	20	12	12	8	8

The present value of free cash flow (FCF) during the planning period is: -

$$PV(FCF) = \frac{-4.00}{(1.11)} + \frac{-4.80}{(1.11)^2} + \frac{-5.76}{(1.11)^3} + \frac{0}{(1.11)^4} + \frac{0}{(1.11)^5} + \frac{4.33}{(1.11)^6} = 9.4 \text{ million}$$

The horizon value At end of six years, applying the constant growth model, is:

$$V_H = \frac{FCF_{H+1}}{WACC - g} = \frac{4.68}{0.11 - 0.08} = 156.0 \text{ million}$$

The present value of V_H is:

$$\frac{156.0}{(1.11)^6} = 83.4 \text{ million}$$

Adding the present value of the free cash flow during the planning period and the present value of horizon value, gives the enterprise DCF value:

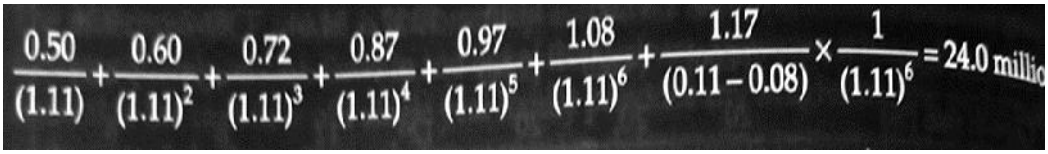
$$V_0 = -9.4 + 83.4 = 74.0 \text{ million}$$

Let us now value of Omega Limited using EP approach under the same set of assumptions. The projected EP_s for 7 years are shown as below: -

Year	1	2	3	4	5	6	7

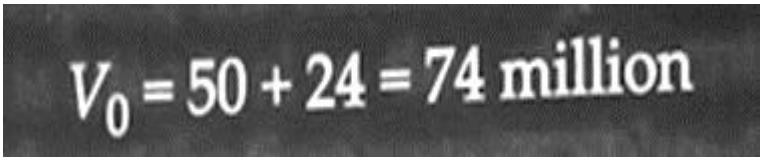
Invested capital	50	60	72	86.4	96.77	108.38	117.05
NOPLAT	6	7.2	8.64	10.37	11.61	13	14.05
Cost of Capital	11	11	11	11	11	11	11
EP	5.5	6.6	7.92	9.5	10.64	11.92	12.88
Growth Rate (%)	20	20	20	12	12	8	8

The present value of the EP stream is:



$$\frac{0.50}{(1.11)}+\frac{0.60}{(1.11)^2}+\frac{0.72}{(1.11)^3}+\frac{0.87}{(1.11)^4}+\frac{0.97}{(1.11)^5}+\frac{1.08}{(1.11)^6}+\frac{1.17}{(0.11-0.08)}\times\frac{1}{(1.11)^6}=24.0\ \text{millio}$$

Now, summing up the invested capital to the present value of EP stream gives enterprise value:



$$V_0 = 50 + 24 = 74 \text{ million}$$

Thus, the models lead to the identical valuation.

Summary

- The free cash flow to equity model discounts the free cash flow to equity (FCFE) at levered c cost o equity. The FCFE is cash flow left for equity shareholders after the company has provided for its capital expenditure and working capital needs and met all its obligations toward the lender and the preference shareholders.
- The adjusted present value (APV) model discounts the unlevered equity cash flow (which is same as the free cash flow to company) at the unlevered cost of equity and adds the discounted value of interest tax shield on debt.
- The economic profit model discounts the economic profit stream at the weighted average cost of capital and adding to the current invested capital.
- The FCFE model assumes that FCFE will be paid out to shareholders. This means that there is no surplus cash build-up in the company. So, expected growth in the FCFE will reflect only the growth in the income from operating assets.

Keywords

- Free cash flow to equity: Free cash flow to equity is a measure of how much cash is available to the equity shareholders of a company after all expenses, reinvestment, and debt are paid. FCFE is a measure of equity capital usage.

- Adjusted Present Value: - The adjusted present value is net present value (NPV) of company if financed solely by equity add to the present value (PV) of any financing benefits, which are the additional effects of debt.
- Economic Profit Model: - Economic value added (EVA), also known as the economic profit, aims to calculate the true economic profit of the firm. EVA is used to measure the value the firm generates from funds invested in it.

Self Assessment

1. …….. is the measure of how much cash is available to the equity shareholders of the firm after all the expenses, reinvestment, and debt are paid. FCFE is the measure of equity capital usage.

A. Free cash flow to equity model
B. Internal rate of return
C. Economic Profit model
D. None of these

2. The Free cash flow to equity is composed of

A. Net income
B. Capital expenditures
C. Working capital, and debt
D. All of the above

3. The formula of working capital includes:

A. Current Assets
B. Current Liabilities
C. Both a) and b)
D. None of the above

4. ……as the method of valuation, gained popularity as the alternative to dividend discount model (DDM), especially for cases in which a firm does not pay a dividend.

A. Adjusted present value method
B. Free cash to equity model
C. EP model
D. None of the above

5. The FCFE model assumes that FCFE will be paid out to ……

A. Shareholders
B. Creditors
C. Suppliers
D. None of the above

6. The formula of, Change in net fixed assets is equal to

A. Depreciation – Capital expenditure
B. Capital expenditure – Depreciation
C. Value of Capital employed
D. None of the above

7. In which model net present value (NPV) of the project or firm if financed solely by the equity plus the present value (PV) of any financing benefits, which are the additional effects of debt
A. Free cash flow to equity
B. Adjusted Present Value
C. Economic Profit model
D. None of the above

8. The formula of APV, Adjusted Present Value =
A. Unlevered Firm Value + NE
B. Unlevered Firm -NE
C. Net capital employed
D. None of the above

9. The net effect of debt includes ……..that are created when the interest on a company's debt is tax-deductible.
A. Tax benefits
B. Capital employed
C. Net income
D. None of the above

10. …….. is endorsed by the academics and practitioners alike because it focuses on the cash flows in and out of the firm.
A. Adjusted Present Value Model
B. Enterprise DCF Model
C. Capital Asset Pricing Model
D. None of the above

11. IC× (ROIC – WACC) is equal to
A. Free Cash Flow to equity
B. Capital Asset Pricing Model
C. Enterprise Profit Model
D. None of the above

12. The other name of the economic profit model
A. Time value of money
B. Economic value method
C. Capital revenue

D. None of the above

13. …….. is used to measure the value the firm generates from funds invested in it.

A. Economic value added

B. Capital expenditure

C. Both a) and b)

D. None of the above

14. The present value of the interest tax shield is therefore calculated as: (tax rate * debt load * interest rate) / x. What is the value of x?

A. Tax rate

B. Inflation rate

C. Interest rate

D. None of the above

15. The …… free cash flow can deteriorate performance or investment for the future returns. In this way, economic profit model is more informative.

A. Increasing

B. Declining

C. Either a) or b)

D. None of the above

Answers for Self Assessment

1.	A	2.	D	3.	C	4.	B	5.	A
6.	B	7.	B	8.	A	9.	A	10.	B
11.	C	12.	B	13.	A	14.	C	15.	B

Revision Questions

1. Explain the concept of free cash flow to equity?
2. How do you measure free cash flow to equity and explain with the help of an example?
3. Define the Adjusted Present value Model?
4. Explain the APV with the help of the formula?
5. What do you mean by economic profit? How can the value of company be defined under the EP model?

Further Readings

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- https://www.managementstudyguide.com/calculating-free-cash-flow-to-equity.htm

- https://corporatefinanceinstitute.com/resources/knowledge/valuation/adjusted-present-value-apv/
- https://strategiccfo.com/articles/valuations/adjusted-present-value-apv-method-of-valuation/

Unit 07: Relative Valuation-I

CONTENTS

Objectives

- Understand the steps involved in relative valuation
- Explain the concept o f the equity valuation multiple
- Discuss the concept of Price to earnings multiple
- Explain the Price to book valuation multiple
- Explain the Price to Sales multiple
- Explore the essence of relative valuation
- Discuss the difference between relative valuation sand absolute valuations

Introduction

It is the business valuation method that compares the firm's value to that of its competitors or industry peers to assess the company's financial worth. Relative valuation methods can be considered as an alternative to absolute value models, which try to determine the firm's intrinsic worth based on its estimated future free cash flows discounted to their present value, without any

reference to another company or industry average. Like absolute value models, investors may use relative valuation models when determining whether a company's stock is a good buy

In simple words, it is:-

- A relative valuation model that compares the company's value with that of its competitors to determine the company's financial worth.
- One of the most considerable relative valuation multiples is the price-to-earnings or (P/E) ratio.
- The relative valuation model is the model that differs from the absolute valuation model which does not mean any other firm or the industry average.
- A relative valuation model can be used to calculate the value of a company's stock price compared to other companies or the industry average.

7.1 Steps involved in Relative Valuation

Relative Valuation has 3 steps.

1. Finding companies similar to the subject company
2. Standardizing prices We cannot compare the price per share because it is the arbitrary number. If stock were to split, the price per share would halve. So, we use the multiple. By dividing the price by earnings or by book value, we obtain a standardized price.
3. Controlling for those differences. The target firm might still be different from other companies in terms of growth and risk in cash flows which need to be adjusted for.

Steps on the basis of multiples

Any relative valuation considers the multiple comprising of a numerator and the denominator. In the numerator, we see one of 3 numbers – the market value of equity (market cap), the market value of the firm (market cap + market value of debt), or enterprise value (market cap + market value of debt – cash). The numerator always takes some measure of market value. With the denominator, we can divide the market value number by revenue or any of the drivers of revenue.

There are several advantages of using the revenue, it being the positive number helping us to always be able to find the multiple. The drivers of revenue may be several clients for subscription businesses and such. We can also use the measure of earnings like net income or operating income for equity and firm respectively. Similarly, we may use the cash flows in the denominator, using FCFE or FCFF. We can also use the book value in the denominator, using the book value of equity or the firm.

Using a multiple involves a 4-step process.

1. Defining the multiple.

The first consideration on a multiple is the stability of its definition, i.e. if the numerator of the multiple is the equity value, the denominator has to be the equity value as well. The same goes for firm values.

The second consideration should be on the uniformity of estimation of the multiple. If we are using multiple values of 15 firms, we need to be measure the same thing. The common multiple used is the price-to-earnings ratio. However, the "earnings" portion of that multiple is an accounting number and we know the same accounting standards may result in different degrees of fidelity to those standards.

The PE may use the earnings from the most recent financial year or the trailing twelve months. The earnings could be before or after extraordinary items. The earnings can be primary, partially diluted, or fully diluted. What analysts use is normally the story they are trying to sell. Similar problems persist with other widely used ratios like EV/EBITDA. Accounting numbers pose a threat that companies with conservative estimates of earnings look expensive and aggressive ones look cheap.

1. **Describing the multiple.**

This is the analysis where we can find the basic statistical data like average and standard deviation. Most of the multiple data is asymmetrical. Most ratios like PE, and EV/EBITDA are positive for healthy companies. So, minimum is pegged to zero. But PE ratios can be as high as 100 or even 300 for some firms due to which the averages get pulled out by the large positive outliers. So, the median makes more sense while talking about the multiple. Also, when such ratios are negative, we need to drop the firms from our data set. As of 30 Nov 2018, 21% of Indian listed companies had the negative PE ratio. That's losing a lot of data. Also, we are creating a bias in a sample by ignoring the smallest, risky, and most troubled firms.

Drivers of multiple.

The questions that we are trying to answer here are

(a) What are the variables that determine this multiple and

(b) How does a change in those variables change a multiple?

Again, taking PE ratios as the example. We know that the high-growth companies have the high PE ratios. So, what is the change in PE for a 1% change in the growth? If we can't answer this question, then we cannot scale our multiples for our specific firms. The simplest way to do that is to use the stable growth dividend discount model for determining the price, and then substitute this mathematical term for the price in the relative valuation multiple.

2. Apply the multiple.

To apply this multiple we need to find out the comparable firms. The lexical way of doing this is to compare the firms in same sector. Reliance is the refinery but is there any refinery company that is remotely close to Reliance? From a valuation perspective, a comparable company is one with similar cash flows, similar growth, and similar growth. There is no need to consider the sector. However, no matter how careful are, there will be differences between target company and sample companies. We need to find out the creative ways of controlling those differences.

 For example, since high-growth firms have high growth rates, we can divide the PE ratio by growth rate which is called the PEG ratio.

So, one needs to be creative about the Relative Valuation. Don't just compare the multiples with the average for the sector. We need to consider data, look across the sector, and not throw away information. Some statistical analysis enables us to make the better judgments about why differences in firms translate into the differences in multiples. If we are able to do that, multiples are excellent tools to have in the arsenal.

General steps are:-

It basically involves the following steps: -

1. Analyze the subject company

To start the process, an in-depth analysis of the competitive and financial position of the subject firm (the firm to be valued) must be conducted. The key aspects to be covered in this analysis are as follows: -

- Product portfolio and market segments covered by the company.
- Availability and cost of inputs
- Technology and production capability
- Market image, distribution reach, and customer loyalty
- Product differentiation and economic cost position
- Managerial competence and drive
- Quality of human resources
- Competence dynamics
- Liquidity, leverage, and access to funds
- Turnover, margins, and return on investments

2. Select Comparable Companies

After the subject company is studied, the next step is to select firms that are similar the subject firm in terms of the lines of business, nature of markets served, the scale of operations, and so on. Often, it is hard to find truly comparable firms because companies that are engaged in the variety of businesses, that serve different market segments and have varying capacities. Hence, in practice, the analyst has to make do with firms which are comparable in some ways. He should make every effort to look carefully at 10 to 15 firms in the same industry and select at least 3 to 4 which come 'as close as possible to the subject firm. Understandably, a good deal of subjective judgment is involved in this process.

3. Choose the Valuation Multiple(s)

The number of valuation multiples are used in practice. They may be divided int two broad categories:

a) Equity valuation multiples (price-earnings ratio, price-book value ratio, and price-sales ratio), and

b) Enterprise valuation multiples (EV-EBITDA ratio, EV-RCFF ratio, EV-book value ratio, and EV-sales ratio).

So, none of the valuation multiples is perfect, it makes sense to use two to three multiples that seem appropriate for task on hand. Normally, the valuation multiples used in the enterprise valuation are EV-EBITDA ratio, EV-book value ratio, and EV-sales ratio).

4. Calculate the Valuation Multiples for the Comparable Firms

Based on the observed financial attributes and value of comparable firms, calculate the valuation multiples for them.

To illustrate, suppose that there are two comparable firms, P and Q, with the following financial numbers.

	P	Q
Sales	3000	5000
EBITDA	500	800
Book value of assets	2000	3000
Enterprise value	4000	5600

The valuation multiples for the firms are:-

	P	Q	Average
EV-EBITDA	8.0	7.0	7.5
EV-book value	2.0	1.87	1.94
EV-sales	1.33	1.12	1.23

5. Value the subject firm

Provided the observed valuation multiples of the comparable firms, the subject firm may be valued. The simple way to do is to apply the average multiples of the comparable firms to the relevant financial attributes of the subject firm and obtain the several estimates (as many companies and then take their arithmetic average.

7.2 Equity Valuation Multiples

The commonly used equity valuation multiples are: -

Price-to-earnings (P/E) multiple, price-to-book value (P/B) multiple, and price-to-sales (P/S) multiple.

7.3 P/E (Price to Earnings) Multiple

In the first edition of seminal work Security Analysis, published in 1934, Benjamin Graham and David L. Dodd described equity valuation based on price-to-earnings (P/E) multiple as the standard method in that time. The P/E multiple continues to be most famous valuation measure even today.

A widely used valuation ratio, the P/E multiple is generally defined as follows: -

P/E multiple = Market price per share / Earnings per share

As the numerator of this multiple is the current market price per share, the denominator4 of this multiple may be earnings per share (EPS) for the previous financial year or the EPS for the trailing 12 months or the expected EPS for the current year or the expected EPS for the following year. In the most common version, it is measured as the expected EPS for current year. So, the price-earnings multiple can be expressed as follows: -

$$\frac{P_0}{E_1}$$

Where P_0 = current market price per share

E_1 = expected earnings per share a year from now.

Fundamental Factors of the P/E multiple

$$P_0 / E_1 = \frac{(1-b)}{r - \text{ROE} \times b}$$

Where,

(1-b) = dividend payout ratio

r = cost of the equity

ROE = return on equity

b = the plough back ratio

Example:- Omega company's ROE is 18 percent and the cost of equity is 15 percent. Omega's dividend payout ratio is 0.4 and its plough back ratio is 0.6. So, from the fundamental point of view, Omega's P/E multiple is

$$P_0 / E_1 = \frac{0.4}{0.15 - 018 \times 0.6} = 9.52$$

Needs of using P/E Ratio

The earning power that is the major driver of investment value and hence EPS looms large in the security valuation. The survey of AIMR members found that earnings ranked first among the four variables – earnings, cash flow, book value, and dividends – as the input in the equity valuation.

Drawbacks of the P/E Ratio

1.The empirical research suggests that the low P/E, arising from the following features of EPS:

2.When the EPS is negative, P/E does not make any economic sense.

3.The components of earnings often have volatile, non-recurring components, the task of the analyst becomes difficult.

4.Management has some discretion to manipulate EPS within the framework of the acceptable accounting practices.

7.4 P/B (Price to Book Value) Multiple

As similar to the P/E ratio, the price to book value multiple has been used for a long time by the investment analysis. What price should the investors pay for the firm's equity shares? If the goal is to unearth high-growth firms selling at low-growth prices, the price-to-book ratio (P/B) offers investors an effective approach to finding undervalued companies.

The P/B ratio can also help the investors to identify and avoid overvalued companies. However, this ratio has its limitations and there are circumstances where it may not be the most effective metric for valuation.

It means:

- The Investors use the price-to-book value to gauge whether the firm's stock price is valued properly.
- A P/B ratio of one means that the stock price is trading in line with the book value of the firm.
- A P/B ratio with lower values, particularly those below one, signals to the investors that the stock may be undervalued.
- A P/B ratio that's greater than one means that the stock price is trading at a premium to the company's book value.

7.5 How the Price-to-Book (P/B) Ratio Works

Price-to-book value (P/B) is the ratio of the market value of a firm's shares (share price) over its book value of the equity. The book value of equity, in turn, is the value of the firm's assets expressed on the balance sheet.

Book value = book value of assets - book value of liabilities

Investors use the price-to-book value to gauge whether the stock is valued properly. A P/B ratio of one means that the stock price is trading in line with the book value of the company. In simple words, the stock price would be considered fairly valued, strictly from the P/B standpoint. A

company with the high P/B ratio could mean the stock price is overvalued, while a company with a lower P/B could be undervalued.

However, the P/B ratio should be compared with firms within the same sector. The ratio is higher for some industries than others. So, it's important to compare it to firms with the similar makeup of assets and liabilities.

A P/B ratio analysis is an important part of an overall value investing approach. Such an approach inherently assumes that the market is somewhat inefficient and therefore, at any given time, companies are trading for significantly less than their actual worth.

7.6 How to Calculate the Price-to-Book (P/B) Ratio

The P/B ratio can be calculated as follows:

$$P/B\ ratio = \frac{market\ price\ per\ share}{book\ value\ per\ share}$$

In order to calculate the P/B Ratio, the following information is needed:

- Market price of stock
- Total amount of the assets from balance sheet
- Total amount of the liabilities from the balance sheet
- Total number of outstanding equity shares from shareholders' section of the balance sheet

First, we need to calculate the book value per share, which is in the denominator of P/B ratio formula. As stated earlier, we know that the book value equals the firm's total assets minus its liabilities. To arrive at book-value-per share, divide the book value by the number of shares outstanding, as shown in the formula below.

Book value per share = (assets - liabilities) / number of shares outstanding

To calculate the P/B ratio, market price of the stock is divided by the book value per share.

7.7 Criticisms of the Price-to-Book (P/B) Ratio

Although the P/B ratio can help investors identify which companies might be overvalued or undervalued, the ratio has its limitations.

1. Intangible Assets

Book value ignores the intangible assets like the firm's brand name, goodwill, patents, and other intellectual property. That means it does not carry much meaning for service-based firms with few tangible assets.

For example, bulk of Microsoft's asset value is determined by its intellectual property rather than its physical property. As the result, Microsoft's share value bears little relation to its book value.

2. Debt Levels

Book value does not offer insight into the firms that carry high debt levels or sustained losses. Debt can boost the firm's liabilities to the point where they wipe out much of the book value of its hard assets, creating artificially high P/B values.

Highly leveraged companies, like cable and wireless telecommunications companies, have P/B ratios that understate their assets. For companies with a string of losses, book value can be negative and, hence, meaningless.

3. Asset Values

Behind-the-scenes, non-operating issues can impact the book value so much that it no longer reflects the real value of the assets.

First, the book value of an asset reflects its original cost, which is not the informative when assets are aging.

Second, the value of assets might deviate significantly from market value if the earnings power of the assets has increased or declined since they were acquired. Inflation–or rising prices–alone may well ensure that the book value of assets is less than the current market value.

At the same time, firms can boost or lower their cash reserves, which, in effect, changes book value but with no change in operations.

For example, if a company chooses to take cash off the balance sheet, placing it in reserves to fund the pension plan, its book value will drop. Share buybacks also distort the ratio by reducing the capital on a company's balance sheet.

4. Capital Intensive Industries

The P/B ratio is only considered useful in practice when applied to the capital-intensive businesses, like energy or transportation firms, large manufacturers, or financial businesses with a significant amount of assets on their books.

7.8 P/S (Price to sales) multiple

The price-to-sales (P/S) ratio shows that how much investors are willing to pay per rupee of sales for the stock.

7.9 What Is the Price-to-Sales (P/S) Ratio?

The price-to-sales (P/S) ratio is the valuation ratio that compares a firm's stock price to its revenues. It is the indicator of the value that the financial markets have placed on each rupee of a firm's sales or revenues.

It includes: -

- The P/S ratio is calculated by dividing the stock price by the underlying company's sales per share.
- The low ratio could imply the stock is undervalued, while the ratio that is higher-than-average could indicate that the stock is overvalued.
- One of the downsides of the P/S ratio is that it doesn't take into account whether the company makes any earnings or whether it will ever make earnings.

7.10 Understanding the Price-to-Sales (P/S) Ratio

The P/S ratio is the key analysis and valuation tool for the investors and analysts. The ratio shows how much investors are willing to pay per rupee of sales. It can be calculated either by dividing the firm's market capitalization by its total sales over the designated period (usually twelve months) or on a per-share basis by dividing the stock price by sales per share. The P/S ratio is also known as a sales multiple or revenue multiple.

Like all ratios, the P/S ratio is the most relevant when used to compare firms in the same sector. A low ratio may indicate the stock is undervalued, while the ratio that is significantly above the average may suggest overvaluation.

How to determine the P/S Ratio?

To determine the P/S ratio, one must divide the current stock price by the sales per share. The current stock price can be found by plugging the stock symbol into any major finance website. The sales per share metric is calculated by dividing a firm's sales by the number of outstanding shares.

$$\text{P/S Ratio} = \frac{MVS}{SPS}$$

Where: -

MVS=Market Value per Share

SPS=Sales per Share

Drawbacks of the P/S Ratio

1. The P/S ratio doesn't take into account whether the firm makes any earnings or whether it will ever make earnings. Comparing companies in the different industries can prove difficult as well.

For example, firms that makes the video games will have different capabilities when it comes to turning sales into profits when compared to, say, grocery retailers.

In addition, P/S ratios do not account for debt loads or the status of a firm's balance sheet. That is, a firm with virtually no debt will be more attractive than the highly leveraged company with the same P/S ratio.

2. While the P/S ratio doesn't take debt into account, the enterprise value-to-sales ratio (EV/Sales) does. The EV/Sales ratio uses the enterprise value and not market capitalization like the P/S ratio. Enterprise value adds debt and preferred shares to market cap and subtracts cash. The EV/Sales ratio is said to be superior, although it involves more steps and isn't always as readily available.

7.11 Why Is the Price-to-Sales (P/S) Ratio important to Investors?

The P/S ratio, also known as the sales multiple or revenue multiple, is a key analysis and valuation tool for investors and analysts. The ratio shows how much investors are willing to pay per rupee of sales. It can be calculated either by dividing the firm's market capitalization by its total sales over the designated period (usually twelve months) or on a per-share basis by dividing stock price by sales per share. Like all ratios, the P/S ratio is most relevant when used to compare companies in the same sector. A low ratio may indicate the stock is undervalued, while the ratio that is significantly above the average may suggest overvaluation.

So, we can conclude that relative Valuation is the method where the asset is valued not based on its fundamentals (cash flows, growth, and risk) but on what other people are paying for assets just like it. Hence, it is also called "pricing". It is the way how 90% of the valuations are done.

7.12 The Essence of relative valuation

1. In relative valuation, the value of an asset is compared to the values assessed by market for similar or comparable assets.
2. To do relative valuation then,
   - we need to identify the comparable assets and obtain market values for these assets
   - Convert these market values into standardized values since the absolute prices cannot be compared .The process of standardizing creates price multiples.
   - compare the standardized value or multiple for the asset being analyzed to standardized values for the comparable assets, controlling for any differences between the firms that might affect the multiple, to judge whether the asset is under or overvalued

7.13 Relative Valuation Model vs. Absolute Valuation Model

Relative valuation uses multiples, averages, ratios, and benchmarks to determine the company's value. The benchmark may be selected by finding the industry-wide average, and that average is then used to find out the relative value. An absolute measure, on the other hand, makes no external reference to a benchmark or average. A company's market capitalization, which is the aggregate market value of all of its outstanding shares, is expressed as the plain dollar amount and tells you little about its relative value. Of course, with enough absolute valuation measures in hand across several firms, relative inferences can be drawn.

7.14 Special Considerations

1. Estimating Relative Value of Stock

In addition to providing the gauge for the relative value, the P/E ratio allows analysts to back into the price that the stock should be trading at based on its peers.

For example, if the average P/E for the specialty retail industry is 20x, it means average price of the stock from a firm in the industry trades at 20 times its EPS.

Assume Company A trades for $50 in a market and has an EPS of $2. The P/E ratio is calculated by dividing $50 by $2, which is 25x. This is higher than the industry average of 20x, which means that Company A is overvalued. If Company A were trading at 20 times its EPS, the industry average, it would be trading for $40, which is the relative value. In other words, based on the industry average, Company A is trading at the price that is $10 higher than it should be, representing an opportunity to sell.

Because of the importance of developing the accurate benchmark or industry average, it is important to only compare firms in the same industry and market capitalization when calculating relative values.

2. Learn the Basics of Trading and Investing

Looking to learn more about trading and investing? No matter about your learning style, there are more than enough courses to get you started.

For example, With Udemy, you will be able to choose courses taught by real-world experts and learn at your own pace, with lifetime access on mobile and desktop. You'll also be able to master the basics of the day trading, option spreads, and more. Find out more about Udemy and get started today.

Summary

- The relative valuation, an asset is valued on basis of how similar assets are currently priced in market.
- The relative valuation of the firm involves the following steps:-

  a) Analyze the subject company, b) select comparable companies, c) choose the valuation multiple, d) calculate the valuation multiple for the comparable firms, e)value the subject firm.

- The generally used equity valuation multiples are : price to earnings ratio, price to book value ratio, price to sales ratio.
- The P/B ratio can also help the investors to identify and avoid overvalued companies. However, this ratio has its limitations and there are circumstances where it may not be the most effective metric for valuation.

- Price-to-book value (P/B) is the ratio of the market value of a firm's shares (share price) over its book value of the equity. The book value of equity, in turn, is the value of athe firm's assets expressed on the balance sheet.

  Book value = book value of assets - book value of liabilities

- The price-to-sales (P/S) ratio is the valuation ratio that compares a firm's stock price to its revenues. It is the indicator of the value that the financial markets have placed on each rupee of a firm's sales or revenues.
- Relative valuation uses multiples, averages, ratios, and benchmarks to determine the company's value. The benchmark may be selected by finding the industry-wide average, and that average is then used to find out the relative value. An absolute measure, on the other hand, makes no external reference to a benchmark or average.

Keywords

- **Relative valuation** – It is a kind of comparable valuation, which is very useful and effective tool in valuing an asset. Relative valuation involves the use of similar and comparable assets in valuing another asset.
- **Valuation multiples**- A valuation multiple is generally an expression of market value of an asset relative to a key statistic that is assumed to relate to that value
- **Price to earnings ratio** - The price-to-earnings ratio (P/E ratio) is the ratio for valuing the firm which measures its current share price relative to its earnings per share (EPS). The price-to-earnings ratio is also sometimes called as the price multiple or the earnings multiple.
- **Price to book value ratio** - Firms use the price-to-book ratio (P/B ratio) to compare the company's market capitalization to its book value. It is calculated by dividing the company's stock price per share by its book value per share (BVPS)
- **The price-to-sales (P/S) ratio** – It is the valuation ratio that compares the firm's stock price to its revenues.

Self Assessment

1. It is the business valuation method that compares the firm's value to that of its competitors or industry peers to assess the company's financial worth. Which model is this?

A. Relative valuation model
B. Market value valuation model
C. Assets Based Valuation model
D. None of the above

2. The most commonly used equity valuation multiples are:-

A. Price to earnings Ratio
B. Price to book value ratio
C. Price to sales ratio
D. All of the above

3. Market price per share / book value per share is the formula of:-

A. Price to book value ratio
B. Price to sales ratio
C. Price to earnings ratio
D. None of the above

4. Which of the following information is / are needed in order to calculate the P / B ratio?
A. Market price of stock
B. Total amount of the assets from balance sheet
C. Total amount of the liabilities from the balance sheet
D. All of the above

5. Which of the following are the criticisms of P / B Ratio?
A. Intangible asset
B. Debt level
C. Asset value
D. All of the above

6. $= \frac{MVS}{SPS}$ is the formula of

A. Price to book value ratio
B. Price to sales ratio
C. Price to earnings ratio
D. None of the above

7. Which of the following are the steps of relative valuation?

1. Standardizing pricing

2. Finding Comparisons

3. Controlling those differences

Which of the following sequence is correct?

A. 1,2 and 3
B. 3,2 and1
C. 2,1 and3
D. None of the above

8. For calculating the book value it requires two elements?
A. Book value of Assets
B. Book value of liabilities
C. Both a) and c)
D. None of the above

9. The ……ratio is the valuation ratio that compares a firm's stock price to its revenues. It is the indicator of the value that the financial markets have placed on each rupee of a firm's sales or revenues

A. Price to book value ratio
B. Price to sales ratio
C. Price to earnings ratio
D. None of the above

10. Using the multiple relative valuations into 4 steps and find the correct sequence of these steps?

1. Apply the multiples

2. Defining the multiples

3. Drivers of multiples

4. Describing the multiples

The options are:

A. 2,4,3,and 1
B. 1,2,3, and4
C. 3,2,1, and 4
D. None of the above

11. A …… is generally an expression of market value of an asset relative to a key statistic that is assumed to relate to that value.

A. Time value of money
B. Valuation multiples
C. Internal rate of return
D. None of the above

12. Which of the following options are correct?

I.A P/B ratio of one means that the stock price is trading in line with the book value of the company II. A relative valuation model that compares the company's value with that of its competitors to determine the company's financial worth.

The options are:

A. Only I is correct
B. Only II is correct
C. Both I and II are correct
D. Both I and II are false

13. Which of the following is correct statement about the price to sales ratio

I.A low ratio may indicate the stock is undervalued.

II. The ratio that is significantly above the average may suggest overvaluation

The options are:-

A. Only I is correct

B. Only II is correct
C. Both I and II are correct
D. Neither I nor II is correct

14. Which of the following are the drawbacks of Price to Earnings ratio?
A. The empirical research suggests that the low P/E, arising from the following features of EPS:
B. When the EPS is negative, P/E does not make any economic sense.
C. The components of earnings often have volatile, non-recurring components, the task of the analyst becomes difficult.
D. All of the above

15. Which of the factors relative valuation uses to determine the company's value?
A. Multiples
B. Averages
C. Ratio
D. All of the above

Answers for Self Assessment

1.	A	2.	D	3.	A	4.	D	5.	D
6.	B	7.	C	8.	C	9.	B	10.	A
11.	B	12.	C	13.	C	14.	D	15.	D

Review Questions

1. Explain the concept of relative valuation?
2. Discuss the steps involved in relative valuation?
3. What are the different equity valuation multiples? Explain with examples.
4. Discuss the P/B multiple with the help of example?
5. Explain the P/E multiples and formulate it.
6. What do you understand by P/S multiples and how the P/S multiples is important to investors?

Further Readings

- https://www.researchgate.net/publication/301260187_Relative_valuation.
- https://pure.port.ac.uk/ws/portalfiles/portal/5773900/PhD_Thesis_Kim_Shelbaya_Ali_ID_088766.pdf
- http://people.stern.nyu.edu/adamodar/pdfiles/country/relval.pdf
- https://media.neliti.com/media/publications/243758-relative-valuation-model-analysis-of-idx-1303505f.pdf

Unit 08: Relative Valuation-II

CONTENTS

Objectives

- Understand the concept of relative valuation
- Discuss the Enterprise Valuation Model
- Explain the EV/EBITDA Multiple
- Understand the EV/FCFF Multiple
- Discuss the EV/Sales Multiple
- Analyze the best practices using Multiples
- Explain why Relative Valuation so popular?
- Discuss the weakness of Relative Valuation

Introduction

Betsy is the financial manager at the large multinational conglomerate. The firm is undergoing restructuring and wants to sell some business units to raise funds to purchase more profitable units. She is therefore consulting with the valuation analyst, David.

Valuationinvolves calculating the price or monetary value of the asset or company. One of the most common methods is the relative valuation model.

Relative valuationtries to calculate the value of a company by comparing it with similar companies, like those in the same industry, and using the same metric. The approach assumes that

the comparable companies are correctly valued by the market. Relative valuation is the great way to see if a company is correctly priced.

8.1 What Is a Relative Valuation Model?

A relative valuation model is a business valuation method that compares a company's value to that of its competitors or industry peers to assess the firm's financial worth. Relative valuation models are an alternative to absolute value models, which try to determine a company's intrinsic worth based on its estimated future free cash flows discounted to their present value, without any reference to another company or industry average. Like absolute value models, investors may use relative valuation models when determining whether a company's stock is a good buy.

8.2 Enterprise Valuation Model

Equity multiples focus on value of equity, enterprise value multiples focus on value of the firm. The firm value is usually related to the some measures of earnings, assets, or sales. The different enterprise value multiples are: -

1. EV/EBITDA multiple
2. EV/EBIT multiple
3. EV/BV multiple
4. EV/SALES multiple

8.2.1 EV to EBITDA multiple

The mostly used multiple in company valuation, the EV-EBITDA multiple can be defined as:

The EV/EBITDA multiple answers to the question, *"For each dollar of EBITDA generated by a company, how much are investors currently willing to pay?"*

The enterprise value represents the debt-inclusive value of the firm's operations (i.e. unlevered) while EBITDA is also the capital structure neutral cash flow metric.

The EV/EBITDA multiple is widely used to benchmark firms of different degrees of financial leverage.

The formula for calculating the EV/EBITDA multiple that comprises of dividing the enterprise value of the firm by its earnings before interest, taxes, and depreciation & amortization.

The numerator, the enterprise value (EV), calculates the total value of the firm's operations, whereas EBITDA is a widely used proxy for the firm's core (i.e. unlevered) operating cash flows.

At their simplest, the two metrics can be calculated using the following formulas:

- Enterprise Value (EV) = Equity Value + Net Debt
- EBITDA = EBIT + Depreciation&Amortization

The value of the operating assets of a firm can be written as:

$$EV_0 = \frac{FCFF_1}{WACC - g}$$

¨ now the value of the firm can be rewritten as ¨

$$EV = \frac{EBITDA\,(1-t) + Depr\,(t) - Cex - \Delta\,Working\ Capital}{WACC - g}$$

Dividing both sides of the equation by EBITDA,

$$\frac{EV}{EBITDA} = \frac{(1-t)}{WACC-g} + \frac{Depr\,(t)/EBITDA}{WACC-g} - \frac{CEx/EBITDA}{WACC-g} - \frac{\Delta\ Working\ Capital/EBITDA}{WACC-g}$$

Consider a firm with the following characteristics:

Tax Rate = 36%

Capital Expenditures/EBITDA = 30%

Depreciation/EBITDA = 20%

Cost of Capital = 10%

The firm has no working capital requirements

¤ The firm is in stable growth and is expected to grow 5% a year forever. ¨

In this case, the Value/EBITDA multiple for this firm can be estimated as follows:

$$\frac{Value}{EBITDA} = \frac{(1-.36)}{.10-.05} + \frac{(0.2)(.36)}{.10-.05} - \frac{0.3}{.10-.05} - \frac{0}{.10-.05} = 8.24$$

EV/EBIT multiple

The enterprise value to earnings before interest and taxes (EV/EBIT) ratio is the metric used to determine if a stock is priced too high or too low in relation to similar stocks and the market as a whole. The EV/EBIT ratio is similar to the price to earnings (P/E) ratio; however, it makes up for some shortcomings of the latter ratio.

The EV/EBIT ratio compares the firm's enterprise value (EV) to its earnings before interest and taxes (EBIT). EV/EBIT is commonly used as the valuation metric to compare the relative value of different businesses. While similar to the EV/EBITDA ratio, EV/EBIT it incorporates depreciation and amortization.

8.3 Importance of the EV/EBIT Ratio

The EV/EBIT ratio is a very important metric for market participants. A high ratio indicates that the firm's stock is overvalued. While beneficial for the immediate sale of shares, such a situation can spell disaster when a market catches up and attaches the proper value to the company, causing share prices to plummet.

Conversely, a low EV/EBIT ratio indicates that a firm's stock is undervalued. It means that share prices are lower than what is the accurate representation of the firm's actual worth. When the market finally attaches the more appropriate value to the business, share prices and the company's bottom line should climb.

Ultimately, the lower the EV/EBIT, the more financially stable and secure a firm is considered to be. However, the EV/EBIT ratio can't be used in isolation. Analysts and investors should use the ratio alongside others to get a full picture of a firm's financial state and actual worth, whether the market's interpretation of value is accurate, and how likely the market is to correct for flawed valuation.

Formula of EV/EBIT Multiple

EV to EBIT formula = Enterprise Value / EBIT =

EV / EBIT = (Market Capitalization + Debt + Minority Interest + Preference Shares – Cash & Cash Equivalents)/EBIT

- The above formula in detail measures if a firm's share is expensive or cheap compared to the broader market or competing firm.
- This ratio is the improved version of the traditional P/E multiple that overcomes the limitations of PE ratio as it also has a balance sheet. Therefore, rather than using the company's share price, the company employs enterprise value that includes debt.

- PE ratio is the most commonly used and easiest valuation technique to measure any firm's capability to deliver profits compared to the market. This multiple is occasionally used against the P/E multiple to relate profit expansion among companies in industries having huge quantities of debt like high capital intensive businesses.
- Key analysts most often study EV/EBIT to promptly identify the company's trading valuation multiples. The large or small multiple signifies that the company is expected to be either overvalued or undervalued. Keeping all other things unchanged, the smaller this ratio comes out to be, the healthier.

EV/FCFF Multiple

The Enterprise Value (EV) to Free Cash Flow (FCF) compares company valuation with its potential to create positive cash flow statements. Here EV represents the total market value of a company's share price times the number of shares outstanding, also referred to as market cap, plus debt, minus cash. FCF represents a firm's net cash earned minus its capital expenditures.

That would be the opposite of the Free Cash Flow Yield, which was added to solve significant flaws. When considering the companies according to the FCF Yield, those with a small valuation and positive FCF will be at the top of the list. Though when the EV is in the negative, the stock drops to the bottom. Stocks that present a negative FCF and EV will probably feature at the top of the stock list. The EV/FCF ratio was created for this particular reason.

Free Cash Flow allows investors to gauge a company's ability to generate cash in addition to just looking at the net income line of an income statement.

The formula for EV/FCF is illustrated below.

EV/FCF = Enterprise Value / FCF

When the enterprise's ratio to free cash flow is low, it means the company can pay back the cost of its acquisition rather quickly. If one is comparing firms, lower multiples are higher in value as compared to higher multiples. It may also generate revenue for reinvestment in the business. The enterprise value is probably one of the accurate means of assessing the firm's value considering it would include the debt and value of the preferred shares and minority interest. Though, it is minus the cash and cash equivalent.

The other aspect when it comes to EV/FCF ratio is the value of the complete firm is taken, wherein P/E ratio, only the market price of equity is considered. It is also determined that EV/FCF is preferred when the company has a high depreciation account. The net profit decreases because of the non-cash item. That multiple has advantages for company valuation despite the capital structure.

8.4 Fundamental Determinants

From the fundamental point of view

$EV_0/FEFF_{-1} = 1/WACC-g$

Omega Limited's WACC is 10 percent and g is 8 percent. From the fundamental point of view, Omega's

$$EV_0 = 1/0.10-.08$$

$$=50$$

EV/BV Multiple

8.5 What Is Enterprise Value (EV)?

Enterprise value (EV) is a measure of a firm's total value, often used as a more comprehensive alternative to equity market capitalization. Enterprise valuation includes in its calculation the

market capitalization of a firm but also short-term and long-term debt as well as any cash on the company's balance sheet. Enterprise value is the popular metric used to value a firm for a potential takeover.

What Is Book Value?

Book value is equal to the cost of carrying an asset on a firm's balance sheet, and firms calculate it netting the asset against its accumulated depreciation. As a result, book value can also be thought of as the net asset value (NAV) of a firm, calculated as its total assets minus intangible assets (patents, goodwill) and liabilities. For the initial outlay of the investment, book value may be net or gross of expenses like trading costs, sales taxes, service charges, and so on.

EV/BV multiple can be defined as: -

Enterprise value/Book value of assets

8.6 Fundamental Determinants

From the fundamental point of view,

$EV\text{-}_0/BV_0$ = ROIC – g /WACC - g

Where ROIC is the retrun on the invested capital,

g is the growth rate, and

WACC is weighted average cost of capital

Example: -Armon company has an ROIC of 10 percent, g of 8 percent, and WACC of 9 percent. From the fundamental point of view Armon's:

$$EV_0 / BV_0 = 0.10 – 0.08/0.09 – 0.08$$

$$=0.02$$

8.2.4 EV/Sales Multiple

Enterprise value-to-sales (EV/Sales) is a financial ratio that measures a company's total value (in enterprise value terms) to its total sales revenue.

It is further simplified as the EV per a dollar of sales. It means that the higher the ratio, the more "expensive" or valuable the company is and vice versa. It is used for financial analysis and valuation strategies when researching a potential investment.

What Does the Enterprise Value-to-Sales Ratio Mean?

Investors are able to get a better idea of the cost relative to per-unit sales, which is essential when deciding whether to invest in a company. In calculating the said value, investors can better understand whether the company is overvalued or undervalued.

EV/Sales multiple is defined as: -

Enterprise Value (EV)/Sales

8.7 Fundamental Determination

From the fundamental point of view,

$EV\text{-}_0 / S_0$ = After tax operating margin(1=g) (1-Reinvestment rate) / WACC - g

Where, g is growth rate

WACC is the weighted average cost of capital.

Example: - Floral Limited's after-tax operating margin is 12 percent and growth rate is 11 percent. Its reinvestment rate is 70 percent and its WACC is 13 percent. From the

fundamental point of view, Floral's

EV_0 / S_0 = 0.12 (1.11) (1-0.7) / 0.13 -0.11

=2.00

Choice of Multiple

Different multiples produce different values, the choice of multiple can make the big difference to your value estimate. Which multiple should you use? As Aswathe Damodaran argues, you can adopt the multiple that reflects your bias (The cynical view), or use all the multiples (the bludgeon view), or pick the "best" multiple.

8.8 The Cynical View

You can choose the multiple that serves the preconceived notion. It you want to sell the business, choose the multiple that gives the highest value. While this may appear like manipulation and not analysis, that sems to be fairly common practice.

Even if you do not such perverse intentions, you should learn how to guard yourself against its consequences. First, if you delegate the task of valuation to an analyst, who will have the natural tendency to follow his biases, you should approve what he multiple and the comparable firms should be. Second, when you examine the relative valuation report, ask what would be the value, if some other multiple or different comparable were used.

8.9 The Bludgeon View

You can value the firm using the number of multiples and then arrive at the final recommendation. There are three ways of doing this. First, you can arrive at the arrange of values, generated by the various multiples. The problem here is that the range is likely to be too wide to be useful for decision making. Second, you can calculate the simple average of the various values thrown up by the different multiples. The advantage of this approach is it simplicity. However, it assigns equal weight to the values form each multiple, even though some multiples may be more appropriate than others. Third, you can calculate the weighted average – the weight assigned to each value reflecting its relative precision.

8.10 The Best Multiple

You may not like to discard any information, the best estimate the value is perhaps obtained by using the one multiple that is most appropriate for the company being valued.

There are three ways to find the best multiple. The fundamental approach suggests that we should use the variable that has the highest correlation with the company's value.

Example: - There is the high degree of correlation between current earnings and value in consumer product firms, but not in cyclical firms. So, price-earnings multiples are suited for the former, but not the latter.

The **Statistical approach** calls for regressing each multiple against the fundamental that theoretically affect the value and using the multiple with the highest R- squared.

The **Conventional approach** involves using the multiple that has become the most commonly used one for the specific situation or sector.

There are some suggestions in this regard:

- The P/E multiple is most appropriate for companies that have proven track record of positive earnings, and no significant non-cash expenses.
- The PEG multiple is more suitable for the companies for the companies that have stable EPS growth rate and risk characteristics.

- The P/B multiple is more appropriated the companies whose balance sheets reflect reasonably well the market value of their assets like banks and financial institutions.

Best practices using Multiples

The judicious use of multiples can provide valuable insights, whereas the unthinking application of multiples can result in confusion and distortion. The following best practices with respect to multiples:

- Define the multiples consistently.
- Choose comparable with similar profitability and growth prospects
- Identify the fundamental determinants.
- Use multiples that use forward-looking estimates.
- Prefer enterprise-value multiples.

Define Multiples Consistently

Make sure that the multiple is defined consistently and measured uniformly across the companies being compared.

Choose Comparable with Similar Growth and Profitability Prospects:

The Key drivers of valuation multiples are growth and profitability prospects. So, as far as possible, the comparable, whose multiples are used as the benchmarks, must have growth and profitability prospects that are similar t o the target company (the company that is being valued). Of Couse, since it is not possible to find truly comparable companies, you will have to adjust for differences between companies on the fundamental characteristics.

3.Identify the Fundamental Determinants

You should identify the fundamental determinants that determine each multiple and how variations in these fundamentals bear on the value of the multiple.

Use Multiples that use Forward looking estimates

Multiples should be based on the projected, not historical profits or cash flows. since the company's value is equal to the present value of its future cash flow, forward-looking multiples are consistent with the theory of valuation.

8.11 Prefer Enterprise-Value Multiples

The price-earnings multiple, despite its popularity, has two major shortcomings:

a. The price-earnings multiple is affected by capital structure.
b. The net profit figure (which determines the EPS) is calculated after non-operating gains and losses.
c. Thus, the non-operating gain, arising out of sale of ass5ts can multiple to the artificially low.

Assessment of Relative valuation

In the theory, discounted cash flow valuation is emphasized, but in practice most assets are valued on the relative basis. With the following: -

- Investment rules of thumb are typically stated in terms of multiples.

For example, A stock is considered cheap if its price-earnings multiple is less than the expected growth rate in earnings per share or if its price-book multiple is less than 1.

- Equity research reports are generally based on multiple, price-book multiple, and price-sales multiple. Even when discounted cash flow analysis is included, the recommendations are usually based on the valuation multiples.
- While the discounted cash flow valuation is commonly done s part of acquisition analysis, the value paid is usually determined or justified in terms of some multiple.

Why is Relative Valuation so popular?

Despite the convincing logic underlying the DCF approach to valuation, why are earnings multiples commonly used in the equity research reports and investment baking pitches?

Multiples serve as the convenient shorthand for communication and provide the useful check for valuation.

The DCF valuation requires projections about ROIC, growth, and free ash flow. Since predicting the future is a difficult task requiring subjective forecasts, analysts find it convenient to use earnings multiples. If the expected ROIC, growth and risk are similar for a given set of firms, they should command similar multiples. So, if the analyst does not have much information about the firm's expected performance, he will probably assume hat its performance will be similar to its peers and value it by applying their average multiple to its earnings.

Naively using the industry average multiple, however, can be misleading. Firms differ in terms of their growth prospects, profitability, risk, capital structure, accounting policies, and corporate governance standard factors which cause differences in the multiples. If an analyst considers all these factors in establishing the appropriate multiple, he may have to put the great deal of effort. He may as well develop the good set of cash flow forecasts.

Multiples can, however, serve as the convenient shorthand for communication, particularly when the sales pitch is short. While an analyst may do DCF Valuation, he may prefer to communicate his findings in terms of imputed multiples.

for example, he might are," company a deserves the higher multiple than company, thanks to its period growth prospects, higher profit margin, margins and lower risks." multiple can also be used as the sanity check. you can compare the firm's implied multiple with its peers and see if you can explain the difference in terms of fundamental factors.

Weaknesses of Relative Valuation

Notwithstanding its importance, relative valuation suffers from certain weaknesses.

1. As the underlying assumptions of the relative valuations are not explicitly defined, it Provides the analyst greater scope for manipulation. The analyst maybe able to justify his valuation, however biased it may be, by choosing an appropriate multiple and the comparable firm. While the potential for subjective bias exists with the DCF approach as well, the analyst there has to be much more explicit about his assumptions and has lesser scope to hie his biases in unstated assumptions.

2. The multiples used in the relative valuation approach reflect the valuation errors of the market. Thus, if software firms in general are over-valued applying the average price-earnings multiple of listed software firms to determine the value of the listed firms may lead to over-valuation. In contrast, the DCF approach is grounded on company-specific cash flows and the growth rates and hence is likely to be less affected by market valuation errors.

Summary

- A relative valuation model is a business valuation method that compares a company's value to that of its competitors or industry peers to assess the firm's financial worth.
- Equity multiples focus on value of equity, enterprise value multiples focus on value of the firm. The firm value is usually related to the some measures of earnings, assets, or sales
- The EV/EBITDA multiple answers to the question, *"For each dollar of EBITDA generated by a company, how much are investors currently willing to pay?"* The enterprise value represents the

debt-inclusive value of the firm's operations (i.e. unlevered) while EBITDA is also the capital structure neutral cash flow metric.

- The enterprise value to earnings before interest and taxes (EV/EBIT) ratio is the metric used to determine if a stock is priced too high or too low in relation to similar stocks and the market as a whole.
- The Enterprise Value (EV) to Free Cash Flow (FCF) compares company valuation with its potential to create positive cash flow statements. Here EV represents the total market value of a company's share price times the number of shares outstanding, also referred to as market cap, plus debt, minus cash

Keywords

Enterprise Valuation, Relative Valuation, Free Cash Flow, Book Value

Self-Assessment

1. A …….. model is a business valuation method that compares a company's value to that of its competitors or industry peers to assess the firm's financial worth.

A. Relative valuation
B. Asset Based valuation
C. Market Based valuation
D. None of the above

2. The different enterprise value multiples are: -

A. EV/EBITDA multiple
B. EV/EBIT multiple
C. EV/BV multiple
D. All of the above

3. ……. multiple that comprises of dividing the enterprise value of the firm by its earnings before interest, taxes, and depreciation & amortization

A. EV/EBITDA multiple
B. EV/EBIT multiple
C. EV/BV multiple
D. All of the above

4. The EV/EBIT ratio compares the firm's enterprise value (EV) to its earnings before interest and taxes (EBIT)

A. True
B. False

5. Which statement is correct.

   i) A low ratio indicates that the firm's stock is overvalued.

   ii) Conversely, a high EV/EBIT ratio indicates that a firm's stock is undervalued.

A. only
B. only
C. both i) and ii)
D. neither i) nor ii)

6. …… is a measure of a firm's total value, often used as a more comprehensive alternative to equity market capitalization.
A. Enterprise Value
B. Book value
C. Market value
D. None of the above

7. …….. is equal to the cost of carrying an asset on a firm's balance sheet, and firms calculate it netting the asset against its accumulated depreciation.
A. Enterprise Value
B. Book value
C. Market value
D. None of the above

8. The …….. Compares company valuation with its potential to create positive cash flow statements.
A. EV/EBITDA multiple
B. EV/EBIT multiple
C. EV/FCFF multiple
D. EV/SALES multiple

9. ……. is a financial ratio that measures a company's total value (in enterprise value terms) to its total sales revenue
A. EV/EBITDA multiple
B. EV/EBIT multiple
C. EV/FCFF multiple
D. EV/SALES multiple

10. The best practices during the multiples are: -

I.Define multiples consistently

II.Choose comparable with similar profitability and growth prospects

III.Identify the fundamental determinants

IV.Use multiples that use forward-looking estimates

V.Prefer enterprise-value multiples

The options are: -

A. I, II, III and IV only
B. I and II only
C. II, III and IV only

D. I, II, III, IV and V

11. Which of the following statement is true.

i) PE ratio is the most commonly used and easiest valuation technique to measure any firm's capability to deliver profits compared to the market.

ii) This multiple is occasionally used against the P/E multiple to relate profit expansion among companies in industries having huge quantities of debt like high capital intensive businesses.

A. i) only
B. ii) only
C. Both i) and ii)
D. None of the above

12. The …… is most appropriate for companies that have proven track record of positive earnings, and no significant non-cash expenses.

A. P/E multiple
B. P/B multiple
C. P/S multiple
D. None of the above

13. ……. focus on value of equity, enterprise value multiples focus on value of the firm. The firm value is usually related to some measures of earnings, assets, or sales.

A. Book value
B. Equity multiple
C. Enterprise value
D. None of the above

14. The ……. is more appropriated the companies whose balance sheets reflect reasonably well the market value of their assets like banks and financial institutions.

A. P/E multiple
B. P/B multiple
C. P/S multiple
D. None of the above

15. …… allows investors to gauge a company's ability to generate cash in addition to just looking at the net income line of an income statement.

A. Enterprise Value
B. Free Cash Flow
C. Both a) and b)
D. None of the above

Answers for Self Assessment

1.	A	2.	D	3.	A	4.	A	5.	D
6.	A	7.	B	8.	C	9.	D	10.	D
11.	C	12.	A	13.	B	14.	B	15.	C

Review Questions

1. Explain the concept of Relative valuation and the different enterprise valuation multiples?
2. Omega Company's ROIC is 20 percent and its g is 12 percent. Omega's DA is 8 percent and its tax rate is 25 percent. What is Omega's EV/EBITDA multiple?
3. Unix Company has the tax rate of 30 percent and a reinvestment rate of 70 percent. Unix's WACC is 12 percent and growth rate is 10 percent. What is UNIX's EV/EBIT multiple?
4. A Limited's WACC is 14 percent and its g is 10 percent. What is A's EV/FCFF multiple?
5. Samar company has an ROIC of 20 percent, g of 12 percent, and WACC of 15 percent. What is Samar's EV/BV multiple?
6. MS Limited's after-tax operating margin is 10 percent and growth rate is 12 percent. Its reinvestment rate is 60 percent and its WACC is 14 percent. What is MS's EV/Sales multiples?

Further Readings

https://corporatefinanceinstitute.com/resources/knowledge/valuation/ev-ebitda/

https://corporatefinanceinstitute.com/resources/knowledge/valuation/ebitda-multiple/

Unit 09: Other Non-DCF Approaches

CONTENTS

Objectives

- Understand the concept of book value approach
- Explain the stock and debt approach
- Discuss the concept of strategic approach to valuation
- Understand the guidelines for corporate valuation

Introduction

The discounted value approach and the relative valuation approach are the primary approaches used to corporate valuation. but these approaches are complex and uncertain as well so practitioners also rely on the some other approaches.So, other non DCF approaches can be used like the book value approach, the stock and debt approach, the contingent claim approach and the strategic approach.

The book value approach that applies on the information found on the balance sheet, adjusted to reflect the replacementcost. The stock and debt approach, also called as market approach, that relies on observed market values of investors claim on the company. Contingent claim approach, that is called the option valuation approach that will seek to assess the real options enjoyed by firm - it is used as supplement to conventional DCF approach. The strategic approach to valuation builds value in terms of three tranches like asset value, growth value, keeping in focus the strategic dimension of company.

9.1 Book Value approach

The simple approach to value a firm is to rely on information found on balance sheet. There are two equivalent ways to use the balance sheet information to check the value of company.

First, The book value of investor claims can be summed directly.

Second, the assets of firm can be totaled and from that value, non investor claim can be deducted.

We can more clarify this concept with the help of illustration discussed below:-

Balance Sheet of Meenakshi Limited as on March 31, 2020

Liabilities	Amount	Assets	Amount
Share capital	1500	Fixed assets (net)	3300
Equity	1500	Gross block	5900
Preference	-	Accumulated Depreciation	2600
Reserve and Surplus	1120	Investments	150
Secured Loans	1430	Current assets, loans and advances	2340
Term loans	700	Cash and bank	100
Debentures	730	Debtors	1140
Unsecured Loans	690	Inventories	1050
Bank credit	250	Pre-paid expenses	50
Inter-corporations	440	Miscellaneous expenditures and losses	-`
Current liabilities and provisions	1050		
	5790		5790

Balance Sheet Valuation

Investor Claims Approach	Amount	Asset-liabilities Approach	Amount
Share Capital	1500	Total assets	5790
Reserve and Surplus	1120	- Current liabilities and provisions	1050
Secured loans	1430		
Unsecured loans	690		
	4740		4740

The accuracy of the book value approach depends on the how well net book values fo assets reflect their fair market value. There are three reasons why book values can diverge form the market values:

- The inflation that drives the wedge between the bookvalue of the assetand its current value. The book value of the assets is its historical cost minus depreciation. So, it does not consider inflation that is definitely the factor influencing the market value.
- Technological changes some assets become obsolete and worthless even before they are fully depreciated in the books.
- Organizational capital, a very valuable asset, that is not shown on balance sheet. Ti is value created by bringing together employees, suppliers, customers and manages in the mutually beneficial and productive relationship. The important features of organizational capital that itcannot be easily separated from the firm as the going entity.

a. Adjusting Book value to Reflect Replacement Cost

As the asset'searning power cannot be related to the book value, it he asset is old, then it important to be related to its current replacement cost. So, book values may be substituted by the current replacement cost. The various assets can be valued as follows:-

i. Cash

It means the cash and there is no problem in valuing it. It is gratifying ot have the asset that is so simple to value.

ii. Debtors

Debtors are valued at the face value. If the qualityof the debtors is doubtful, prudence calls for making the allowance for likely bad debts.

iii. Inventories

It can be divided into three categories: Raw materials, work-in-process and the finished goods.

Raw material can be valued at the most recent cost of acquisition.

Work-in-process can be approached from cost point of view (cost of raw materials plus th cost of processing) or it can calculated from the selling price of view (selling price of the final product less expenses to be incurred in converting work in process to sales.

Finished goods inventory can be calculated by determining the sale price realizable in the ordinary course of the business minus expenses to be incurred in packaging, handling, transporting, selling and collection of receivables.

iv. Other Current Assets:

Other current assets like deposits, prepaid expenses, and accruals are valued at the book value.

Fixed Tangible Assets:

Fixed tangible assets consist mainly land, building and civil works and plant and machinery. The valuation of the land can be done if it is vacant and available for sale. Buildings and civil works can be valued at the replacement cost minus physical depreciation and deterioration. The value of the plant and machinery can be calculated at the market value of similar asses plus the cost of transportation and the installation.

Non-operating Assets:

The assets that is required for the meeting of the operating requirements of the business that are referred to the non-operating assets. The commonly found operating assets are financial securities, excess land, and they are infrequently used buildings. and these all the assets are valued at the fair market value.

Example:- In September 1989, the market value of the equity of Meenakshi Limited was hovering around 400 per share. At that time the paid-up equity capital of Meenakshi limited was about 1000 crore, 100 crore shares of 10 each. J and L issued the public statement that the market was significantly undervaluing the Meenakshi limited share. Argument is that intrinsic value per share of Meenakshi limited was about 650 per share. he arrived at this number as follows:-

	In Crores
Replacement cost of M's plants	40,000
Value of M's 50 percent shareholding in Meenakshi limited	15,000
Value of M's shareholdings in BSES and L&T	10,000
Value of M's 30 percent stake in Panna, Mukti, and Tapti oil ventures	2600
Cash holdings	6,000
A: Value of Assests	73600
Outstanding Debt	9,000
B:Net Asset Value	64,600

C:NAV per share (64,600 / 100) 646

b. Adjusting Book Values to Reflect Liquidation Values

The direct approach for approximating the fair market value of the assets on balance sheet of the firm that is to find out that they would fetch if the firm were liquidated immediately. If there is any secondary market that do not exist for may business assets. In these cases, the evaluator must try to estimate the hypothetical price at which the assets can be sold.

Weakness of the liquidation value

The principal weakness of the liquidation value approach is that it ignores organizational capital. In place of valuing the company as the going concern, it values as collection of assets to be sold individually. This will make sense only for the firm that is worth more unreal than alive.

The Bottom Line

It is the unadjusted book value approach that makes sense only in some few cases, such as the appraisal of regulated industries. Some adjusted book value approach - replacement cost approach or the liquidation value approach- that makes sense for firms which derive the value from owning the tangible resources. Insuch situations are not common because the most firms have the valuable organsational capital. So, in real life situations, the book value has limited applicability.

Fair Value Accounting

In the late 1990s, the accounting rule makers and regulators have been pushing for "fair value accounting." The accounting community, seems to be divide on the issue of fair value accounting The proponents of fair value accounting argue that it will improve the alignment of accounting statements and the value and provide the useful information to the financial markets.

9.2 Stock and Debt Approach

In this approach, the valuation is done when the securities of the firm are publicly traded its value can be obtained by merely summing themarket value of all its outstanding securities. The simple approach is the stock and debt approach.

Example:- The valuation of Meenakshi limited provides an example of stock and debt approach. As on March 31, 2021, the firm had 1.5 billion outstanding shares. At the closing price of 20 on that day, Meenakshi's equity had the market valueof 30 billion. On march 31, 2021 the firm also had the outstanding debt with the market value of 21 billion. Now, adding market value of equity to market value of the debt that gives the total of firm value of 51 billion of Meenakshi as on March 31, 2021.

Efficient Market Hypothesis

As the stock and debt approach assumes the market efficiency, it is the worth the idea of efficient market hypothesis. In the mid-1960's Wugene FAma introduced idea of the "efficient" capital market to literature of financial economics. It is simply the idea of that the intense competition in the capital market that leads to fair pricing of the debt and the equity securities.

This is actually a sweeping statement. It continues to stimulate insight and controversy even today. The Efficient Market Hypothesis explained by Benjamin Friedman as "credo" a statement of faith and not the scientific proposition.

Warren Buffett, the most successful investor of our times has characterized the market as "a slough of fear and the greed untethered to corporate realities."

What is the Efficient Market

An efficient market is one in which the market price of the security is unbiased estimate of th intrinsic value.

Notes:-Market efficiency does not imply that market price equals the intrinsic value at the point in time. All it says that the errors in the market proves are unbiased. This is pierce that can deviate form intrinsic value but the deviations are random and uncorrelated with any observable variable

and if the deviations of the market price from the intrinsic value are random, it is not possible to consistently identify over or under-valued securities.

Market efficiency is defined as the relationto information that is reflected in security prices. The Eugene Fame suggested that it is important to distinguish the three levels of the market efficiency:

1. Weak-form efficiency:

The prices reflect all the information found in record of past prices and volumes.

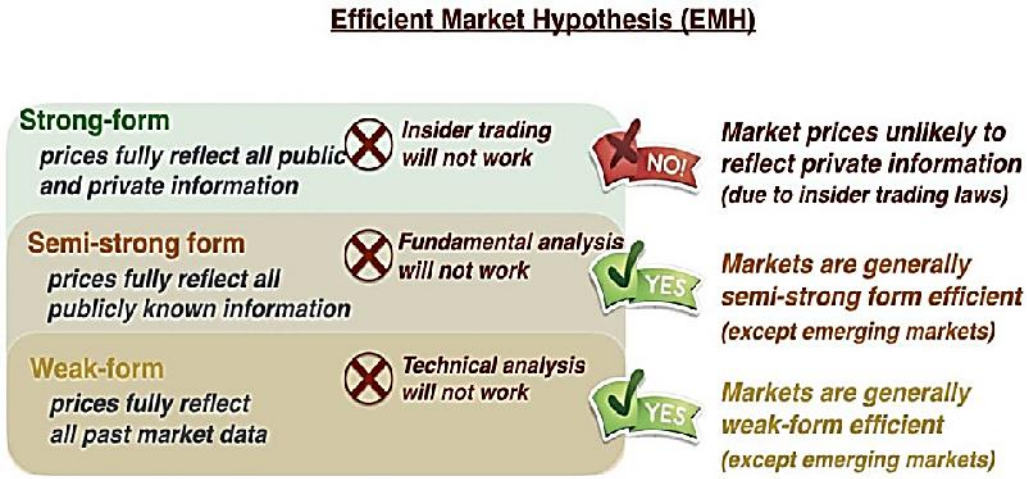
2.Semi Strong form efficiency:

Prices reflect not only the information in record of past prices and volumes but also theother publicly available information.

3.Strong-form efficiency:

The prices that reflect all the available information, public as well as private.

Diagram shows the forms of market efficiency



Evidences in favor of Efficient Market Hypothesis

There are basically some important predictions of the Efficient Market Hypothesis, which are fairly supported by the empirical evidence.

1.If the security prices reflect all the publicly available information, then even professional investors cannot earn superior risk - adjusted rates of return.

The results of the empirical studies stronglysupport the EMH. Neither the technical investors, what use the mechanical trading rules, nor professional fund managers, have been able to consistently outperform thesimple buy and hold strategy.

If you talk about the legendary Benjamin Graham, in the interview before the death he said: "I am no longer an advocate of elaborate techniques of security analysis in order to find the superior value opportunities. The reqrdin activity , say 40 years ago when the graham and Dodd was first published; but situation has changed today.

2. Since the current stock price reflects all the currently available information, prices changes only in the response to new information that, is unrelated to previous information. the new information that cannot be predicted in advance, the price changes cannot be forecasted. The prediction of the EMH not been supported by empirical evidence over time.

3. The stock prices respond to the immediate and unbiasedly to the new information.

Example:- let's suppose that the Tata Steel announces unexpectedly lower earnings and as a result the stock drops from 525 to 500. As per the EMH, the decline should occur simultaneously following the announcement.

The number of the event studies have examined the response of the stock prices to announcements regarding earnings, bonus issues, dividends, takeover bids, and so on. These studies have found that the stock prices respond immediately and unbiasedly to the new information.

Evidences against Market Efficiency

As the bulk of the empirical evidence supports the Efficient Market Hypothesis, the number of inefficiencies has been found. These are divided into 3 categories:-

1.Patterns in Stock Prices:

The researchers have found the some seasonal patterns. One well documented anomaly is the "the day of the week" effect - stock returns that tend to be lower on Mondays than the drung the rest of the week. Another puzzling calendar is the January effect. Stock prices seem to rise the more in January than in any other month of the year.

2. Mispricing of the Securities:

There is empirical evidence that suggests some of the mispricing of the securities:

- Banz and others have found that inventors in the small firms hae earned significantly the higher return than the investors in the large companies, after adjusting for risk.
- The number of studies have found that the value stocks tend to outperform the growth stocks.

3. Excess Volatility in Stok Returns:

Robert Shiller's pioneering the work sparked the debate regarding the volatility of the stock prices. He also presented evidence that he stock prices jumped around much more than the what is justified by the variations in corporate dividends and cash flow.

4. Market inefficiency and Valuation:

It still remains an actively researched area, its impact for the valuation are limited. In practice, to be useful it is important to have documented and predictable inefficiencies that values can incorporate in the valuation analysis.

Example:- The value when he observes that the stock's market price to be 100 may conclude that the true value is about 120, taking into account well known market inefficiencies.

9.3 Strategic Approach to valuation

The Discounted Cash Flow approach is used in valuing companies because it is sound conceptually. in this, the consulting companies have developed practical methodologies for applying it. It suffers from some limitations. These limitations can be overcome by using the strategic approach to valuation with the DCF approach to valuation.

Limitations of DCF Approach

There are some limitations which are discussed as follows:

1.It mixes reliable information and unreliable information in assessing the value of the firm. In the DCF valuation, cash flows are estimated explicitly for a period of five to ten years. The cash flows beyond the explicit forecast period are lumped together and reflected in the "terminal value" The question arises. How is the terminal value estimated? the common method is to apply the suitable price earnings multiple to accounting earnings of terminal year. If the accounting earnings are projected to be 100 million and the exact price earnings multiples is 12, then the terminal value is 1200 million.

2.The second limitation of the DCF approach is threat it discard the information that is relevant for calculating the value of the company. There are two aspects of the value.

First, Resources or asses employed by the firm.

Second, Distributable cash flows that are produced by the resources invested into the firm.

3. The last limitation of DCF approach is that it relies on the assumption that are difficult to make but ignores assumptions that can made with the greater confidence.

Example:- It is difficult to forecast how quickly the Ford's sales will grow over the next two decades, what profit margin it will enjoy, or how much capital it will have to invest per dollar of revenue. These estimated have to be made to arrive at the value of Forrd using the DcF approach. But it is easier to assume that , given the intensity of competition in the automobile sector, no automobile manufacturer is likely to enjoy significant competitive advantages over others, twenty years down the road.

A strategic approach to valuation

The strategic approach evaluationinvolves valuing the company at the three levels:-

1.Asset Value

For valuing the firm, the most reliable information is the information on the balance sheet. The assets and liabilities that are shown as they exist presently and can be inspected, some of them may be intangible. The valuing of the balance sheet items does not need any projections of the future developments.

The first important judgment relates to the product market in which the firm operates will be economically viable in future. It is believed that the business will not be economically viable, the assets must be valued at the liquidation value. The valuation of cash is done as its balance sheet value. Marketable securities are valued at the market value.

The account receivable can be valued at he slight discount over the balance sheet value.

2. Current Earnings Power value:

- After the valuation on the assets and liabilities, the next approach for determining the value of the company is current earnings power affirms. As the earnings power can be defined as distributable earnings that can be sustained with existing operations of firm. To calculate the "earning power" some adjustments have to be made to reported earnings.
- To abstract away the effects of the financial leverage begin with the operating earnings of EBIT (earnings before interest and taxes), instead of the net profit. This ensures that we should ignore the interest payments and tax shield associated with debt financing.
- Make adjustments for "nonrecurring items" like gains or losses fromthe sale of the assets and the restructuring charges, timing of that is often chosen by the management with the motive of managing the bottom line. The way to adjust them is to determine their average level over the period of time and sum or minus theis average level to the operating earning before the nonrecurring items.
- Then after eliminating the effect of accounting manipulation, then adjust the current earnings for the cyclical factor that may cause them to either above or below their sustainable level. The easy way is to determine the average operating margin over the business cycle and apply that to the current sales to arrive at the normalized current operating earnings.
- Now, supplant accounting depreciation with the economic depreciation. The accounting depreciationdepends on the certain conventional rules for allocating historical cost of assets over the estimated life.
- Finally, apply the average sustainable tax rate to normalized pre-tax earnings to get the earnings power of the firm, the amount that can be distributed to investors each year without diminishing the productive assets of the company.

3.Total Value

The total value of assets and earnings power value. As the total value of firm is equal to the present value of its future cash flows. If the firm lacks sustainable competitive advantage, then total value is equal to its asset value. If the firm enjoys the sustainable competitive advantage but cannot leverage theses same for growing profitable, then the total value is equal to its earnings power value. Actually, if the firm enjoys the sustainable competitive advantage that can be leveraged successfully for the profitable growth than its total value is equal to its earnings power value plus the value of growth.

Value of Growth:

Growth is bad when the asset value exceed the EPV. So, management is doing bad job in managing the current resources of company. It is earning the rate of return which is less than the cost of capital. That'swhy;it is the company lacks competitive advantage. In these situations growth will destroy value.

9.4 Guidelines for Corporate Valuation

We have done the various approaches to corporate valuation and touched upon the difficulties and pita falls that the appraiser encounters. We end up with the guidelines that the appraiser should consider while determining the corporate value.

1.Understand how the various approaches Compare:

The various approaches to valuation are as follows:

Adjusted book value approach makes sense when liquidation is being considered a distinct possibility or when you want to establish the minimum benchmark price.

The stock and debt approach is suitable when the securities of the company are activelytraded and there is no price manipulation.

The relative valuation approach is appropriate when

a.the current earnings of company is reflective of future earnings capacity,

b.the firm expects to enjoy stable growth rate, and

c.there are comparable companies.

2. Use at least two different approaches:

No one approach is complete. Hence exclusive reliance on the single approach can lead to biases in valuation. The practical wisdom suggest that in most real life valuation exercise, appraiser must use at least tow different approaches. Final value indicator can be arrived at taking the weighted average of the valuation figures produced by two or more different approaches.

3. Work with the value Range:

The valuation si the inherently imprecise, inexact and uncertain exercise. The inescapable indeterminatenesscharacterizing valuation, it is naive and foolhardy to attach the great precision to any single value estimate. The most sensible approach would be to look at two to three plausible scenarios and define the value range, based on the value indicators for these scenarios and define the value range, based on the value indicators for these scenarios, to atake care of the imponderables.

4. Tell the story but support it with data:

The human beings have the natural tendency to tell the story to justify why the firm should command the certain value. These stories often meant to rationalize our preconceptions about the companies. These stories are meant to rationalize about firms. As the value, we have the obligation to support the story with data.

5. Go behind the numbers

There arevarious value drivers, like invested capital, return on invested capital, the most critical value driver. Since the return on invested capital is mainly the function of entry arrears, the appraise must go behind the numbers and examine carefully entry barriers like economies of scale, product differentiation, technological edge, access to distribution channels, patent protection, and governmental license.

6. Value Flexibility

The discounted cash flow approach to valuation is based on the cash flows forecasted on the basis of the current assessment of the future prospectus. This approach is incomplete as ti does not atake into account the value of flexibility

Notes:- The management can change its policies in the light of future developments and can exercise the variety of options sutured to he needs of the unfolding environment. Flexibility and options are quality valuable. To ignore this is to overlook the important source of the value.

Summary

- The simplest approach to valuing the company is sorely on the information found on the balance sheet, typically adjusted to reflect the replacement cost.
- When the securities of the companyarepublicly traded, the value of company can be obtained by just adding the market value of all this outstanding securities. Thai is the stock and debt approach. This also assumes the efficient market - the market in which the price of the security is the unbiased estimate of the intrinsic value.
- The DCF approach mixes reliable information and unreliable information, and also rejects the great deal of information that is relevant for calculating the value of the firm, and relies on the assumptions that are difficult to make but ignores assumptions that can be made with the greater confidence.
- The strategic approach to valuation involves valuing the firm at the three levels like asset value, earnings power value, and total value. This approach also decomposes the value of the firm.
- The following are some of the important guidelines for valuation that the appraisershould bear in mind that are:-

1.Understand how the various approaches to valuation compare.

2.Use at least two different approaches to valuation

3.Work with the value range

4.Tell the story but support that with data

5.Go behind the numbers

6.Value flexibility

Keywords

- **Replacement costs**:- Replacement cost is a term referring to the amount of money a business must currently spend to replace an essential asset like a real estate property with one of the same or higher value
- **Efficient Market Hypothesis**: -The efficient market hypothesis (EMH), means the efficient market theory, is a hypothesis that states that share prices reflect all information and consistentalpha generation is impossible.
- **Market efficiency**:- Market efficiency refers to the degree to which market prices reflect all available, relevant information
- **Fair value accounting**: -Fair value accounting is the practice of measuring assets and liabilities at their current market value.

Self Assessment

1. ……..approach to value a firm is to rely on information found on balance sheet.

A. Book value approach
B. Asset value approach
C. Stock and debt approach
D. none of the above

2. For Adjusting Book value to reflect replacement cost the items include

A. Cash
B. debtors
C. Fixed Tangible assets
D. all of the above

3. When the securities of the company ae publicly traded its value can be obtained by just adding the market value of all its outstanding securities. This simple approach is called the ……approach.

A. Asset value approach
B. Book value approach
C. Stock and Debt approach
D. None of the above

4. Who introduced the idea of an "efficient" capital market to the literature of financial economics?

A. Eugene Fama
B. Gordon Scot
C. Both a) and b)
D. none of the above

5. …… is the one in which the market price of the security is the unbiased estimate of its intrinsic value.

A. Efficient market
B. Inefficient Market
C. Either a) or b)
D. none of the above

6. Three types of market efficiency are:-

A. Weak form efficiency
B. Semi-strong form efficiency
C. Strong-form efficiency
D. All of the above

7. In …….. Form of efficiency prices reflect all the information found in the record of past prices and volumes.

A. Weak form efficiency
B. Semi strong form efficiency
C. Strong form efficiency
D. None of the above

8. In ……form of efficiency, the prices reflect not only all the information found in the record ofpast prices and volumes but also all other publicly available information.

A. Weak form efficiency
B. Semi strong form efficiency
C. Strong form efficiency
D. None of the above

9. In……form of efficiencythe prices reflect all available information, public as well as private.

A. Weak form efficiency
B. Semi strong form efficiency
C. Strong form efficiency
D. None of the above

10. Which of the following is an evidence against market efficiency

A. Patterns in Stock Prices
B. Mispricing of Securities
C. Excess Volatility in Stock Returns
D. All of the above

11. Cash flows beyond the explicit forecast period are lumped together and reflected in ……..

A. estimated value
B. historical value
C. terminal value
D. none of the above

12. Which of the following is the level of strategic valuation?

A. Asset Value
B. Current Earning Power Value
C. Total Value
D. All of the above

13. If the business is considered viable, the assets will have to be reproduced at some point. So, they should be valued at …….

A. Replacement cost

B. Reproduction cost
C. Historical cost
D. None of the above

14. ……value may be defined as distributable earnings that can be sustained with the existing operations of the firm.
A. Current Earnings Power Value
B. Asset Value
C. Total Value
D. All of the above

15. The difference between the EPV and the asset value is known as……
A. Franchise Value
B. Asset Value
C. Both a) and b)
D. None of the above

Answers of Self Assessment

1.	A	2.	D	3.	C	4.	A	5.	A
6.	D	7.	A	8.	B	9.	C	10.	D
11.	C	12.	D	13.	B	14.	D	15.	A

Review questions

1. Explain the reasons for the potential divergence between book value and market value?
2. What s fair value accounting? What are the pros and cons ofaffairvalue accounting?
3. What is efficient market? Distinguish threelevel of market efficiency?
4. How are the various sets valued to reflect replacement cost?
5. What is the empirical evidence in favor of and against market efficiency?
6. What are the implications of efficient market hypothesis for appraisal practice?
7. What are the limitations of DCF approach?
8. How is asset value assessed under the strategic approach to valuation?
9. How is current earnings power value estimated under the "strategic approach to value"?

Further Readings

- https://www.google.com/search?q=wiley+corporate+valuation&oq=wiley+&aqs=chrome.2.69i57j0i131i433i512j69i59j0i131i433i512j0i10i512j46i199i433i465i512j0i131i433i512j0i512j0i433i512j0i512.4956j0j15&sourceid=chrome&ie=UTF-8
- https://www.mheducation.co.in/corporate-valuation-9789390219230-india

Unit 10: Advanced Issues in Valuation -I

CONTENTS

Objectives

- understand the concept of multi business companies
- explain the different issues in the valuation of multi business companies
- discuss the valuation of companies having subsidiaries
- analyse the valuation of high growth companies
- explain the valuation of banking business
- discuss the factors that affects in valuation of insurance business

Introduction

In the field of finance, corporate valuation is the process of determining the value of any firm. It is an important aspect of corporate finance, that is used for the wide variety of purposes. Valuation is essential for the mergers and acquisitions, where the sound decision has to be made whether and at what price to acquire the firm. The value of the company could be different for sellers and buyers, so valuation is integral part of the negotiation process. It is also crucial for the effective management of the firm, for identifying its value-generating units, and formulating strategies for growth. Initial public offerings, portfolio management, and tax assessment are also areas that involve a lot of corporate valuation.

There are different valuation methodologies, yielding different results and used in different situations. For applying the basic principles and the techniques of corporate valuation to the different types of companies which you have to take into account the different characteristics.

For example, In Multi-business companies which is having some complex characteristics that make it more difficult to value that a single-business company. On the other hand, valuing the

banking and insurance business presents very different issues compared to those faced while valuing the manufacturing company.

Valuation of companies of Different Types

There are a few companies that are discussed below:

1.Valuation of Multi-business companies

2.Valuation of companies with subsidiaries

3.Valuation of high growth companies

4.Valuation of bank and insurance companies

10.1 Valuation of Multi-Business Companies

There are various companies that are engaged in multiple businesses. As the different businesses of the multi-business company have different financial characteristics (ROIC, growth rate, and risk), that is best to value each company separately and then the sum of the parts to obtain the value of the entire company.

Example:-Reliance Industries Limited has a portfolio consisting of oil and gas, refining, petrochemicals, textiles, and the retail. The General Electric is engaged in the four main businesses viz., technology, energy infrastructure, finance, and media.

While principles of the valuation remain the same, there are some issues that arise in context of the multi-business company. This relates to: -

1.Creation of business unit financial statements

2.Estimation of cost of capital for each business unit

3.Interpretation of results

10.2 I Creation of Business Unit Financial Statements

To value the business unit, you need its financial statements, viz. income statement, balance sheet, and cash flow statement. For this, you need some elements like you have to allocate corporate costs,

deal with the inter-company transactions, deal with inter-company receivables/ payables, value financial subsidiaries, and deal with the incomplete information.

Corporate Costs:

Various multi-business companies incur costs for the shared services and corporate overheads. Which of these costs should be allocated to business units and which can be retained at the corporate level?

When a corporate centre provides shared services like accounting, human resources, and information technology, then you have to allocate these costs to various business units using suitable cost drivers.

Example: -The cost of human resources services provided by the corporate centre may be allocated to the various business units on the basis of the number of employees.

Intercompany sales: -

When the business units sell goods and services to one another. These intercompany sales must be recorded at the value at which they would be transacted with the third parties in the arm's length relationship. Otherwise, there will be distortion in the relative valuation of business units.

Intercompany receivables and payables

In the multi-business company, cash and debt for the business units are managed centrally. Those units with positive cash flow remit the same to the corporate center, leading to the intercompany receivable from the corporate parent. In the same way, units with a negative cash flow get cash from the parent, leading to the intercompany payable to the parent. And these intercompany receivables and payables are not like third party receivables and payables, they should not be assumed as the part of the operating working capital.

Financial Subsidiaries

Some of the firms that have financial subsidiaries. The balance sheet of the financial company is structured very different from that of the manufacturing or services company. Its assets are mostly financial and has the high debt-equity ratio. The financial business should be valued by discounting the cash flow to equity at the cost of equity.

Note: - Just avoid the double-counting its a debt in the overall valuation of the company while valuing the financial subsidiary which makes the sense to rework the consolidated company's income statements and balance sheets to treat financial subsidiary as the nonconsolidated subsidiary.

II Estimation of Cost of Capital for Each Business unit

As the systematic risk of the operating cash flows and debt capacitates tend to vary across the business units, each business unit must be valued at the own cost of capital. The cost of capital can be calculated as follows: -

1. Estimate the business unit's target capital structure. Then use the median capital structure of publicly traded peers if most of these have similar capital structures. If the peers are not available or if their capital structure differs widely, this will allocate the consolidated corporate debt to the various business units, so the interest coverage ratio is same for each unit.
2. Then, determine the leveraged beta for each business unit. This involves the estimating the unleveraged sector median beta and then re-levering it using the business unit's capital structure as calculated in step1.
3. Calculating the cost of equity for each business unit. The cost of the business unit is:

Risk-free return + Leveraged beta × Market risk premium

4. Estimating the cost of capital for each business unit. The cost of capital of the business unit is:

Cost of capital = Weight of equity × Cost of equity + Weight of debt × Cost of debt

III Summation of Parts and Interpretation of Results

Estimating the DCF value of each business unit (on the basis of forecasted free cash flow and cost of capital), sum of the business unit values, and minus the corporate costs to find the operating enterprise value.

After this add the value of nonoperating assets to the operating enterprise value to get the figure of total enterprise value. From this value, subtract nonequity claims to obtain the value of equity.

10.3 Valuation of companies that have Subsidiaries

Many companies have subsidiaries or associate companies in which they have very important equity stakes that usually range between 25 percent and 100 percent. To find the intrinsic value per share of such firms the sum of the parts (SOTP) method of valuation is generally employed. This involved the following steps: -

1. Calculating the value per share attributable to the main business. One way to find out is to calculate the earnings per share from the main business and apply the suitable multiple to it.
2. Finding the value per share for each of the listed subsidiaries. In calculating this value the discount factor of 15 to 20 percent is generally applied to the observed market value of equity stake in listed subsidiary.
3. Assessing the value for share for each of unlisted subsidiaries. To calculate this, the analyst has to first estimate the market value using the earning multiple or some other basis as there is no observed market value and then apply the discount factor o 15 to 25 percent to the same.
4. Now, add the per-share values for the core business, for the listed subsidiaries, and for unlisted subsidiaries, to get the total value per share.

10.4 Valuation of High Growth Companies

The rise and fall of Internet stocks suggest that valuing high growth, high -uncertainty firms is challenging – some the practitioners even consider this as despairing.

The valuation principles apply to high-growth companies as well. The best way to value such firms is to use scenario-based DCF analysis supported by microeconomic fundamentals.

To value the established firm, we start with the analysis of the historical performance. But in new high-growth companies, historical performance provides little or no clue about future prospects. For this, the following procedures must be followed: -

Starting from the future: -

To value the high growth firms, start by defining what the industry and firm might look like when it reaches the steady-state in the future.

Work Backward to current performance: -

After developing the forecast for the total market size, market share, and Return on invested capital, interpolate back to the current performance. Now, find out how to assess the future long-

term performance from the current performance. In this, your estimates must reflect economic principles and industry characteristics.

Developing Scenario: -

We have to develop a few possible scenarios to handle the uncertainty associated with high-growth companies. Estimate the revenues, pre-tax margins, capital turns, and the DCF equity values for different scenarios.

Estimate the Expected Equity Value: -

Estimate the probability of the occurrence of each scenario. Now, obtaining the expected equity value by multiplying the equity value under each scenario by the probability of its occurrence and adding these products across the scenarios.

10.5 Valuation of Banks

The financial institutions – banks and insurance companies – are some of the most complex firms to value, mainly to outside analysts as they do not have some critical information about these firms. These institutions are highly geared, and their valuation that is extremely sensitive to small changes in the key drivers.

The enterprise DCF model is the model of choice for the non-financial firms as their operating and the financing decisions are more or less separate. For the financial firms, that are by nature highly levered the equity cash flow approach is more appropriate for the following reasons:

- The financial firms by nature are highly levered institutions. The operations cannot be valued separately from the interest income and interest expense, as these are the dominant components of the income statements.
- The invested capital of the non-financial firm is more or less independent of how its assets are financed. However, the financing decisions are central to how financial companies like banks and insurance firms produce earnings.

When you apply the equity cash flow approach to value the banks, consider the following points: -

The net interest income and the fee income, these are the most important source of income for the bank. NII is the difference between the interest income a bank earns from lending and the interest expense it pays on its borrowings. NII consists of 2 components: -

First, it represents the true customer spread – the lending rate is higher than the borrowing rate.

Second, reflects the maturity mismatch in income. This situation arises because the duration of the bank's assets is different from that of the liabilities and the bank earns the spread by operating on the different parts of the yield curve.

- Fee income is the income that is derived from services rendered to customers in the areas such as retail banking, private banking, M& A, and the asset management and also non-fund-based activities like letters of credit and guarantees. The fee income is easy to understand, as it is independent of financing.
- Besides, NII and the fee income, the banks may derive income from the other activities like proprietary trading or the investment in securities. These kinds of incomes tend to be highly volatile.

- Considering the cost aspect, the major item is the provision for loan losses. It is different from the outside analyst to evaluate the quality of the bank's loan portfolio and assess future loan losses. The other major cost items sis selling, general, and administrative expenses.
- The main assets of the bank are its loan portfolio and its securities and the cash portfolio's. The fixed assets and working capital usually represent the small portion of the bank's assets. Coming to the liabilities side, the main items are deposits, debt, and equity.

10.6 Valuation of Insurance Companies

Some factors to be kept in mind while valuing the insurance companies as these kinds of companies are very difficult to value. These factors are: -

- It is difficult for the outside analyst to assess amount of capital the insurer needs to meet the unexpected claims and insurers themselves employ actuaries and risk management exper4sts while regulators and credit rating agencies provide external scrutiny.
- The cash flows of the insurers extend over long periods. Still, it is difficult to match revenues and the expenses and measure an insurer's true profitability.
- The insurers derive revenues from the several sources like premium income, interest and dividend income, capital gains, and the fee income.
- Premium income represents that what customers pay for their policies. As the policies run for more than one year, premium income for any year is just the portion of the longer-term cash flow.
- There is a time lag between the receipt of premiums and payment of benefits and claims. As in this period, insurers can earn investment income by investing the fund lying with them.
- In the investment portfolio, insurers can also realize the capital gains or suffer the capital losses. From the economic point of view, it makes no difference whether he insurer realizes these gains in the given year. However, this kind of decision can have the important bearing on the insurer's reported net income for the given period.
- The insurers must earn fee from the selling financial products like mutual funds.
- There are the several industry-specific items on the cost side of reinsurance, benefits and the claims, and the commission and other policy acquisition costs.

The cost of reinsurance is generated only when the insurer shifts the underlying risk of the policy to the reinsurer. The cost of reinsurance is generally netted against the premium income rather than the reported as the separate item.

The benefits and the claimsrepresent the cost of meeting the claim of policyholders. It is usually the largest expense item.

Commissions and the other policy acquisition costsrepresent the cost incurred in the selling insurance policies.

- The ratio of total costs to premium income is also known as combined ratio. For most of the insurers, the combined ratio exceeds 100. These insurers remain in the business by investing the premiums and the earning returns on them.
- The assets side of the insurer's balance sheet consists of investments, "separate account" assets, "deferred policy acquisition cost assets," and "typical assets." Investments dominate the asset side of the insurer. "Separate account" assets means funds entrusted to the insurer to be invested on behalf of customers. These assets are matched by "separate account " liabilities, since the insurer has no claim on the underlying assets. Since insurance policies

are expected to generate premium income over the multiple years, GAAP permits insurers to capitalize policy acquisition cost and reflect them on their balance sheets as the asset called "deferred policy acquisition cost" which is written off over the period of time. Finally, as any other firm, insurers have the number of "typical assets like fixed assets, working capital, and goodwill on the balance sheet.

- The liabilities side of the insurer's balance sheet consists of the given below: reserves, debt, and equity financing. The main liability for any insurers is its reserves, which reflect the present value of expected benefits and claims to be paid out (for life insurers this is reduced by the present value of the expected premiums under the existing policies). Like any other firm, insurers also have the debt and the equity financing. The debt is measured in the fairly straightforward fashion. The calculation of the equity is somewhat complicated by the pension accounting, foreign-currency translation, and so on.

Summary

- There are different valuation methodologies, yielding different results and used in different situations. For applying the basic principles and the techniques of corporate valuation to the different types of companies which you have to take into account the different characteristics.
- To value the firm in another country bear in mind international accounting differences and variations in tax regimes and estimate cost of capital from the perspectives of the global investor.
- When you apply the DCF valuation to firms in emerging markets, bear in mind the higher inflation and the greater macroeconomic risk characterizing these markets. The valuation of firms in emerging markets tends to be more volatile, triangulate scenario DCF valuation with the country risk premium DCF valuation and the multiples-based valuation.
- Perhaps te best way to value the high growth, high risk fims is to use the scenario based DCF analysis supported by the microeconomic fundamentals.
- There are various companies that are engaged in multiple businesses. As the different businesses of the multi-business company have different financial characteristics (ROIC, growth rate, and risk), that is best to value each company separately and then the sum of the parts to obtain the value of the entire company.
- Many companies have subsidiaries or associate companies in which they have very important equity stakes that usually range between 25 percent and 100 percent. To find the intrinsic value per share of such firms the sum of the parts (SOTP) method of valuation is generally employed.
- The financial institutions – banks and insurance companies – are some of the most complex firms to value, mainly to outside analysts as they do not have some critical information about these firms. These institutions are highly geared, and their valuation that is extremely sensitive to small changes in the key drivers.

Keywords

Multi-business units, Subsidiaries, high-growth companies, Net interest income (NII), Banking units, Insurance companies

SelfAssessment

1. Which of these is the type of valuation of companies?

A. Valuation of multi-business companies
B. Valuation of companies having subsidiaries
C. Valuation of high growth companies
D. All of the above

2. Which is the issue in the valuation of the multi-business company?
A. Creation of business unit financial statements
B. Estimation of cost of capital for each business unit
C. Both a) and b)
D. None of the above

3. Financial statements consist of
A. Income statement
B. Balance sheet
C. Cash flow statement
D. All of the above

4. When the business units sell goods and services to one another is called …… sales.
A. Intercompany
B. Intracompany
C. Neither a) nor b)
D. None of the above

5. The estimation of cost of capital can be calculated with the help of following sequence. Which of the following sequence is correct?

1.Calculate the cost of equity for each business unit

2.Estimate the cost of capital for each business unit

3.Determine the leveraged beta for business

4.Estimate the business unit's target capital structure

The options are:

A. 2,3,1 and 4
B. 1,2,3 and 4
C. 4,3,1 and 2
D. 4,3,2 and 1

6. Which of the following sequence is correct for the valuation of companies with subsidiaries?

1.Determine the value per share attributable to the main business

2.Find value per share for each of listed subsidiaries

3.Assess the value per share for each of the unlisted subsidiaries

4.Add the per share values for the main business

The options are:

A. 2,3,1 and 4
B. 1,4,3 and 2

C. 4,3,2 and 1

D. 1,2,3 and 4

7. In which type of company, historical performance provides little or no clue about future prospects.

A. Existing company

B. New high growth companies

C. Both a) and b)

D. None of the above

8.Which procedure is correct for valuation of high-growth companies?

1.Work Backward to the current performance

2.Start from the future

3.Estimate the expected equity value

4.Develop Scenario

The options are:

A. 2,1,4 and 3

B. 1,2,3 and 4

C. 3,2,1 and 4

D. 4,3,2 and 1

9. For what reasons, the financial firms, that are by nature highly levered the equity cash flow approach is more appropriate.

A. Financial firms by nature are highly levered firms

B. The invested capital of the non-financial company is more or less independent of how its assets are financed.

C. Both a) and b)

D. None of the above

10.NII is the difference between

A. Interest income

B. Interest expense

C. Both a) and b)

D. None of the above

11.NII consists of 2 components: -

A. It represents the true customer spread -the lending rate is higher than the borrowing rate.

B. It reflects the maturity mismatch in income.

C. Both a) and b)

D. None of the above

12. Fee income is the income that is derived from services rendered to customers in the areas which includes:

A. Retail banking

B. Private banking

C. M& A

D. All of the above

13. Total cost/ premium income is known as

A. Combined Ratio

B. Interest coverage ratio

C. Neither a) nor b)

D. None of the above

14. Which of the following are the multi-business company's financial characteristics

A. ROIC (Return on invested Capital)

B. Growth rate

C. Risk

D. All of the above

15. Many companies have subsidiaries or associate companies in which they have very important equity stakes that usually range between ……. percent and …… percent.

A. 25, 100

B. 50,100

C. 10,50

D. 20,60

Answers for SelfAssessment

l.	D	2.	C	3.	D	4.	A	5.	C
6.	D	7.	B	8.	A	9.	C	10.	C
11.	C	12.	D	13.	A	14.	D	15.	A

Review Questions

1. What are the unique issues in the context of a multi-business company?
2. How can the estimation of the cost of capital for each business unit be calculated?
3. Explain the procedure for the valuation of companies that have subsidiaries?
4. Explain the concept of valuation of the high-growth companies?
5. What are the considerations when you apply the equity cash flow approach to value banks?

6. What are the factors that should be kept in mind while valuing insurance companies?

Further Readings

https://link.springer.com/article/10.1007/s11573-020-01010-z

https://www.huconsultancy.com/blog/valuation-of-multiple-business/

https://www.researchgate.net/publication/322387156_Valuation_of_Firms_with_Multiple_Business_Units

http://www.columbia.edu/~dn75/Analysis%20and%20Valuation%20of%20Insurance%20Companies%20-%20Final.pdf

Unit 11: Advanced Issues in Valuation-II

CONTENTS

Objectives

- Understand the concept of cross border valuation
- Discuss the pricing an Initial Public Offerings
- Explain the valuation in the private equity settings
- Differ the private versus public equity investing
- Analyze the valuation of intangible assets through the economic value approach

Introduction

In the field of finance, corporate valuation is the process of determining the value of any firm. It is an important aspect of corporate finance, that is used for the wide variety of purposes. Valuation is essential for the mergers and acquisitions, where the sound decision has to be made whether and at what price to acquire the firm. The value of the company could be different for sellers and buyers, so valuation is integral part of the negotiation process. It is also crucial for the effective management of the firm, for identifying its value-generating units, and formulating strategies for growth. Initial public offerings, portfolio management, and tax assessment are also areas that involve a lot of corporate valuation. As there are several issues in valuation in different ways. In this unit we will discuss cross border valuation, pricing an Initial Public Offerings, valuation of Intangible assets.

11.1 Cross Border valuation

1. If you want to value the firm in another country, then follow the principles and methods discussed before. However, considers the following points: -

First, international accounting differences, an important issue earlier, are becoming less of an issue for two reasons:

a) Most major countries in Europe and Asia have adopted or are adopting International Financial Reporting Standards.

b) The IFRS and U.S. GAAP, there the two main set of accounting standards, have been converging in the recent years. However, when you analyze the long-term financial performance, you will find that the former differences are still considered because the companies provide only the few years of results based on the similar principles.

Notes: -Tax regimes differ across countries. You must know how taxable income is calculated and what the relevant tax rate is. You must take into consideration reliefs available through tax exemptions, tax credits, and tax treaties.

2. The value of the firm should be the same, regardless of the currency in which its cash flows are projected. You may use any of the following methods for valuing the cash flows.

a) **Spot Rate method:** The project foreign cash flows in the foreign currency, the discount these cash flows at the foreign cost of capital and finally converting the present value of cash flows into the domestic currency by applying the spot the exchange rate.

b) **Forward Rate method**: The project foreign cash flows in the foreign currency, that covert the foreign currency cash flows into the domestic currency applying the forward exchange rates, and finally discount the converted cash flows are domestic cost of capital.

2. While estimating the cost of capital for the foreign entity, it is very important to ensure the currency of the discount rate is consistent with the currency of the cash flow.
3. The cost of capital should be estimated form the perspective of the global investor. This means that both the market risk premium and beta have to be measured against the global market portfolio, not the local (domestic or foreign) market portfolio.
4. The weighted average cost of capital should not include the additional risk premium for the perceived currency risk. The spot and forward exchange rates that are used to translate the currencies that are supposed to reflect the currency risk premium, if any.

11.2 Pricing an Initial Public Offering

When the shares of the company that are offered for the sale for the first time in the public market, the process of offering those shares is called initial public offering or IPO. In the pricing of IPOs, the market comparable approach plays the important role.

To start, the lead merchant banker, who manages the IPO process, establishes the price range in consultation with the firm. This is mainly based on the comparable valuation analysis using the valuation ratios like EV-EBITDA ratio, price-book ratio, price-earnings ratio, and so on.

As the price range is fixed, the firm uses the mechanism of book building. This means inviting the subscriptions from the potential investors wherein they are asked to indicated how much they are willing to buy and at what price.

If once the demand is calculated through the book building mechanism, the merchant banker and the firm executives finalize the initial offering price. The determination of this price is judgmental, which considers the up-to-date comparative valuation analysis, the demand function revealed in the book building process and the desire to "leave something on the table" for allottees (which means that the IPO is priced at the discount to the price the shares are expected to trade on listing).

11.3 Valuation in the Private Equity Setting

The private equity has become the integral part of financial services industry globally in the last two decades or so on the top private equity funds have established an impressive track record. This is because of the paradigm shift in investment model in the past 2 to 3 decades, partnership and mutual dependence have become the main of all the relationship between the private equity investors and investee firms. As the David Rubenstein, co-founder, the Carlyle Group, argues: "Large private equity firms have the experience, organization, processes, and risk appetite to evaluate and close investments. It is the only class of investors who have the ability, track record and willingness to add value without any ultimate control desires."

In these recent years, India also have witnessed the surge of the private equity investment. Basically, what has fueled this growth? On the demand side, high growth companies have found private equity to be the attractive form of capital. The tremendous success of the companies like Bharati AND Suzlon which depended on the private equity demonstrated the private equity is long-term, dependable, non-intrusive, and the value-enhancing (through strategic contributions). Not shocking, leading BPO companies like Spectra Mind, Daksh, WNS, EXL., and the even Progeon depended on the PE capital in their formative years.

On the supply side, western pension funds and the other institutions have been looking of the alternative investment avenues to earn the higher return so that hey can meet their obligations. The search for the higher returns has brought them to well-performing emerging market like India, which has become the attractive global investment destination.

Private Versus Public Equity Investing

Private equity investing differs from the public equity investing in the several ways.

Illiquid Investment

The private equity investment tends to be illiquid as there is no organized market or there may be restrictions on the transfer of securities.

Active Role

The private equity investors normally play the active role in the management of investee firms. In contrast, the mutual funds and the others who invest mainly in the public equity markets follow a "hands-off" investment style.

Fine Horizon

The private equity funds are normally organized as the limited partnership with the life of 7 to 10 years. At the end of this time period, the fund is liquidated and the proceeds are returned to the partners. In this contrast, the mutual funds often have no fixed liquidation date.

High Return Expectation

The private equity investors that require the rate of return of (often in range of 25% to 50 %) as they bear the higher risk and the suffer illiquidity.

Procedure for Valuation

The private equity investors (referred thereafter as PE, for the sake of simplicity) normally participate in equity of investee firms that they hold for a few years before liquidating the same. The returns come mainly from liquidating their investments, as they expect negligible dividends during the holding period. The procedure used by PE in valuing the assisted entity and the structuring the deal typically involves the steps:

Private equity establishes the rate of return that it expects to realize for investments (KpE).

The PE's required rate of return is used to ascertain the rupee value the PE hopes to realize at the end of its planned holding period, H years, that is 4 to 7 years.

$$\text{PE investment--}_{\text{today}}(1 + k_e)^{-H} = \text{Required Value of PE Investment}_H$$

The private equity estimates the value of company's equity at the end of the year H, applying the multiple to the company's projected EBITDA for year H.

$$\text{Estimated Equity Value}_H = \text{EBITDA}_{-H} \times \text{EBITDA Multiple}_H + \text{Cash}_{H\,-} - \text{Debt}_H$$

The PE determines the ownership share needed to generate the required rate of return.

$$\text{Ownership Share} = \text{Required Value of PE Investments}_H \,/\, \text{Estimated Equity Value}_H$$

11.4 Valuation of Intangible Assets

Intangible assets are more difficult to value than tangible assets, for several reasons. In the case of intellectual property (IP),the intangible assets by definition have no exact comparable; this uniqueness is the defining characteristic of IP. Active markets, where they exist, are as the result less definitive in establishing value since it's acknowledged that comparables can be hard to define—and because intangible assets are, well, *intangible*. Particularly in case of new, unproven IP, it can be extremely difficult to determine value since it largely depends on the accuracy of forecasts.

What are intangible assets?

Intangible assets (intangibles) are an asset that lacks physical form yet still has the value for the owner. Intangibles fall into two broad categories: identifiable intangibles and value enhancement.

In the identifiable intangibles bucket is intellectual property (IP), like the patents and trademarks, customer relationships, and contracts. These assets typically have the legal right of property and can be sold or separated from the business. Owners can exploit these assets in the business, through license fees or royalties, or selling these assets. In other category, intangibles like work processes, skilled management, and the trained workforce provide competitive advantages and enhance the value of a going concern but cannot be sold separately from the enterprise.

The term Knowledge assets, intellectual capital, and intangible assets they are used interchangeably. Economist call them as the knowledge assets, management experts are referred to them as the intellectual capital, the intangible assets or simply intangibles. all of these is a usually represents the known physical claim to the Future benefits. when the claim enjoys legal protection like in case of patents trademarks, or copyright, assets is called as intellectual property. four the papers of simplicity we will use them as intangible assets.

the important type of intangible assets are shown in the diagram

Patents, Trademarks, Copyrights, and Licenses

The owner of the patent, trademark, copyright, or license enjoys the exclusive right to produce the product or provide the service. So, the value of the patent, trademark, or copyright What license is derived from the cash flows that can be produced from the exclusive right. If there is a cost associated with the production of any goods or provision of service, the value stems from excess returns generated by the exclusive rights.

You can value patents, trademarks, or copyrights in the two ways. You can also estimate the expected cash flows, and compute the discounted cash flow value of the asset. Then, you can use the relative valuation method wherein you apply the suitable multiple to revenues or income generated by the asset.

In making these estimates, you will have to grapple with two estimation issues.

- First, the patent, copyright, or trademark confers exclusive rights for the finite period. So, the cash flows have to be considered only for the finite period with practically no terminal value.
- Second, the possible violations of the patent, copyright, or trademark entail costs such as legal and monitoring costs. Further, strict monitoring is, some violations are likely to occur leading to loss of revenues and profits.

Franchises

The franchise confers on its owner the right to sell the branded product or service.

Example: -

McDonald's fast-food restaurants and dealerships of the tat Motors. Typically, the franchisee pays the franchiser (let say McDonald) an upfront fee or the annual fee for operating the franchise business. In return, the franchisee gets technological and marketing support, apart from the power of the brand.

The franchisee enables the franchisee to earn above-market returns during the life of a franchise. The source of the excess returns is the technological, marketing and the other support provided by franchisor and the power of the brand. In some cases, the franchisee may also benefit from the grant of the exclusive right to sell the product or service in a certain area or setting.

The franchise is not an unmixed blessing. The value of the franchise can be impaired in the different ways.

First, the problems of the franchisor naturally have the adverse impact on the firm of the franchisee.

Second, the franchisors, thanks to the superior bargaining power, that can take advantage of the franchisees.

Third, the value of the franchise is diluted when franchise is granted to the competitor.

You can also value the franchise with the discounted cash flow method. To apply this method, you have to first estimate the incremental cash flow associated with operating the franchise business and then discount the same using the risk-adjusted discount rate.

With this, you can determine the valuation multiple (like franchise value/ sales) based on the recent transactions and apply it to the value the given franchise. This approach also called the relative valuation approach or market approach is theoretically appealing because it is objective, credible, and the relevant. However, there are the practical problems in using the market approach. First, the activity in market for intangible assets is rather limited. Second, the intangible assets tend to be highly unique, making comparisons rather difficult.

Brands

According to the Philip Kotler, the brand is "the name, term, sign, symbol or design, or the combination of them this is intended to identify the goods or services of one seller to differentiate them from those of the competitors."

According to J. Hugh Davidson, "Brands enable consumers to identify the products or services which promise specific benefits. They arouse the expectations in the minds of customers about quality, price, purpose, and the performance. The brand stands out from the commodities because the commodities lack identity."

The brand name benefits the company as the whole. Valuing it is difficult as it does not produce the cash flows on its own. There are different ways in which you can estimate the value of the brand.

You can go by the cost incurred in the building the brand. This means that you have to capitalize advertising and promotional expenses over time, amortize it realistically, and look at the unamortized balance. While the cost approach appears to be objective, consistentand reliable, it is not very appropriate for valuing th intangible asset like brand.

Note: You have to remember that the value of the asset must reflect the benefits that are expected from it and there is hardly any correlation between the expenditure on the intangible asset and its value. A low-cost but highly productive brand-building program can be very valuable, but the high-cost but infructuous brand-building program can be worthless.

You can also calculate discounted cash flow valuation. For this, you have to estimate the incremental cash flow expected to be generated by the intangible asset and discount the same by applying the suitable risk-adjusted discount rate.

You can compare the market value of a company with the intangible asset with the market value of the company without the intangible asset, and attribute the differential to the intangible asset.

The Economic Approach to Valuation

There are various approaches to value the intangible assets, discussed broadly in the previous section, the economic approach is perhaps the most rigorous. So, we discuss this approach in some detail.

Several methodologies that are used to value the intangible asset on the basis of economic value. These methodologies involve the two steps: -

First, Estimating the cash flows/ earnings

Second, capitalize the cash flows/ earnings

1. **Estimating the cash flow/ earnings**

The cash flows/earnings associated with the intangible asset can be estimated in the following ways:

- Direct Identification Method
- Brand contribution Method
- Royalty Method

Direct Identification method: -

If the only important asset of a company is intangible asset, it is possible to readily identify the cash flows/earnings that are linked with the intangible asset.

Example: - The earnings/ cash flows generated by the library of films, music, or copyrights.

2. Brand Contribution Method: -

The brand contribution means the profit or cash flow that are generated by the intangible asset that is in excess of the profit generated by the underlying company. There are four methods commonly used for estimating brand contribution and these are listed as below: -

I. Utility cost method
II. Return on capital employed
III. Premiums profit method
IV. Retail premium method

I. **Utility cost method,** the gross contribution of the brand is estimated by subtracting from the turnover generated by branded product/service the 'utility' cost charged by the manufacturers of the unbranded products or the providers of the unbranded services. From the gross brand contribution, marketing costs, other overheads, and the taxes are deducted to arrive at the brand contribution after tax.

b) **Return on capital method,** the appropriate remuneration on capital employed is deducted from the earnings of the company to identify the brand earnings. By deducting the return on capital, the value added by the other assets of the company like fixed assets and the net working capital is eliminated.

c) **Premium profits method**, the attempt is made to quantify the excess return attributable to intangible assets. The steps that are involved in applying this method are

i) Calculate the current firm market value of the net tangible assets.

ii) Assessing the return required by the knowledgeable investor from the tangible assets.

iii) Figure out the excess return that is attributable to the intangible assets.

This is difference between the return that is obtained by the branded product manufacturer and the return requir4ed from the tangible assets of the company.

d) **Retail premium method**,The brand earnings are equated with the price premium commanded by the branded product or service over and above that of the unbranded product or service. The procedure to be followed in this method are: -

i) Estimate the gross retail premium attributable to the brand as the difference between average retail price of the branded product or the service and the average retail price of unbranded equivalent

ii) From gross retail premium, deduct incremental costs incurred for branded product to sustain the premium and arrive at the retail premium before tax.

iii) Finally, deducting the taxes from retail premium before tax to get the retail premium after tax.

3. Royalty Method: -

In this method, you ask the question: What is the estimated post-tax royalty (after deducting the costs associated with maintaining the licensing arrangements.) which can be earned from the intangible asset under the hypothetical licensing arrangements? To answer the question, you have to handle over:

- Turnover that intangible asset is expected to generate,
- The royalty rate, and
- The cost of maintaining the licensing arrangement.

II) Capitalize the cash flows/earnings

As the cash flows/earnings that are linked with the intangible assets have been estimated, the next step is to convert them into the capital value. The commonly used methods are: -

a) Discount cash flow method

b) Earnings multiple method

a)Discount cash flow method

As per the discounted cash flow method, the value of the intangible asset is equal to the present value of the net cash flows expected to be generated by the asset. The discount rate used for calculating present value is the weighted average cost of capital, that reflects the company and financial risks that are associated with the investment.

b) Earnings multiple method

According to this method, the value of the intangible asset is estimated by multiplying the earnings attributable to that of intangible asset by the suitable earning multiple.

The earnings multiple method is normally used in the valuation exercises. The firm may be valued by considering the P/E multiple for comparable firms and applying it to the earnings of the company to be valued. The scope for applying the earnings multiple method to the intangible assets can be somewhat limited because that are very less transactions involving sale of intangible assets separated from the underlying business.

Summary

- If you want to value any firm in another country bear in mind the international accounting differences and variations in the tax regimes and estimate the cost of capital from the perspective of the global investor.
- Tax regimes differ across countries. You must know how taxable income is calculated and what the relevant tax rate is. You must take into consideration reliefs available through tax exemptions, tax credits, and tax treaties.
- The value of the firm should be the same, regardless of the currency in which its cash flows are projected. You may use any of the following methods for valuing the cash flows.

a) Spot Rate method: The project foreign cash flows in the foreign currency, the discount these cash flows at the foreign cost of capital and finally converting the present value of cash flows into the domestic currency by applying the spot the exchange rate.

b) Forward Rate method: The project foreign cash flows in the foreign currency, that covert the foreign currency cash flows into the domestic currency applying the forward exchange rates, and finally discount the converted cash flows are domestic cost of capital.

- Intangible assets (intangibles) are an asset that lacks physical form yet still has the value for the owner. Intangibles fall into two broad categories: identifiable intangibles and value enhancement.
- You have to remember that the value of the asset must reflect the benefits that are expected from it and there is hardly any correlation between the expenditure on the intangible asset and its value. A low-cost but highly productive brand-building program can be very valuable, but the high-cost but infructuous brand-building program can be worthless.
- Several methodologies that are used to value the intangible asset on the basis of economic value. These methodologies involve the two steps: -

  i) First, Estimating the cash flows/ earnings

  ii) Second, capitalize the cash flows/ earnings

Keywords

Cross border valuation, Initial public offering, private equity setting, intangible assets, Franchises, Patents, Brand, copyrights, and trademarks.

SelfAssessment

1. …… is the valuation technique used to value the firm in another country.

A. Valuation of initial public offering
B. Cross border valuation
C. Valuation of intangible assets
D. None of the above

2. In cross border valuation, the valuing of firms can be done by using the different methods

A. Spot rate method
B. Forward rate method
C. Both a) and b)
D. None of the above

3. The cost of capital should be estimated form the perspective of the global investor. This means that both the market risk premium and ……..have to be measured against the global market portfolio, not the local (domestic or foreign) market portfolio.

A. Alpha
B. Beta
C. Both a) and b)
D. None of the above

4. The full form of IPO

A. Initial Private Offerings
B. Initial Public Offerings

C. Industry Public Order

D. None of the above

5. When the shares of the company that are offered for the sale for the first time in the public market, the process of offering those shares is called ……

A. Initial public offerings

B. Bonus shares

C. Neither a) nor b)

D. None of the above

6. As the……., co-founder, the Carlyle Group, argues: "Large private equity firms have the experience, organization, processes, and risk appetite to evaluate and close investments.

A. David Rubenstein

B. David Roberto

C. Neither a) nor b)

D. None of the above

7. On which of the following basis the private investing differs from the public investing?

A. Illiquid investment

B. Active Role

C. Fine Horizon

D. All of the above

8. …….. are an asset that lacks physical form yet still has the value for the owner.

A. Tangible assets

B. Intangible assets

C. Neither a) nor b)

D. Physical assets

9. The intangibles fall into two broad categories:

A. Identifiable intangibles

B. Value enhancement

C. Both a) and b)

D. None of the above

10. Which of the following is not the intangible assets?

A. Patents

B. Trademarks

C. Furniture

D. Brands

11. The ……. confers on its owner the right to sell the branded product or service.

A. Brands

B. Trademarks

C. Goodwill
D. Franchises

12. Which of the following statements is/are true ?

The value of the franchise can be impaired in the different ways.

A. First, the problems of the franchisor naturally have the adverse impact on the firm of the franchisee.
B. Second, the franchisors, thanks to the superior bargaining power, that can take advantage of the franchisees.
C. Both a) and b)
D. None of the above

13. The brand is "the name, term, sign, symbol or design, or the combination of them this is intended to identify the goods or services of one seller to differentiate them from those of the competitors." Who gave this definition?

A. Philip Kotler
B. Hugh Davidson
C. Neither a) nor b)
D. None of the above

14. The procedure of valuation of intangible assets through the economic approach are: -

A. Estimating the cash flows/ earnings
B. Capitalize the cash flows/ earnings
C. Both a) and b)
D. None of the above

15. In ……method, the appropriate remuneration on capital employed is deducted from the earnings of the company to identify the brand earnings. By deducting the return on capital, the value added by the other assets of the company like fixed assets and the net working capital is eliminated.

A. Utility cost method
B. Return on capital method
C. Premium profit method
D. None of the above

Answers for SelfAssessment

l.	B	2.	C	3.	B	4.	B	5.	A
6.	A	7.	D	8.	B	9.	C	10.	C
11.	D	12.	C	13.	A	14.	C	15.	B

Review Questions

1. What are the factors to be considered in cross border valuation?
2. Explain how the valuation is done in private equity settings.
3. Explain the concept of intangible assets with its types.

4. Discuss the economic approach to value the intangible assets.
5. What are the methods used in the brand contribution method of valuing the intangible assets?
6. Differ the private versus public equity investing?

Further Readings

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Unit 12: Mergers and Acquisitions

CONTENTS

Objectives

- Understand the concept of mergers and acquisitions.
- Discuss the types of mergers and acquisitions.
- Explain the reasons for mergers and acquisitions.
- Explain the different types of transactions.
- Explore the vale creation through M &A.
- Analyze the cost and benefits of mergers and acquisitions.

Introduction

In this unit Mergers and Acquisitions, we will discuss some models useful in assessment of acquisition value (with reference to either the entire capital of a company or a controlling stake of the company) within transactions aimed at integrating companies such as mergers and acquisitions (M&A) and joint ventures. We will see how the acquisition value, to a great extent, determines the prices in a market for corporate control and, means, the fair market value of companies in aa the sectors. To present the concepts to be illustrated in the following unit, we will discuss the mechanisms and the forces responsible for the formation of the prices negotiated between buyers and sellers in the market for corporate control. The indications that can be inferred from the models presented will eventually be linked to the procedure for calculating premiums and discounts in the context of business valuation.

Corporate restructuring means a broad number of activities that will expand or contract a firm's operations or modify its financial structure or bring out the significant changes in ownership structure. It includes mergers, acquisitions, takeover, demerger, slump sales, and equity carve outs.

Mergers and acquisitions have become a major force in the financial and economic environment all over the world. An American phenomenon till the mid-1970s, they have become a dominant global business theme. As David Sinclair put it: "It was once thought that states too sophisticated to fight

each other would make war through sport. They do not. The real international battle ground these days is boardroom. The weapon is takeover."

12.1 Mergers and Acquisitions

Mergers and acquisitions (M&A) is a general term that describes the consolidation of companies or assets through various types of financial transactions, including mergers, acquisitions, consolidations, tender offers, purchase of assets, and management acquisitions.

The terms mergers and acquisitions are often used interchangeably, however,they have slightly different meanings.

When one company takes over another and establishes itself as the new owner, the purchase is called an acquisition.

On the other hand, a merger describes two firms, of approximately the same size, that join forces to move forward as a single new entity, rather than remain separately owned and operated.

In a merger, theboards of directors for two companies approve the combination and seek shareholders' approval.

For Example,in 1998, a merger deal occurred between the Digital Equipment Corporation and Compaq, whereby Compaq absorbed the Digital Equipment Corporation. Compaq later merged with Hewlett-Packard in 2002. Compaq's pre-merger ticker symbol was CPQ. This was combined with Hewlett-Packard's ticker symbol (HWP) to create the current ticker symbol (HPQ).

Acquisitions

In a simple acquisition, the acquiring company obtains the majority stake in the acquired firm, which does not change its name or alter its organizational structure.

An example of this type of transaction is Manulife Financial Corporation's 2004 acquisition of John Hancock Financial Services, wherein both companies preserved their names and organizational structures.

12.2 Types of Mergers and Acquisitions

There are basically three types of mergers and acquisitions:-

Horizontal M&A:-

In this kind of mergers and acquisitions, there is merging of two or more companies of similar nature. The main objective is to integrate to have active influence on price creation.

Vertical M&A-

In this vertical merger and acquisition, there is merging done but at the same level like suppliers merge with buyers or distributors. The main reason is to eliminate cost of searching for prices, contracting, payment collection and advertising. In horizontal integration, there is no specific timing, but in vertical mergers take palace when both firms plan to integrate the process of production.

Conglomerate M&A-

When both the companies maintain their autonomy and have a large amount of sovereignty in decision making process.

12.3 Reasons for M&A

The major motive for mergers and acquisitions is the realization of the synergy effects that will lead to raise the efficiency in a company and to lower costs. These synergies can be achieved in different ways. Firstly, production-economical synergies can be achieved by raising the economies of scale, since bulk production decreases the unit costs and therefore completes the rationalization gains

through staff reductions. Moreover, M&As give access to other markets and facilitate the creation of market entry barriers.

Reasons for Mergers or Acquisitions can be so fundamentally different; the reasons divide this rationale into three main groups.

1. **Classical motives**the classic motive of M&A seeks its justification in the power of the market. By merging or acquiring competitors from the same sector the company reduces competitive pressure and wins advantages in a price war. If a company has a monopoly position, the competition completely disappears and the higher prices will be forced onto the market

2**. Neoclassical motives**when a company reaches its development frontier – either in a single market or in a product category - management must decide on the future strategy. M&As that happen then are described as the neoclassical approach. The main specific reasons are: operational efficiencies arising from the economies of scale, reduction in overall costs from the joint production of complementary products, cost cuts – this motive has become mostly quoted as raison d'être, market power effects,development acceleration, and bargain search – a company may seek an acquisition because it believes its target is undervalued, and thus it is a bargain – a good investment capable of generating a high return for the acquiring company's shareholders.

3. **Managers motives**Mergers and acquisitions are also often triggered by managers' motivations. There are a few types of such transactions: empire building syndrome (strive to grow companies as their salaries, non-wage profits, and both business and social position depend on company size), self-realization motive (an attempt to fully show one's skills and knowledge), risk diversification (the motive is linked to financial tensions and bankruptcy possibility), and job sustention motive (a threat of evil acquisition by another company).

From a financial point of view M&A are motivated mostly by:

1. Cost reduction.

2. Better exploitation of the potential of a company.

a) Typically, a company has an excess of cash but suffers from a shortage of interesting projects to carry out.

b) A company cannot use the tax shield.

c) Companies with complementary resources.

3. Diversification- It is doubtful in the case of public companies – investors can do those themselves. In case of small companies the reduction of risk is likely to happen

4. Credit rating- Bigger companies may apply for bigger loans and easily serve the existing loans

5.Better management- Taking over another company is the simplest way to replace an ineffective management team

6.Increased EPS-It is doubtful whether this should be the main reason for a merger.

12.4 Types of Transactions

There are different types of transactions in the corporate restructuring.The transactions can be classified as follows:-

I Acquisitions

Under Acquisitions, there are different types of transactions like merger, purchase of a unit or plant, takeovers and leveraged buyouts etc.

- Merger:

Mergermeans a combination of two or more companies into one company. It can also involve absorption or consolidation. In absorption, one company acquires another company.

For Example:-Hindustan Lever Limited absorbed Tata Oil Mills Company. Digital Equipment Corporation was absorbed by Compaq after it was acquired in 1997.

- Consolidation

In a consolidation, two or more companies combine to form a new company.

For example:-Hindustan Computers Limited, Hindustan Instruments Limited, Indian Software company Limited, and Indian Reprographics Limited combined to form HCL Limited. Citigroup was the firm created when Citicorp and Travelers Group consolidated.

Notes: -In India, mergers, called amalgamations in the legal parlance (hereafter we will use the different terminologies mergers and amalgamations interchangeably) are of absorption.

2. **Purchase of division or plant**: -The Company can acquire division or plant of the other company. Normally, the acquiring company acquires the assets and also takes over the liabilities of that particular division and pays off the cash compensation of the selling company.

For Example: -Abbott laboratories acquired the pharmaceuticals business of Piramal Healthcare For$2.13 billions.

Notes: - In this kind of transactions only some part of assets and liabilities of one company are taken by the other company.

3.**Takeover**: -A takeover generally involves the acquisition of a certain stake in the equity capital of a company in which the right is given to exercise the control over the affairs of the company.

For Example**:** - The takeover case where HINDALCO took over INDIA by acquiring a 54 percent stake in INDAL from its overseas parent, Alcan. Subsequently, however, INDAL was merged into HINDALCO.

Notes: - unlike mergers and acquisitions, in takeover it does not involve transfer of assets and liabilities.

4. **Leveraged Buyouts**:- under leveraged buyouts, a variant of takeover or purchase of a division, affected substantially with the help of debt finance.

II Divestitures:-

While acquisitions lead to expansion of assets or increase of control, divestitures result in contraction of assets. The different types of divestitures are as follows:-

1.Partial Selloffs: - it basically means when the sale of a business division or a plant from one company to another company. It is very similar to purchasing a business division.

2.Demerger: -A demerger involves the transfer by one company of one or more of its business divisions to another company which is newly set up.

For Example: - The Great Eastern Shipping Company transferred its offshore division to the new company which is now called 'The Great Offshore Limited."The company whose business division has been transferred is called a demerged company and the company to

which the business division is transferred as Resultant Company.

3.Sale of Equity Stake: In this kind of divestiture, in which sale of equity stake, investor of stake sells its equity stake, that represents the controlling block, to another investor.

For example: - Alcaan sold its 54 percent stake in INDAL to HINDALCO. It can also be said as a takeover.

4.Equity Carve out: -In this equity carve out, a parent company sells a portion of its equity in the completely owned subsidiary. This sale can be the general investing public or a strategic investor.

5. PSU Disinvestment: -it means the transfer of ownership , parietal or completely, of public enterprises from the government to individuals and non-governmental institutions.

12.5 Value Creation in Mergers and Acquisitions

The net value created for an acquirer is equal to the value of the target to the acquirer minus the price paid and the value of the target to the acquirer is the pre-acquisition intrinsic value of the target and the net present value of the synergies expected from the business combination. The price paid for the target by the acquirer is the pre-acquisition market value with the premium that he has to pay.

VALUE	PRICE
Target's intrinsic value 6000	Target's market value 4,000
NPV of synergies 1500	Premium Paid 1500
Value of assets acquired 7500	Total price paid 5500
Value created for the acquirer 7500-5500 = 2000	

1.Market Value versus Intrinsic Value:

Market value is the value at which the firm values the target company fairly, however there can be chances of being undervalued or overvalued. So, sometimes there are chances that the firm is misvalued. To discover under-valuation, managers must have good information, superior analytical abilities, and sound judgment. There are chances that a talented investor may profit by timing the market; an expert acquirer may be able to buy assets for less than their intrinsic value.

Notes: - However, remember that the market perhaps over-values assets as often as it under-values them, so acquirers must guard themselves against over-valuation.

2.Synergies:

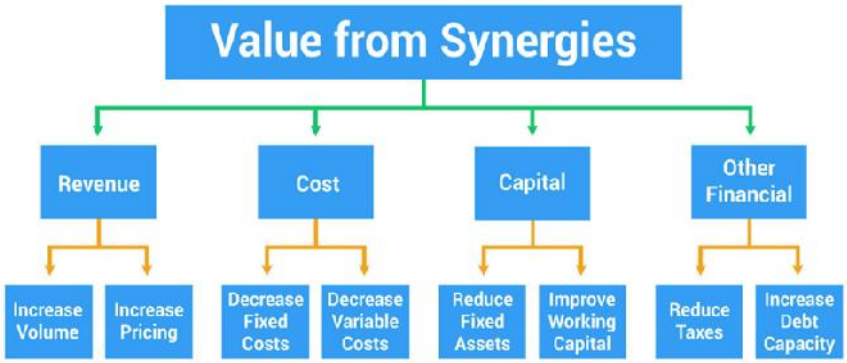
The experience of the experts suggests that there are few opportunities for buying low and selling more and the value creation depends on the ability of the acquirer to realize the synergistic benefits from acquisition. It can increase the value that will lead to better margins, higher revenue growth, or low cost of capital.

The acquirer must assess its strategies and capabilities to identify how the acquisition can lead to better margins, greater asset turnover, higher revenue growth, or lower cost of capital. If the acquirer is the efficient to earn from the acquisition then synergistic benefits would likely come from better margins and greater asset turnover.

3.Premium for control

Premium for Control is the premium which the acquirer has to pay while he is acquiring the target company. Sometimes, when there are many chasers and the competition is in bulk then the

premium paid by the acquirer can be even higher. Normally, the premium which is paid by the acquirer ranges between 20 to 60 percent of the price of the target's equity before announcement. Various values are generated from synergies these can be clearly understand with the help of diagram shown below:-



Sometimes, the required premium can exceed the synergistic benefits that have been actually realized. Some of the reasons are:-

a)Winner's curse:-

The new company sometimes in the competitive bidding situation bids more. The highest bidder is one who overestimates value out of ignorance. Though he becomes the unfortunate winner of the bidding transaction. This is called "winner's Curse" hypothesis.

b)Hubris:-

This is basically a situation where the acquirer overestimates his abilities or capabilities and ignores the warning that comes in the way like current economic conditions. So, out of misplaced confidence, the acquirer's management tends to overestimate the synergies that it hopes to realize. At such times, executives can over-attribute their company's strong performance to their own actions and capabilities rather than the estimation in a floating economy. This will result in their inflated belief in their own talents. so, the executives evaluating an acquisition come to believe that with proper planning and superior management skills, they can make it more valuable.

c)Obsession with size:-

Very less firms have the ability to successfully manage diverse businesses. The temptations to stray into unrelated areas that appear promising are often strong. This can sometimes lead to forays that are often risky.

How to create more value through M&A

EY analysis shows that companies that actively execute M&A on average create more value than those that don't.

Although the data suggests M&A creates value more than it does not, strong execution remains critical to success. There are four ways that companies can drive value through M&A:

1.Follow strategy-driven discipline – Successful M&A can begin with identifying the "right" target that closely fits the company's growth strategy. It is important for companies to pursue the right deals at the right time that are based on strategy. Successful buyers tend to be highly disciplined executives who resist succumbing to "deal fever." Successful M&A executives can actively avoid deals that are off strategy as much as they pursue deals that fit their strategic criteria. Target identification can be driven by a buyer's corporate strategy and growth plans.

2.Perform due diligence and synergy estimation – Two key reasons behind failed M&A transactions are often the underestimation of costs and overestimation of synergies. Once a target has been identified, it can be imperative to develop a sound understanding of its business, operations, industry and competitors. Estimating all one-time costs and quantifying synergies accurately are important to effectively value a target. Experience from frequent acquisition activity helps in the estimation and quantification process. Furthermore, effective buyers understand clearly when a deal's valuation no longer generates an attractive return for shareholders. Executives must be

willing to walk away from even attractive strategic acquisitions if the economics no longer make sense.

3.Conduct effective M&A integration – It is important for the integration program to be detailed and transparent to promote efficient decision making, seamless transitioning and rapid execution. Companies can clearly define how they plan to achieve synergies and how the combined business will be run to enhance value. Strong governance should be in place so that different vertical leads are aligned with the deal objectives and work toward effective integration.

12.6 Primary Reasons for failure in Value Creation through M&A

Indian companies would have been in a better state if they had not taken the path of Merger and Acquisition for organic-growth. Around 75% of M&A transactions made by the local firms have failed to create substantial value from the deals; moreover, 59% of the acquirers have indeed destroyed value within one year of closing the deal.

As per the legal experts, the Indian companies do not accentuate on integration issues before finalizing an M&A deal. However, the acquirers around the world persistently insist on an integration plan and a detailed synergy assessment prior to sealing the deal. Besides, firms lose interest in the acquired assets and do not refurbish them post-transaction, which affect the value of the acquirer.

Generally, it takes 12 months after M&A deal completion to determine the success of the transaction and check if it will add any value for the buyer's shareholders or not. The most common reasons that lead to the failure in value creation through mergers and acquisitions are cultural disparity and post-integration while there are other factors as well. Let us look at the other reasons:

1.Inadequate Involvement of the Owner- Some business leaders may take an active part in the process of Merger and Acquisition, but plenty of the owners count on experts to handle most of the work. During the negotiations of M&A transactions, many professionals oversee the major issues. It creates problems for the business owners to smoothly function as they do not get an insight into the existing circumstances and expectations post-transaction for being out of the picture.

2.Integration Impediments- Merger and Acquisition is far easier on papers than merging the operation & culture in actuality. Things may get topsy-turvy if there is no concrete plan for the integration. Also, a company faces integration obstacles due to miscommunication amongst the middle to higher management. An uncertainty Merger or Acquisition disrupts the company's productivity and efficiency. Therefore, such integration must be evaluated beforehand and handled diligently.

3.Inaccurate Data and Valuation Errors- Overly strategic evaluation and lofty projections are common reasons for the deal's demise. Granted, the parties do everything possible to do an approaching deal. Regrettably, this often shows that the financial matters are certainly calculated and analyzed rather "innovative" to make them as attractive as possible. Although it is evident that the parties seek to anticipate the numbers assuming the best-case scenario, the reality is far below what was presented prior to the deal.

4.Resource Limitation- A newly formed entity requires plenty of resources, both financial and human, to overcome the challenges of integrating two different cultures and companies after M&A. The company ought to update policies, invest in creating extra real estate space, which requires a bit of time and money. Therefore, the company must consider and plan beforehand; however, that is not always the case.

5.Unfavorable Economic Factors- Even the best business plans can go wrong if there is a sudden change in the economy, which affects stock prices and interest rates. A negative economic climate will certainly hinder the success of a Merger and Acquisitions, regardless of how well they were expected to perform.

6.Lack of Strategy and Planning- Mostly, the issues mentioned above are responsible for an M&A deal's failure, but that can be avoided with proper planning, creation and execution of a coherent strategy. The central focus is on getting the M&A deal closed, but not enough attention is paid on the aftermath. Such lack of foresight is the reason that even the smallest issues get in the way of the deal's true potential.

Efficient ways for Successful Value Creation through Mergers and Acquisitions

Around 34% of acquirers' claim that value creation is a priority on the day of closing the deal, however, 66% of dealmakers said that value creation must be a priority right from the start. Some acquirers only emphasize upon integrating the hard tangible assets such as accounting, financial, and operations systems, during M&A to achieve the desired value. Besides, they neglect the soft and equally important intangible assets like people and culture. The root cause of failure in value creation through Mergers and Acquisitions is the acquirers' inability to create synergy, selecting inappropriate target companies, paying too high a premium, and ineffective integration.

1.Things to consider for successfully creating value through M&A:

With a wide selection of targets and effective implementation of acquisitions, one can achieve synergy and create value. The difference in the sizes of an acquiring company and the target company affects value creation. In case the target company is much smaller than the acquiring company, then it shall not affect value creation. On the other hand, if the target company has the same capabilities as an acquiring company, an opportunity for synergy creation exists. If the difference narrows and value creation increases, integration often becomes a problem. It further leads to value loss, even if the companies involved are of similar size.

The acquirers need to stay true to the strategic intent. Companies must approach Merger and Acquisition deals as part of a clear strategic vision and align it to the long-term objectives for the business. 86% of acquirers said that their latest acquisitions had created a significant value as it was a part of a broader portfolio review than merely an opportunity. Thus, companies must bring a more strategic lens to M&A planning and understand where the business requires strengthening.

Companies must have a clear blueprint containing all the elements of the value creation plan. Acquirers should ensure to conduct a thorough due diligence across all areas of the business for a successful value creation through Mergers and Acquisitions. Consider some factors like how each element of the value creation process supports your business model, operating model, technology plans and synergy delivery. Reportedly, 79% of acquirers did not have an integration strategy in place when signing an M&A deal, while 63% did not have a technology plan.

Lastly, prioritize and fix cultural differences at the start of a deal. Human capital and talent management majorly influence how companies can deliver value. 82% of companies said a large value was destroyed in their latest acquisition and lost more than 10% of employees after the transaction took place. Businesses should invest more time and resources in the process of M&A transactions to succeed. Over two-thirds of the companies said that their latest M&A deal subsequently created significant value as they had an integration strategy in place while signing. The acquirer must have an ability to bring different cultures together, which is a key factor in determining the success and failure of the deal.

A successful M&A process utilizes these best practices:

1. Thorough evaluation and due diligence of the target companies
2. Strategic interest of the potential synergies
3. Resource and cultural management;
4. Solid communication strategy which helps to facilitate a change in management and raise value creation.

12.7 Cost and Benefits of Merger

When the firm A acquires the firm B, then they have to make the capital investment decision and the acquired firm is making the divestment decision so valuation of cost and benefits of merging is done. In this we will find, what is the net present value of firm A and net present value of this decision to firm B.

If you want to calculate the net present value to the firm A we have to find out the benefits and cost for acquiring A. Hence, the benefit of calculating A can be determined as follows:-

$$\text{Benefit} = PV_{AB} - (PV_A + PV_B)$$

The cost of merger, from the point of view of firm A, can be calculated as the compensation to firm B is paid in cash, which is the cash payment made for acquiring firm B less the present value of firm B as the separate entity. Thus,

$$\text{Cost} = \text{Cash} - PV_B$$

So, the net present value of the merger to firm A is simply the benefit and cost as defined above. It can be mathematically expressedas:-

$$\text{NPV to A} = \text{Benefit and Cost}$$

$$= [(PV_{AB} - (PV_A + PV_B)] - [\text{Cash} - PV_B]$$

$$= PV_{AB} - PV_A - \text{Cash}$$

Now, we will calculate the net present value of the merger from the point of view of firm B is simply the cost of the merger from the point of view of firm A.

Hence,

$$\text{NPV to B} = (\text{Cash} - PV_B)$$

Illustration : Firm A has the value of 3000 million and Firm B has the value of 600 million. If both the firms merge, cost savings with the present value of 600 million would occur. Firm B proposes to offer 700 million cash compensation to acquire firm B.

Calculate the net present value of both the firms.

Solution: First of all, Present value of A firm (PV_A) = 3000 million

present value of firm B (PV_B) = 600 million

Present value of both the firms (PV_{AB}) = 4200 million

Cash = 700 million

Therefore, **Benefit** $= PV_{AB} - (PV_A + PV_B)$

= 600 million

Cost = Cash - PV_B

= 700 - 600 = 100 million

NPV to A = Benefit - Cost

=600 - 100 million = 500 million

NPV to B = Cash - PV_B

=700 - 600 million

=100 million

Summary

- Corporate restructuring, includes activities such as mergers, purchases of the other firms, slump sales, demergers, and equity carve outs.
- Mergers and acquisitions have become the main force in the financial and economic environment all over the world. On the Indian scene, they have become the order of the day.
- The peak pace of mergers and acquisitions throughout the owls being catalyzed by different factors: - technological changes, globalization, favorable financial environment, overcapacity, and the race to go at the peak.
- Acquisition is unique investment decisions because there are no dry runs, the entire money has to be paid up front, exit cost after integration are prohibitively high, and managing a synergy in many ways is akin to managing the new complex business.
- Value creation in mergers and acquisitions is done with the help of different elements that depend upon the value and price of the acquisition like the target's intrinsic value, NPV of synergies then we will get the value of assets acquired.
- The price paid in the acquisition by the acquirer is the target's market value, premium paid then we will get the total price paid by the acquirer.

Keywords

- **Consolidation-** It is also known as amalgamation where two or more companies merge to become one. It is most often associated with M&A activity.
- **Synergies**:- It means combining different units to increase the vale and performance of two companies that will be greater than the sum of the separate individual parts.
- **Divestitures**:- It is simply selling of a business unit either partially or fully disposal. It can also happen through exchange, closure or bankruptcy.
- **Hubris**:- This is basically a situation where the acquirer overestimates his abilities or capabilities and ignores the warning that comes in the way like current economic conditions. So, out of misplaced confidence, the acquirer's management tends to overestimate the synergies that it hopes to realize.

SelfAssessment

1. Market for corporate control includes the following:

   (I) Mergers

   (II) Spin-offs and divestitures

   (III) Leveraged buyouts (LBOs)

   (IV) Privatizations

A. I only
B. I and II only
C. I, II, and III only
D. I, II,III, and IV

2. The merger of J.P. Morgan and Bank One is an example of:

   (I) Cross-border merger

   (II) Horizontal merger

   (III) Conglomerate merger

   (IV) Vertical merger

A. I only
B. II only
C. III only
D. I and III only

3. Pfizer's acquisition of Pharmacia is an example of:

   (I) Horizontal merger

   (II) Vertical merger

   (III) Conglomerate merger

A. I only
B. II only
C. III only

D. None of the given ones

4. AOL's (America Online) acquisition of Time Warner is an example of:
   (I) Cross-border merger
   (II) Horizontal merger
   (III) Conglomerate merger
   (IV) Vertical merger

A. I and II only
B. I and III only
C. III only
D. IV only

5. Firm A has a value of $100 million, and B has a value of $70 million. Merging thetwo wouldallow a cost savings with a present value of $20 million. Firm A purchases B for $75 million. What isthe gain from this merger?

A. $30 million
B. $20 million
C. $15 million
D. $75 million

6. Firm A has a value of $100 million, and B has a value of $70 million. Merging thetwo wouldallow a cost savings with a present value of $20 million. Firm A purchases B for $75million. What isthe cost of this merger?

A. $30 million
B. $20 million
C. $5 million
D. $10 million

7. Firm A has a value of $100 million, and B has a value of $70 million. Merging thetwo wouldallow a cost savings with a present value of $20 million. Firm A purchases B for $75million. How much do firm A's shareholders gain from this merger?

A. $30 million
B. $20 million
C. $15 million
D. $5 million

8. Firm A has a value of $200 million, and B has a value of $120 million. Merging thetwo wouldallow a cost savings with a present value of $30 million. Firm A purchases B for $130million. What is the gain from this merger?

A. $30 million
B. $20 million
C. $100 million
D. $80 million

9. Firm A has a value of $200 million, and B has a value of $120 million. Merging thetwo wouldallow a cost savings with a present value of $30 million. Firm A purchases B for $130million. What is the cost of this merger?

A. $30 million
B. $20 million
C. $15 million
D. $10 million

10. Firm A has a value of $200 million, and B has a value of $120 million. Merging thetwo wouldallow a cost savings with a present value of $30 million. Firm a purchases B for $130million. How much do firm A's shareholders gain from this merger?

A. $30 million
B. $20 million
C. $15 million
D. $10 million

11. AT&T's acquisition of TCI is an example of:

(I) Horizontal merger
(II) Vertical merger
(III) Conglomerate merger
(IV) Cross-border merger

A. I only
B. II only
C. III only
D. III and IV only

12. The following reasons are good motives for mergers except:

(I) Economies of scale
(II) Complementary resources
(III) Diversification
(IV) Eliminating Inefficiencies

A. I only
B. II only
C. III only
D. I, II, and IV only

13. The following are good reasons for mergers:

(I) Surplus funds
(II) Eliminating inefficiencies
(III) Complementary resources
(IV) Increasing earnings per share (EPS

A. I only
B. I and II only
C. I, II, and III only
D. IV only

14. The following are good reasons for mergers:

(I)Economies of scale

(II)Economics of vertical integration

(III)Complementary resources

(IV)Surplus funds

(V)Eliminating inefficiencies

(VI)Industry consolidation

A. I only
B. I, II, and III only
C. I, III, IV, and V only
D. I, II, III, IV, V, and VI

15. The following are dubious reasons for mergers:

(I)to diversify

(II) Increasing the earnings per share (EPS)

(III) Lower financing costs

(IV) Industry consolidation

A. I only
B. II and IV only
C. III and IV only
D. I, II, and III only

Answers for Self Assessment

1.	D	2.	B	3.	A	4.	D	5.	B
6.	C	7.	C	8.	A	9.	D	10.	B
11.	B	12.	C	13.	C	14.	D	15.	D

Revision Questions

1. What factors have heightened the pace of mergers and acquisitions globally?
2. Explain the reasons for M & A?
3. Describe the various types of corporate restructuring transactions?
4. Discuss the cost and benefit of the merger?
5. Explain the reasons for failure of value creation through M&A?

Further Readings

- https://blog.ipleaders.in/valuation-mergers-acquisitions/
- https://www.researchgate.net/publication/329815733_Corporate_business_valuation_for_mergers_and_acquisitions
- https://www.valentiam.com/newsandinsights/merger-and-acquisition-valuation-methods
- https://www.streetofwalls.com/finance-training-courses/investment-banking-technical-training/mna-valuation-techniques/

Unit 13: Case Studies in Valuation-I

CONTENTS

Objectives

- Understand the assumptions for the valuation of Bharat Hotels Company
- Discuss the DCF value and continuing value for the valuation
- Explain the valuation of Bharat Heavy Electricals Limited
- Analyze the different methods for the valuation of Bhoruka Power Corporation Limited

Introduction

Businessvaluation is a process and a set of procedures used to estimate the economic value of an owner's interest in a business. Here in this unit we will going to discuss about the valuation of the different companies like Bharat Hotels Company, Bharat Heavy Electricals Limited, Bhoruka Power Corporation Limited.

Bharat Hotels Company is the major hotel chain of India. The company operates 35 hotels of which 14 are owned by it and the rest are owned by it and the rest are owned by others but managed by BHC.

Bharat Heavy Electricals Limited (BHEL), the public sector firm is the largest engineering and manufacturing enterprise in India in the energy-related / infrastructure sector. BHEL caters to the core sectors of Indian economy viz., power generation and transmission industry, transportation, renewable energy, and defense.

Bhoruka Power Corporation Limited is the highly profitable power generation firms which has done very right from its inception in 1992. It has grown at the healthy rate, achieved the high return on equity, and built impressive reserves and surplus. In terms of the two key financial performance measures, viz., net profit to sales ratio, and return on net worth, BPCL outperformed all the listed power generation firms.

13.1 Bharat Hotels Company

Bharat Hotels Company is the major hotel chain of India. The company operates 35 hotels of which 14 are owned by it and the rest are owned by it and the rest are owned by others but managed by BHC.

BHC's principal strategy has been to serve the high end of the international and leisure travel markets in major metropolises, secondary cities, and tourist destinations. It plans to continue to develop new businesses and leisure hotels to take advantage of the increasing demand which is emanating from the larger flow of commercial and tourist traffic of foreign as well as domestic travelers.

BHC believes that the unique nature of its properties and emphasis on the personal service distinguishes it from other hotels in the country. Its ability to forge management contracts for choice properties owned by others has given it the flexibility to swiftly move into new markets while avoiding the capital-intensive and time-consuming activity of constructing its hotels.

BHC's major competitors in India are the two other major Indian hotel chains and the host of other five-star hotels which operate in the metropolises as an extension of multinational hotel chains. The foreign hotel majors are considerably stronger than Indian hotels in terms of financial resources, but their presence in the country has historically been small. With the government committed to developing India as a destination for business and tourism, several hotel majors have announced their intention to establish or expand their presence in the country.

BHC's operating revenues and expenses for the year just concluded were as follows: -

Operating Revenues	Rupees (in million)
Room rent	1043
Food and beverages	678
Management fees for managed properties	73
Operating Expenses	
Materials	258
Personnel	258
Upkeep and services	350
Sales and general administration	350

BHC's assets and liabilities (in million rupees) at the end of the year 0 were as follows: -

Owner's Equity and Liabilities		Assets	
Net Worth	1126	Net Fixed Assets	1510
Debt	900	Gross Block	2110
		Accumulated depreciation	600
		Net Current Assets	516
	2026		2026

BHC had no non-operating assets

At the beginning of year 0, BHC owned 2190 rooms. It has planned the following additions for the next seven years. Most of the land needed by firm for these additions has been already acquired.

Year	Rooms	Investment (in million rupees)
1	90	200
2	130	300
3	80	240

4	130	500
5	186	800
6	355	1400
7	150	1300

Assumptions

The good portion of investment in the 7 would be toward the purchase of land.

For the purpose of simplicity assume that the addition will take place at beginning of the year. For developing the financial projections of BHC, the following assumptions may be made.

- The occupancy rate will be 60 percent for year 1. Thereafter, it will increase by 1 percent per year for the next six years.
- The average room rent per day will be 2,500 for year 1. It is expected to increase at the rate of 15 percent per year till year 7.
- Food and beverage revenue are expected to be 65 percent of the room rent
- Material expenses, personnel expenses, upkeep and services expenses, and sales and the general administration expenses will be, respectively, 15, 15, 18, and 18 percent of the revenues (excluding the management fees).
- Working capital (current assets) investment is expected to be 30 percent of revenues.
- The management fees for managed properties will be 7 percent of room rent.
- The room rent from the managed properties will be more or less equal to room rent from owned properties.
- The depreciation is expected to be 7 percent of the net fixed assets.
- Given the tax breaks it enjoys, the effective tax rate for BHC will be 20 percent.

Besides financial projections, the following information is relevant for valuation.

- The market value of equity of BHC at the end of year 0 is 3050 million. The imputed market value of the debt is 900 million.
- BHC's stock has the beta of 0.921.
- The risk-free rate of return is 12 percent and the market risk premium 8 percent.
- The post-tax cost of debt is 9 percent.
- The free-cash-flow is expected to grow at the rate of 10 percent per annum after 7 years.

DCF Value

The DCF value of the BHC is calculated as follows:

Free Cash Flow Forecast:

Based on the information provided above, the forecast for revenues and the operating expenses is developed in the first three panels of the table below.

The schedule for the current asses, fixed assets, and the depreciation is shown in the fifth panel. Finally, the free cash flow forecast is developed in fourth panel of the table.

Financial Projections
PANEL I

Year	1	2	3	4	5	6	7
A. Rooms	2280	2410	2490	2620	2806	3161	3311
B. Occupancy rate	0.60	0.61	0.62	0.63	0.64	0.66	0.66
C. Average room rent (in rupees)	2500	2875	3306	3802	4373	5028	5783

PANEL II							
D. Room rent from owned properties	1248	1543	1863	2291	2867	3771	4613
E. Food and beverage revenues	811	1003	1211	1489	1864	2451	2998
F. Revenue from owned properties (D + E)	2059	2546	3074	3780	4731	6222	7611
G. Management fees from managed properties	87	108	130	160	200	264	323
H. Total revenues (F+G)	2146	2654	3204	3940	4931	6486	7934

PANEL III							
I. Material Expenses	309	382	461	567	710	933	1142
J. Personnel expenses	309	382	461	567	710	933	1142
K. Upkeep and service expenses	371	458	553	680	852	1120	1370
L. Sales and general admin expenses	371	458	553	680	852	1120	137
M. Total operating expenses	1360	1680	2028	2491	3124	4106	5024

PANEL IV							
N. EBDIT (H-K)	786	974	1176	1446	1807	2380	2910
O. Depreciation	120	132	140	166	210	293	329
P. EBIT	666	842	1036	1280	1597	2087	2581
Q. NOPLAT	533	674	829	1024	1278	1670	2065
R. Gross cash flow	653	806	969	1190	1488	1963	2394
S. Gross investment (Fixed assets)	302	446	398	712	1085	1878	1716
T. Free cash flow form operations (R-S)	351	360	571	478	403	115	678

PANEL V							
A. Net Current Assets	516	618	764	924	1134	1419	1867
B. Net current assets addition	102	146	158	212	285	448	416
C. Gross block	2110	2310	2610	2850	3350	4150	5550
D. Capital expenditure	200	300	240	500	800	1400	800
E. Accumulated Depreciation	600	720	852	984	1150	1360	1653
F. Net block (C+D-E)	1710	1890	1998	2366	3000	4190	4697
G. Depreciation	120	132	140	166	210	293	329

Cost of Capital BHC has two sources of finance, equity and debt. The cost of capital has BHC is:

Cost= Weight of Equity × Cost of Equity + Weight of Debt × Cost of Capital Debt

The weights of equity and debt, based on market value, are as follows;

Weight of Equity = 3050/3950 = 0.772

Weight of Debt = 900/3950 = 0.228

The cost of debt is given as 9 percent. The cost of equity using the capital asset pricing model is calculated below:

Cost of Equity of BHC = Risk-free rate + Beta of BHC (Market risk premium)

=12+ 0.921 (8)

=19.37

Given the component weight and cost, the cost of capital for BHC as :

(0.772)(19.37) + (0.228) (9)

=17.00 percent

13.2 Continuing Value

The continuing value can be estimated using the growing free cash flow perpetuity method. The projected free cash flow for the year 7 is 678 million. Thereafter it is expected to grow at the constant rate of 10 percent per year. Hence the expected continuing value at the end of seventh year is given by

$$CV_{-7} = FCF_g / k\text{-}g$$

$$=678(1.10) / 0.17 - 0.10$$

$$= 106.54 \text{ million}$$

Calculation and Interpretation of Results

The value of equity is equal to: Discounted free cash flow during the explicit forecast period

+ Discounted continuing value + Value of non-operating assets

-Market value of debt claims

$$= \frac{351}{(1.17)} + \frac{360}{(1.17)^2} + \frac{571}{(1.17)^3} + \frac{478}{(1.17)^4} + \frac{403}{(1.17)^5} + \frac{115}{(1.17)^6} + \frac{678}{(1.17)^7} + \frac{10654}{(1.17)^7} + 0 - 900$$

Since the discounted continuing value (10654/(1.17)--^{2} = 3550 million looms large in this valuation, it is worth looking into it further. Its key determinant appears to be expected growth rate in free cash flow beyond the explicit forecast period. This has been assumed in the preceding analysis to be 10 percent. What happens to the estimate of equity value to variations in growth rate in the range of, say, 8 percent to 12 percent is shown below:

Growth rate (percent)	Equity value estimate (in million rupees)
8	3490
9	3835
10	4279
11	4871

13.3 Bharat Heavy Electricals Limited (BHEL)

Established in 1964, BHEL, the public sector firm is the largest engineering and manufacturing enterprise in India in the energy-related / infrastructure sector. BHEL caters to the core sectors of Indian economy viz., power generation and transmission industry, transportation, renewable energy, and defense.

In March 1992, BHEL was 100 percent government-owned company. In the wake of the economic reforms initiated in 1991, BHEL felt that scope for a strategic alliance with foreign firms had increased. It also anticipated that the government of India would partially disinvest its stake in BHEL. In this context, it asked the author to do a valuation as on March 31, 192.

The inputs for the valuation exercise came largely from the five-year plan BHEL had developed for the period 1992-1997. From the detailed financial projections available in the plan, the free cash flow forecast for the five-year period, 1992-1997, was prepared, as shown in table below. While the firm had detailed plans and projections for the five years, it did not have any projections for the period thereafter. So, the explicit forecast period was set at five years.

BHEL: Free Cash Flow Forecast

	1992-93	93-94	94-95	95-96	96-97

Turnover	3350	3700	4200	5000	6000
EBDIT (12%)	402	444	504	600	720
Depreciation (3.12%)	104.5	115.4	131.0	156.0	187.2
EBIT (8.88%)	297.5	328.6	373.0	444.0	532.8
Tax Rate	45%	40%	35%	35%	35%
Tax	133.9	131.4	130.6	130.6	186.5
NOPLAT	163.6	197.2	242.4	242.4	346.3
+Depreciation	104.5	115.4	131.0	131.0	187.2
Gross Cash Flow	268.1	312.6	373.4	373.4	535.5
- (CAPEX + ΔWC)	103	135.0	153.0	153.0	219.0
Free Cash Flow	165.1	177.6	220.4	220.4	314.5

The free cash flow forecast was based on the following assumptions:

- EBDIT, depreciation, and EBIT would be 12.00 percent, 3.12 percent, and 8.88 percent respectively of the turnover.
- The tax rate would be 45 percent for the year 1992-1993. Thereafter it would decline by 5 percent each year for the two years and stabilize at 35 percent beyond two years. This assumption was in line with the indication given by Dr. Manmohan Singh, the finance minister.

The management of BHEL estimated its weighted average cost of capital at 12.5 percent.

The terminal value at the end of 5 years was estimated as the multiple of free cash flow for the year 5. The multiple was judgmentally determined.

Given the above projection and the assumptions, the enterprise value was calculated as follows: -

Present value of free cash flow during the explicit forecast period:

$$PV_{(FCF)} = \frac{165.1}{(1.125)} + \frac{177.6}{(1.125)^2} + \frac{220.4}{(1.125)^3} + \frac{262.6}{(1.125)^4} + \frac{314.5}{(1.125)^5}$$

= 780.3crore

Present value of horizon or terminal value

$$PV\,(HV) = 314.5 \times 12 \times \frac{1}{(1.125)^5}$$

= 2094.3 crore

On March 31, 1992, BHEL had the total debt of 775 crore on balance sheet. it was assumed that book value of debt was the good proxy for tis market value.

So, the equity value was estimated as

=2874.6 - 775

= 2099.6 crore

As on the March 31,1992, BHEL had 24 crore shares outstanding of 10 each. So, the imputed value per share worked out to

=2099.6/24

= 87.5

13.4 Bhoruka Power Corporation Limited

Bhoruka Power Corporation Limited is the highly profitable power generation firms which has done very right from its inception in 1992. It has grown at the healthy rate, achieved the high return on equity, and built impressive reserves and surplus. In terms of the two key financial performance measures, viz., net profit to sales ratio, and return on net worth, BPCL outperformed all the listed power generation firms.

The superior financial performance of the BPCL is attributable to the three factors, in the main:

a. Allotment of choice hydel sites by the government at the nominal water cess.
b. Good project implementation and commendable technical and managerial capability, an
c. Banking and wheeling arrangement.

While BPCL has done very well, its investments in the group firms have soured. It had to write off nearly 4.25 crore of its loan to Bhoruka Steels and its investments in Prabhu securities, and its investment subsidiary has eroded considerably. This raises serious concerns in the mind of a strategic investor.

BPCL is currently operating hydel power projects at the Shivapur and Shahapur and is setting up the hydel project at Rajankollur. BPCL has begun work on the thermal power project to be set up at Wadi. It is exploring the few other options.

BPCL will enjoy superior returns on its existing hydel projects and even on the thermal project at Wadi (where it has worked out tariff structure assuming the return on equity of 25 percent). However, it appears that the profitability of new hydel projects may not match the profitablility of its existing projects. Hence its thrust in future will probably be in the area of thermal power where profitability is likely to be moderate.

Methods

There are three methods have been employed for valuing BPCL's equity.

Replacement cost method

Earnings capitalization method

Discounted cash flow method

1. Replacement cost method

According to this method, the value of equity is derived as follows: -

Value of equity = Replacement cost of fixed assets + Net current assets- Loss funds

BPCL had 24.6 MW of hydel capacity in operation which may be assigned a replacement cost of 4.5 crore per MW. In addition, as on March 31, 1998 its other assets would be as follows;

Capital Work in Progress	10.1 crore
Net current assets	6.1 crore

The loan funds on that date would be 37.8 crore

BPCL's value of equity as per the replacement cost method is worked out below:

Replacement cost of 24.6 MW of hydel capacity in operation 110.7

(4.5 crore per MW)

+ Capital works in progress as on 31st March, 1998 10.1

+Net current assets as on 31st March, 1998	6.1
- Loan funds as on 31st March, 1998	37.8
	89.1 crore

Since the number of outstanding shares of BPCL is 0.825 crore, the replacement cost per share is: 89.1 / 0.825 = 108

2. Earnings Capitalization Method

According to this method, the value of equity is estimated as:

Normal profit after tax × An appropriate P/E multiple

Normal profit after tax: For the firm that experiences the lot of variability in profit after tax it is the common practice to use the weighted average of profit after tax for 2 to 3 years. However, in case of BPCL, profit after tax has been rising steadily and this is expected to continue in the foreseeable future. In such situation, it suffices to look at the profit after tax for the current year. This is expected to be 14.2 crore.

Appropriate P/E multiple How can one establish an appropriate P/E multiple? The P/E multiple is mainly function of the following factors:

- Growth prospects
- Risk characteristics
- Size of the firm
- Liquidity
- Corporate governance

While the BPCL scores well on the first two factors, it does not currently fare well on the remaining factors. (Its size is not large; since it is an unlisted firm there is no secondary market; its funds have been used for subsidizing group firms).

The P/E multiple for the power generation firms currently varies between 4.5 and 13.5 with the average of about 9.5.

Given the above evaluation of BPCL the P/E multiple of 7.0 seems appropriate for it.

Given the profit after tax figure of 14.2 crores and the appropriate multiple of 7, the value of BPCL's equity works outto:

14.2 × 7 = 99.4 crore

On the per-share basis, it works out to:

99.4 / 0.825

= 120.5

3. Discounted Cash Flow Method

Ordinarily, when the DCF valuation of firm is done, one estimates the entity value by discounting the free cash flow to all the providers of capital using the post-tax weighted average cost of capital as per the discount rate. From the entity value, the value of the debt is subtracted to arrive at the value of equity.

In the case of BPCL, we have looked at the cash flows to equity over the period of 15 years and discounted the same at the discount rated reflecting the cost of equity. This procedure has been followed because the capital structure is expected to change significantly over the time.

How are cash flows to equity defined? The cash flows to equity represent the net cash flows accruing to equity shareholders after taking into account the operations, the financing from non-equity sources, and servicing of non-equity sources. More specifically, the cash flows to equity are defined as follows:

Revenues

-operating expenses

-Earnings before interest, taxes, depreciation, and amortization (EBITDA)

Depreciation and amortization

=Earning before interest and taxes (EBIT)

-Interest expenses

=Earnings before taxes

-Taxes

=Earnings (profits) after taxes

+Depreciation and amortization

=Cash flow from operation

+Proceeds of debt issues

+Proceeds of preference issues

Sale of assets (fixed and current)

-Increase in current assets (inventories, debtors, and others)

-Preference dividends

-Redemption of debt

-Redemption of preference capital

The cash flow to equity stream for the period 1998-99 through 2013-2013 for BPCL is projected to be as follows:

Year	Cash Flow to Equity (in lakhs)
1998-1999	1137
1999-2000	-580
2000-2001	2958
2001-2002	4363
2002-2003	4855
2003-2004	5236
2004-2005	4588
2005-2006	4078
2006-2007	6216
2007-2008	6456
2008-2009	7271
2009-2010	7337
2010-2011	7454
2011-2012	7763

2012-2013	6716 + 17288 = 24004 (Terminal Value)

Notes: Cash flow to equity is derived from the projected fund flow statement for the period 1998-2013.

At the end of 2012-2013 the terminal value of 17288 lakh has been obtained as follows:

Depreciated value of 80 MW	14400
+ Ne current asses excluding cash	+4996
-Long term debt	-21088
	=17288

Present value of equity – related cash flows and derivatively the intrinsic value per share has been worked out at the two discount rates: 20% and 22%

Discount Rate	Present value of equity related cash flows	Intrinsic value per share
20%	172.04 crore	208.5
22%	151.74 crore	183.9

Averaging we find that the three methods, produce different estimates of intrinsic value per share.

Replacement Cost method	108
Earnings capitalization method	120.5
DCF method (assuming the 22% discount rate)	183.9

There can be discrepancies because of the following reasons:

- The replacement cost method does not capture the 'economic rents' BPCL expects from favorable circumstances.
- The earnings capitalization method is influenced by current valuation norms (P/E multiples) in the market which are somewhat depressed.

Since all the methods have their merits and demerits, prudence calls for taking the average of the values provided by the methods. The simple arithmetic average the values is:

$$(108 + 120.5 + 183.9) / 3 = 137.5$$

Notes: In the private transactions of the equity of unlisted firms there is often a discount of 15% - 25% over the intrinsic value. The discount is the function of the faith the private equity investor has been in the projection provided by the firm and the quality of management and corporate governance and b) the relative bargaining power of the two parties.

Summary

- Bharat Hotels Company is the major hotel chain of India. The company operates 35 hotels of which 14 are owned by it and the rest are owned by it and the rest are owned by others but managed by BHC.

- BHC's major competitors in India are the two other major Indian hotel chains and the host of other five-star hotels which operate in the metropolises as an extension of multinational hotel chains.
- The DCF value of the BHC is calculated with the help of Free Cash Flow Forecast.
- The forecast for revenues and the operating expenses is developed in the first three panels.
- Bharat Heavy Electrical Limited (BHEL), established in 1964, the public sector firm is the largest engineering and manufacturing enterprise in India in the energy-related / infrastructure sector. BHEL caters to the core sectors of Indian economy viz., power generation and transmission industry, transportation, renewable energy, and defense.
- Bhoruka Power Corporation Limited is the highly profitable power generation firms which has done very right from its inception in 1992. It has grown at the healthy rate, achieved the high return on equity, and built impressive reserves and surplus. In terms of the two key financial performance measures, viz., net profit to sales ratio, and return on net worth, BPCL outperformed all the listed power generation firms.
- The superior financial performance of the BPCL is attributable to the three factors, in the main:
  1. Allotment of choice hydel sites by the government at the nominal water cess.
  2. Good project implementation and commendable technical and managerial capability, an
  3. Banking and wheeling arrangement.

Keywords

1. **DCF value: -** Discounted cash flow (DCF) means the valuation method used to estimate the value of an investment based on its expected future cash flows.
2. **Risk free Rate of Return:** - The risk-free rate of return means the least rate of return earned by an investor from an investor who holds zero risks.
3. **Earnings Capitalization Method:** - Capitalization of earnings is the method of determining the value of an organization by calculating the worth of its anticipated profits based on current earnings and expected future performance.

SelfAssessment

1. Which source of finance BHC is having

A. Equity
B. Debt
C. Both a) and b)
D. None of the above

2. …… is a valuation method used to estimate the value of an investment based on its expected future cash flows.

A. Discounted Cash Flow
B. Continuing Value
C. Historical Value
D. None of the above

3. …… is the return that a company requires to decide if an investment meets capital return requirements.

A. Cost of Equity
B. Cost of Debt
C. Cost of Retained Earnings
D. None of the above

4. What is the Cost of Equity of BHC if its risk-free rate is 12, Beta of BHC is 0.921 and Market risk premium is 8.
A. 18.67
B. 19.37
C. 20.23
D. 19.03

5. Bharat Heavy electrical limited established in …….
A. 1962
B. 1964
C. 1991
D. 1980

6. BHEL is a ……
A. Private Company
B. Public Company
C. Government owned Company
D. Both b) and c)

7. Which of the following methods have been employed for valuing BPCL's equity.
A. Replacement cost method
B. Earnings capitalization method
C. Discounted cash flow method
D. All of the above

8. Value of cost can be derived by…….
A. Replacement cost of fixed assets - Net current assets- Loss funds
B. Replacement cost of fixed assets + Net current assets- Loss funds
C. Replacement cost of fixed assets +-Net current assets - Loss funds
D. None of the above

9. According to Earning Capitalization method, the value of equity is estimated as:
A. Normal profit after tax × An appropriate P/E multiple
B. Normal profit before tax × An appropriate P/E multiple
C. Normal profit after tax / An appropriate P/E multiple
D. None of the above

10. The P/E multiple is mainly function of the which of the following factors

A. Growth prospects
B. Risk characteristics
C. Size of the firm
D. All of the above

11. The superior financial performance of the BPCL is attributable to the three factors, in the main:

A. Allotment of choice hydel sites by the government at the nominal water cess.
B. Good project implementation and commendable technical and managerial capability, an
C. dBanking and wheeling arrangement.
D. All of the above

12. Which of the following statement is true.

I. Bhoruka Power Corporation Limited is the highly profitable power generation firms which has done very right form its inception in 1992.

II. It has grown at the healthy rate, achieved the high return on equity, and built impressive reserves and surplus

The options are as follows: -

A. Only I
B. Only II
C. Both I and II
D. None of the above

13. The ……. means the least rate of return earned by an investor from an investor who holds zero risks.

A. Risky Rate of Return
B. Risk Free Rate of Return
C. Total Revenue
D. None of the above

14. …….. is the method of determining the value of an organization by calculating the worth of its anticipated profits based on current earnings and expected future performance?

A. Capitalization of earnings
B. Earnings Capitalization Method
C. Both a) and b)
D. None of the above

15. Which of the following statement is true?

I. A non-operating asset is a class of assets that are essential to the ongoing operations of a business but may still generate income or provide a return on investment (ROI).

II. These assets are listed on a company's balance sheet along with its operating assets, and they may or may not be broken out separately.

A. Only I
B. Only II
C. Both I and II
D. Neither I nor II

Answers for SelfAssessment

1.	C	2.	A	3.	A	4.	B	5.	B
6.	D	7.	D	8.	B	9.	A	10.	D
11.	D	12.	C	13.	B	14.	C	15.	B

Review Questions

1. Analyze the corporate valuation of Bharat hotel company.
2. Explain the different methods that have been employed in the valuation of Bhoruka power corporation limited.
3. What are the different discrepancies that are been faced during the valuation of BPCL using different methods?
4. What are the different assumptions have been made for developing the financial projections of BHC?
5. Critically analyze the valuation of Bharat heavy electrical limited?

Further Readings

- https://www.tofler.in/bharat-hotels-limited/company/U74899DL1981PLC011274
- https://www.tofler.in/bharat-hotels-limited/company/U74899DL1981PLC011274/financials
- https://www.infrontanalytics.com/fe-EN/30216FI/Bharat-Heavy-Electricals-Limited/market-valuation
- https://www.zaubacorp.com/company/BHORUKA-POWER-CORPORATION-LIMITED/U40101KA1986PLC007404
- https://www.tofler.in/bhoruka-power-corporation-limited/company/U40101KA1986PLC007404
- https://www.indiamart.com/bhoruka-power-corporation-ltd/aboutus.html

Unit 14: Case Studies in Valuation-II

CONTENTS

Objectives

- Understand the performance of Sasken performance
- Explain the origin of Sasken Communication Technologies
- Discuss the comparable companies of Sasken Communication Technologies
- Explain the valuation of Infosys Brand
- Analyze the methodology of valuing the brand
- Understand the process of valuation
- Discuss the assumptions of Infosys Brand

Introduction

Sasken Technologies Limited (formerly Sasken Communication Technologies Limited) is an Indian multinationaltechnology company, based in Bangalore, India, which provides product engineering and digital transformation services to global customers in industries such as semiconductors, automotive, consumer electronics, enterprise grade devices, Smart devices and wearables, industrials, and telecommunication. The valuation of Sasken's equity shares was done using two methods, the DCF method and the direct comparison method – for a technologically intensive firm like Sasken whose major assets are its human and intellectual capital, which are not considered appropriate.

Infosys Limited is the Indian multinationalinformation technology firm that provides business consulting, information technology and outsourcing services. The firm was founded in Pune and is headquartered in Bangalore. Infosys is the second-largest Indian IT company after Tata Consultancy Services by 2020 revenue figures and the 602nd largest public company in the world according to Forbes Global 2000 ranking. The Balance Sheet discloses the financial position of the firm. The financial position of the enterprise is influenced by the economic resources it controls, the financial structure liquidity and solvency, and its capacity to adapt to changes in the environment. However, it is becoming increasingly clear that intangible assets have a significant role in the definite growth of the high-tech firm

14.1 Sasken Communication Technologies

Sasken Communication Technologies Limited (Sasken, hereafter) provides telecommunication software solutions and services to network equipment manufacturers terminal device manufacturers, and semiconductor firms worldwide. Headquartered in Bangalore, Sasken has offices around the world. Presently Sasken employs about 1350 persons.

Sasken is the unlisted public firm. It prepares its financial statements in conformity with the Indian GAAP as well as the US GAAP.

Sasken plans to issue stock options to its employees in April 2004. Sasken wants to ascertain the intrinsic value of its equity shares to structure its employee stock option scheme and determine the compensation cost associated with it.

The valuation of Sasken's equity shares was done using two methods, the DCF method and the direct comparison method – for a technologically intensive firm like Sasken whose major assets are its human and intellectual capital, which are not considered appropriate.

Origin

Sasken began as the brainchild of Rajiv C Mody, its chairman, MD & CEO, and three other co-founders: Krishna Jhaveri, Suresh Dholakia, and Badruddin Agarwala. Sasken came into being as Silicon Automation Systems (SAS) in 1989 in the small warehouse in Fremont, California. Later, the firm changed its name to Sasken Communication Technologies Limited.

In February 2017, Sasken announced that it had changed its name to Sasken Technologies Limited to serve customers in businesses ranging from automotive, enterprise grade devices, smart devices and wearables, industrials, and satellite communication. In January 2018, Sasken unveiled the new logo to reflect its 30-year-old heritage.

Sasken's Performance

The revenues and profits of Sasken grew at the impressive rate right from its inception in 1989-90 to 2000-01, indeed, in terms of return on the net worth, it was one of the most profitable firms in the software industry during the decade of 1990s. The following two years, 2001 -2003, were the trying period because the shrinkage in the world telecom market adversely impacted the growth and margins of Sasken. However, in 2003-04, Sasken witnessed the district rebound and its performance improved appreciably. The financial numbers of Sasken for the period 2000-2004 are given in the table below: -

in milliion				
(other than per share data)				
	00-01	01-02	02-03	03-04
Net Sales	1428.3	1086.3	1092.6	1636.0
PAT	281.1	(156.4)	12.7	170.1
Net profit margin(%)	19.7	(14.4)	1.2	10.4%
Equity capital ('5 par)	125.7	126.7	127.1	151.6
Net worth	1017.0	905.2	1012.6	1163.0
Debt	317.7	353.9	267.5	14.0
Return on net worth	27.6%	(17.3%)	0.1%	14.6%
Earnings per share	11.2	(6.2)	0.05	5.6
Book value per share	40.0	35.6	40.0	38.4
Sales per share	56.1	42.8	43.0	54.7

Sasken's future look promising for the following reasons:

a.The global telecom market is recovering

b.Sasken is well-positioned in those segments of the telecom market that are growing rapidly.

c. Sasken has restructured its licensing arrangement with its customers and this is expected to augment its overall income from licensing.

The combination of these factors is expected to generate the robust growth in revenues and improve the net profit margin over the next five years. The best current estimates of revenue growth and the net profit margin are as follows

Year	Revenue growth rate	Net profit margin
2004-05	62%	8%
2005-06	30%	10%
2006-07	20%	11%
2007-08	20%	14%
2008-09	10%	15%

The track record of Sasken and improvement in business conditions, these are the fairly credible estimates.

Comparable Companies

The software industry in India comprises of companies varying widely in terms of size, focus area, revenue mix (from products and services), technological intensity, and so on.

Sasken's focus is exclusively on the telecommunication software solutions and services. Among the listed software firms in India, Hughes software is perhaps closest to Sasken in terms of focus. Subex systems is the another firm that may be used as the reference firm. The following tables present the key financial numbers for the Hughes Software, and Subex Systems.

in million (other than per share data)				
	00-01	01-02	02-03	03-04
Net Sales	1985.4	2348.8	2203.7	3440.0
PAT	629.3	522.5	378.4	748.0
Net Profit Margin	31.7%	22.3%	17.2%	21.7%
Equity capital (5 par)	167.1	167.5	168.0	168.0
Net worth	2001.3	2469.2	2651.5	333.1
Debt	-	-	-	-
Return on net worth	31.4%	21.2%	14.3%	22.4%
Earnings per share	18.8	15.6	11.3	22.3
Book value per share	59.9	73.7	78.9	99.2
Sales per share	59.4	70.1	65.6	102.4

Annualized on the basis of 9 months performance upto 31/12/03

Assuming here the dividend rate of 40%

Subex Systems Financials

in million (other than per share data)

	00-01	01-02	02-03	03-04
Net Sales	552.4	591.8	700.1	837.7
PAT	102.8	41.8	96.1	171.9
Net Profit Margin	18.6%	7.1%	13.7%	20.5%
Equity capital (10 par)	71.3	71.3	73.4	73.4
Net worth	488.5	367.2	474.9	639.5
Debt	123.1	304.6	437.9	639.5
Return on net worth	21.0%	11.4%	20.2%	26.9%
Earnings per share	14.4	5.9	13.1	23.4
Book value per share	68.5	51.5	64.7	87.1
Sales per share	77.5	83.0	95.4	114.1

Annualized on the basis of 9 months' performance upto 31-12-03

Assuming the dividend rate of 10 percent

The market price per share of Hughes Software and Subex Systems as on March 23, 2004 was: -

Hughes Software: 570

Subex Systems: - 280

The relevant multiples for Hughes Software and Subex Systems are: -

	Hughes Software	Subex Systems
Price to earnings per share	25.6	12.0
Price to book value	5.75	3.21
Price to sales share	5.62	2.45

The comparison of the Hughes Software, Subex systems, and Sasken suggests that: -

In terms of turnover Hughes in nearly twice the size of Sasken which in turn is nearly twice the size of Subex.

Hughes Software has a renowned international parent. Sasken and Subex systems do not have that advantage.

Sasken has historically displayed greater volatility in the performance compared to Hughes software and Subex Systems.

Taking into the account factors like size, volatility, technological intensity, international affiliation and corporate governance, appropriate multiple values for Sasken were judgmentally estimated as follows:

P/E =12.0

P/B = 3.3

P/S =2.5

Based on these multiple values estimates for the Sasken are:

Value estimate based on the P/E multiple

= 12.0 × 5.6

= 67.2

Value estimate based on the P/B multiple

= 3.3 × 38.4

= 126.7

Value estimate based on the P/S multiple

=2.5 × 54.7

= 136.8

Taking the simple arithmetic average of these three estimates, we get the direct comparison value of:

$$\frac{67.2 + 126.7 + 136.8}{3} = 110.2$$

14.2 Valuation of Infosys Brand

From the time to time, we have used various models for evaluating assets of the Balance Sheet to bring certain advances in the financial reporting to the notice of our shareholders. The aims of modeling is to lead the debate on the Balance Sheet of the next millennium. These models are still the subject of debate among researchers and using these models and data in projecting the future is risky. We are not responsible for any direct, indirect, or consequential losses suffered by the person using these models or data.

The Balance Sheet discloses the financial position of the firm. The financial position of the enterprise is influenced by the economic resources it controls, the financial structure liquidity and solvency, and its capacity to adapt to changes in the environment. However, it is becoming increasingly clear that intangible assets have a significant role in the definite growth of the high-tech firm.

14.2.1 Valuing the Brand

The wave of brand acquisitions in the late 1980s exposed the hidden value in highly branded firms, and brought brand valuation to the fore. The values associated with the product or service are communicated to the consumer through the brand. Consumers no longer want just the product or service, they want to relationship based on the trust and familiarity.

The brand is much more than the trademark or logo. It is the 'Trustmark' -the promise of quality and authenticity that clients can rely on. Brand equity is the value addition provided to the product or the firm by its brand name. It is the financial premium that the buyer is willing to pay for the brand over the generic or less worthy brand. Brand equity is not created overnight. It is the result of relentless pursuit of quality in manufacturing, selling, advertising and marketing.

It is integral to the quality of client experiences in the dealing with the firm and its services over the period.

The third annual BRANDZ-™ Top 100 Most Powerful Brands ranking published in the cooperation with the Financial Times was announced in the April 2009 by Milward Brown. According the report, Google topped the ranking with the brand value of US $100 billion. The market capitalization of Google at that time was US $84 billion. Thus, 119% of market capitalization represented its brand value.

Methodology

The task of measuring brand value is the complex one. Different models are available for accomplishing this. The most commonly used is the brand-earnings-multiple model. There are several variants of this model.

The methodology followed for valuing the brand is given as follows:

- Determine the brand profits by eliminating the non-brand profits from the total profits.

- Restate the historical profits at present-day values3
- Provide for the remuneration of capital to be used for purposes other than the promotion of the brand.
- Adjust the taxes.
- Determine the brand strength or the brand earnings multiple.

Brand strength multiple is the function of the multitude of factors like leadership, stability, market, internationality, trend, support and protection. We have internally evaluated these factors on the scale of 1 to 100, based on the information available within.

In crore			
	2009	2008	2007
Brand Value	32,345	31,863	31,617
Market Capitalisation	75,837	82,362	1,15,307
Brand value as the percentage of market capitalisaiton	42.7%	38.7%	27.4%
Brand value / revenue (x)	1.49	1.91	2.28

Brand Valuation

in crore			
	2009	2008	2007
Profit before interest and tax	6,9.7	5,344	4,245
-Non brand income	426	634	335
Adjusted profit before tax	6,481	4,710	3,910
Inflation factor	1,000	1,092	1,192
Present value brand profits	6,481	5,142	4,660
Weighted Factor	3	2	1
Weighted average profits	5,731	-	-
Remuneration of capital	801	-	-
Brand-related proftis	4,930	-	-
Tax	1,676	-	-
Brand earnings	3,254	-	-
Brand multiple	9.94	-	-
Barnd value	32,345	-	-

Assumptions

- The figures stated above are based on the consolidated Indian GAAP financial statements.

- Brand revenue is total revenue excluding other income after adjusting for cost of earnings such income, since this is the exercise to determine out brand value as the firm and not for any of our products or services.
- Inflation is assumed at 8.4% per annum, 5% of the average capital employed is used for purposes other than promotion of the brand and tax rate is at 33.99%.
- The earnings multiple is based on our ranking against the industry average based on the certain parameters.

Summary

- The valuation of Sasken's equity shares was done using two methods, the DCF method and the direct comparison method – for a technologically intensive firm like Sasken whose major assets are its human and intellectual capital, which are not considered appropriate.
- Sasken's future look promising for the following reasons:

a)The global telecom market is recovering

b)Sasken is well-positioned in those segments of the telecom market that are growing rapidly.

c)Sasken has restructured its licensing arrangement with its customers and this is expected to augment its overall income from licensing.

- The brand is much more than the trademark or logo. It is the 'Trustmark' -the promise of quality and authenticity that clients can rely on. Brand equity is the value addition provided to the product or the firm by its brand name.
- The task of measuring brand value is the complex one. Different models are available for accomplishing this. The most commonly used is the brand-earnings-multiple model. There are several variants of this model.

The methodology followed for valuing the brand is given as follows:

1. Determine the brand profits by eliminating the non-brand profits from the total profits.
2. Restate the historical profits at present-day values3
3. Provide for the remuneration of capital to be used for purposes other than the promotion of the brand.
4. Adjust the taxes.
5. Determine the brand strength or the brand earnings multiple.

- Brand strength multiple is the function of the multitude of factors like leadership, stability, market, internationality, trend, support and protection.

Keywords

1.**GAAP: -** Generally accepted accounting principles (GAAP) means the common set of accounting rules, standards, and procedures issued by the Financial Accounting Standards Board (FASB).

2.**Market capitalization:** -It is the aggregate market value of a firm represented in a dollar amount. Since it represents the "market" value of a company, it is computed based on current market price (CMP) of its shares and total number of outstanding shares.

3.**Price to Earning per Share:** - P/E ratio is the ratio for valuing a firm that measures its current share price relative to its earnings per share (EPS). The price-to-earnings ratio is also sometimes called the price multiple or the earnings multiple.

4.**Price to Book value: -**Firms use the price-to-book ratio (P/B ratio) to compare firm's market capitalization to its book value. It's calculated by dividing the firm's stock price per share divided

by its book value per share (BVPS). An asset's book value is equal to its carrying value on the balance sheet, and firms calculate it by netting the asset against its accumulated depreciation.

SelfAssessment

1. Which of the following methods were used to value the Sasken's equity

A. DCF method

B. Direct comparison method

C. Both a) and b)

D. None of the above

2. What are the major assets of Sasken's Communication Technologies?

A. Human resource

B. Capital

C. Both a) and d)

D. Intellectual Capital

3. Infosys was found in ……..

A. Pune

B. Hyderabad

C. Banglore

D. None of the above

4. Sasken's Communication Technologies headquatered in ……..

A. Ahmedabad

B. Banglore

C. Delhi

D. None of the above

5. Sasken's is a kind of……..

A. Listed public firm

B. Unlisted public firm

C. Listed Private Firm

D. None of the above

6. Sasken's prepare the financial statements on the basis of…….

A. Indian GAAP

B. US GAAP

C. Both a) and b)

D. None of the above

7. Which of the following reasons that assures the Sasken's future promising performance?

A. The global telecom market is recovering

B. Sasken is well-positioned in those segments of the telecom market that are growing rapidly.
C. Sasken has restructured its licensing arrangement with its customers and this is expected to augment its overall income from licensing.
D. All of the above

8. Which of the following is the correct sequence for valuing the brand?

I.Determine the brand profits by eliminating the non-brand profits from the total profits.

II.Restate the historical profits at present-day values3

III.Provide for the remuneration of capital to be used for purposes other than the promotion of the brand.

IV.Adjust the taxes.

V. Determine the brand strength or the brand earnings multiple.

The options are: -

A. I, II, III, IV, V
B. V, II, III, IV, I
C. II, I, V, IV, III
D. None of the above

9. …… the common set of accounting rules, standards, and procedures issued by the Financial Accounting Standards Board (FASB).
A. Accounting Knowledge
B. Auditing
C. GAAP
D. None of the above

10. …… is the ratio for valuing a firm that measures its current share price relative to its earnings per share (EPS). The price-to-earnings ratio is also sometimes called the price multiple or the earnings multiple.
A. P/E ratio
B. P/BV ratio
C. P/Sales ratio
D. None of the above

11. ……the promise of quality and authenticity those clients can rely on.
A. Brand
B. Trademark
C. Logo
D. Trustmark

12. ……. is the value addition provided to the product or the firm by its brand name. It is the financial premium that the buyer is willing to pay for the brand over the generic or less worthy brand.

A. Brand equality
B. Brand equity
C. Both a) and b)
D. None of the above

13. Firms use …….. to compare firm's market capitalization to its book value. It's calculated by dividing the firm's stock price per share divided by its book value per share (BVPS).

A. Price to Book value
B. Price to Sales
C. Price to Earnings per share
D. None of the above

14. ……..is the aggregate market value of a firm represented in a dollar amount. Since it represents the "market" value of a company, it is computed based on current market price (CMP) of its shares and total number of outstanding shares.

A. Book value
B. Market Capitalization
C. Historical value
D. None of the above

15. …… multiple is the function of the multitude of factors like leadership, stability, market, internationality, trend, support and protection.

A. Brand Strength
B. Brand Equity
C. Brand Logo
D. Brand Trademark

Answers for SelfAssessment

1.	D	2.	C	3.	A	4.	A	5.	B
6.	D	7.	D	8.	A	9.	C	10.	A
11.	C	12.	B	13.	A	14.	B	15.	A

Review Questions

1. Explain the valuation of Sasken Communication technologies limited.
2. Critically analyze the comparable companies to Sasken Communication Technologies limited.
3. Discuss the different methodologies used for the valuation of Infosys Brand.

4. Discuss the assumptions for the valuation of Infosys brand.
5. Analyze the valuation of Infosys Brand.

Further Readings

- https://en.wikipedia.org/wiki/Sasken_Technologies
- https://www.moneycontrol.com/india/stockpricequote/computers-software/saskentechnologies/SCT01
- https://www.infosys.com/content/dam/infosys-web/en/investors/reports-filings/annual-report/annual/documents/ar-2011/Additional-Information/Brand_valuation.html

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